

Appendix to Document AQ - Revised as at 28.09.05

**DRAFT**

**MUNICIPAL  
WASTE MANAGEMENT  
STRATEGY**

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Version 6.0

# Contents Page

Page No.

## 1.0 INTRODUCTION

1.1	Profile of the Bradford District	1
1.2	Waste Management Background	2
1.3	Present Situation	3
1.4	Waste Composition	4
1.5	Present Operational Arrangements and Infrastructure	7
1.6	Current Waste Management Performance Indicators	11

## 2.0 STRATEGIC REVIEW

2.1	National Context	13
2.2	Regional/Sub Regional Situation	13
2.3	Best Value	13
2.4	Planning Regime and Land Use	14
2.5	Recycling Markets	16
2.6	Bradford's Current Waste Strategy	16

## 3.0 NEED FOR CHANGE

3.1	Key Legislative Drivers	18
3.2	Other Legislative Drivers	22
3.3	Waste Growth Projections	24
3.4	Gap Analysis	25

## 4.0 STRATEGIC DEVELOPMENT

4.1	Aims and Objectives of the Municipal Waste Management Strategy	27
4.2	Links to Spatial Planning	27
4.3	Establishing Business Case	28
4.4	Attracting Contractors to Bid	28
4.5	Legal Powers	29
4.6	Council Decision Making Structures	30
4.7	Public Engagement	31

**5.0 WASTE MANAGEMENT OPTIONS**

5.1	Waste Reduction	34
5.2	Waste Reuse	34
5.3	Recycling and Composting	34
5.4	Waste Treatment Technologies	35
5.5	Land Availability and Status	40
5.6	Possible Funding Arrangements	41
5.7	Affordability of Options	42
5.8	Procurement Model for Long Term Contract	45

**6.0 OPTIONS APPRAISAL**

6.1	Introduction	47
6.2	Developing a Specification Based on Outputs	47
6.3	Treatment Capacity Required	48
6.4	Other Appraisal Criteria	51
6.5	Other Considerations	52
6.6	Cost Model	53

**7.0 OPTIONS SELECTION**

7.1	Summary	55
7.2	Selection	55
7.3	Justification	57

**8.0 RISKS**

8.1	Identification of Risk	58
8.2	Evaluation	59
8.3	Risk Management	61

List of Appendices	62
--------------------	----

Abbreviations	63
---------------	----

Glossary of Terms	64
-------------------	----

References	70
------------	----

Appendices	
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## **List of Tables**

### **Page No.**

A.	Summary of MEL kerbside waste composition analysis (Bradford)	5
B.	Biodegradable material survey by MEL of CA waste (Bradford)	6
C.	Waste Management Best value Performance Indicators	12
D.	Growth Projections of Municipal Waste	25
E.	Gap Analysis	26
F.	Costs of Do Nothing	43
G.	Process Capacity Required to Treat Waste	49
H.	Predicted Recycling and Recovery Rates	50
I.	Risk Assessment	60

## **1.0 INTRODUCTION**

### **1.1 Profile of the Bradford District**

Bradford is the fourth largest metropolitan district in the country and is a unitary authority. In addition to the city of Bradford, which is situated to the south-eastern boundary, the district includes the smaller former mill towns of Keighley, Bingley and Shipley. The more rural areas in the north and west of the District, include the tourist areas of Ilkley and Haworth, with the Saltaire area of Shipley recently designated world heritage status. Indeed the majority of the district, covering 141 square miles, is rural (66.%).

The District's population has risen in recent years to around 478,000, although this is projected to fall slightly. It is anticipated that the ethnic population, which currently forms 22% of the total, will increase to approximately 28% over the next decade.

The District has a wide range of social and economic conditions, containing 9 wards that are within the 10% most deprived wards in the country (according to the national indices of deprivation). In contrast it also contains 2 wards within the least deprived wards.

Historically, the economy of the District was largely dependent on the textile and clothing industries. Although still the biggest employer in the manufacturing sector, with 10,000 jobs, employment in these industries continues to fall. More than three times this number of jobs is now provided by retail and wholesale distribution. Electronics and financial services are the most rapidly growing sectors, and there is a growing tourism industry within the District.

The level of unemployment, although reducing, remains above both the West Yorkshire and national averages. There are also great disparities between unemployment levels across the District, with certain wards having rates of around 37%.

The District is well served by the national road network, with the recently completed Aire Valley Link Road leading north from Shipley towards North Yorkshire, and the M606 leading south from Bradford to join the M62 motorway.

The Council's long-term strategy for the regeneration of the District is embodied within the Local Strategic Partnership "20/20 Vision". Its primary focus is the local economy, although a range of social and environmental issues are identified. One of the main features relates to the achievement of a "clean, safe and healthy environment" - an outcome, which is fundamentally influenced by the quality of its refuse, cleansing and waste management services.

This long-term vision is supported by the development of a 5-year strategy containing detailed policies for addressing a range of economic, social and environmental issues. Through the Local Strategic Partnership, a priority is to achieve "an economy which minimises waste and utilises recycling and renewable energy sources to make it cleaner and less dependent on scarce resources". Within the Council's Corporate Plan, improving waste management and the environment is one of the 6 key priorities.

The Council has recently engaged in a number of significant initiatives, aimed at improving the quality of the services provided. This has included the outsourcing of the local education function, the transfer of the Council housing to a housing trust and an agreement for ICT provision with an external specialist provider.

## 1.2 Waste Management Background

The Local Government Act 1972 brought about a major reorganisation of local government services in England and Wales. The Act created a two tier system of local government, where County Councils were responsible for strategic services on a county wide basis (e.g., police, fire, passenger transport, highway maintenance, waste management etc) whilst District Councils were responsible for more localised services (e.g., housing, local planning, regeneration, recreation, refuse collection).

Of the upper tier county authorities, six were designated Metropolitan County Councils, and covered the major conurbation areas (excluding Greater London). West Yorkshire Metropolitan County Council (WYMCC) was one of these authorities and came into being on 1<sup>st</sup> April 1974. The county councils were the Waste Disposal Authority (WDA), whilst the district councils were the Waste Collection Authority (WCA).

On 1<sup>st</sup> April 1986 the metropolitan county councils were abolished, and the WDA function devolved to the district council level. In West Yorkshire the District Councils concerned (and which geographically together made up the West Yorkshire Metropolitan County Council area) were Bradford, Calderdale, Kirklees, Leeds and Wakefield. These five District Councils together decided to delegate their new duties as Waste Disposal Authorities to a Joint Committee. This gave rise to the West Yorkshire Waste Management Joint Committee (WYWMJC).

WYWMJC continued the previous WYMCC strategy of disposing of waste to landfill, which it purchased, developed and operated, providing the cheapest end disposal option.

It became clear that the major future landfill sites would be located in the eastern and south eastern parts of the County owing to the suitable geology and existence of former mineral workings (e.g., Welbeck). As the major conurbation areas were in the northern half of the County, (Leeds and Bradford), transfer stations were developed to allow the bulking up and onward transport by road of the local waste arisings to the distant landfill.

This policy in waste disposal terms had a number of advantages:-

- transfer stations can be located near to waste arisings
- collection vehicles suffered little damage whilst tipping inside plants, whereas with landfill site conditions there will inevitably be a greater wear and tear on vehicles
- unexpected/unplanned operational problems at landfill sites could be reduced by having buffer capacity within the plant, thus preventing disruption to the refuse collection service

Upon the implementation of the Environmental Protection Act 1990 (EPA) local authorities were instructed to divest themselves of the Waste Disposal Authority

function. Operational landfills were transferred and this requirement precipitated the demise of WYWMJC in 1998. Residual WDA functions were transferred to the District Councils, and from 1<sup>st</sup> April 1998 Bradford became a Unitary Authority in waste terms, being both a WCA and WDA.

In complying with the EPA requirements, the Council let a number of contracts for landfill disposal to the private sector in 1998, the waste being delivered via the transfer station network described earlier, from Bradford and Keighley, to landfills outwith the Bradford boundary: a situation that continues to exist to date.

### 1.3 Present Situation

Bradford Metropolitan District covers an area of 141 square miles, and contains some 200,000 domestic properties producing 224,000 tonnes per annum of domestic waste. Of this 51,000 tonnes arises from Household Waste Recycling Centres (HWRC – formerly known as Civic Amenity Sites), of which there are 7 within the District. The balance mainly arises from kerbside collections, where almost all domestic properties are provided with a wheeled bin (usually 240 ltr), which is collected weekly. However, the Council also has a large trade waste portfolio of around 60,000 tonnes per annum, producing a total municipal waste stream of some 292,000 tonnes per annum.

The vast majority of this waste is delivered directly to the 2 transfer stations (in Bradford to the south of the District, and Keighley to the north). The waste is bulk loaded and transported by road to distant landfill sites. The contracts referred to in 1.2 above will continue until 31<sup>st</sup> March 2008 with options to extend to 31<sup>st</sup> March 2010. This contract strategy was put in place to enable the Council to meet the full impact of the EU Landfill Directive from 2010, and infers that the major successor to landfill will come online within that 2 year extension window (March 2008 – March 2010).

The Council achieved a recycling/composting rate for domestic waste of 17% for 2004/5, and has a statutory target of 24% for 2005/6. As part of a Local Public Service Agreement, based on improving a wide range of Council activities, a 1.2% stretch target has been added, giving the overall target for 2006 of 25.2%.

To achieve the 17% recycling target, the Council employs a number of initiatives, which are discussed in greater detail in Section 2. These are:

- a diversion rate of nearly 50% is achieved at HWRC;
- a kerbside recycling scheme based on paper is provided to 60% of all domestic properties on an opt out basis;
- a kerbside recycling scheme based on glass/cans is provided to 10% of all domestic properties on an opt in basis;
- drop off banks are provided across the District;
- green waste kerbside collection.

Details of the Council's waste management performance indicators are given in 1.6 below.

## 1.4 Waste Composition

WS2000 states that “approximately 25 million tonnes of household waste is produced in England and Wales each year. The range of materials included in this waste is large.”

WS2000 reproduced the following typical household waste analysis:

- 32% paper and card;
- 21% putrescible wastes;
- 9% glass;
- 8% miscellaneous combustible wastes;
- 7% fines;
- 6% ferrous metals;
- 6% dense plastics;
- 5% plastic films;
- 2% textiles;
- 2% non-ferrous metals;
- 2% miscellaneous non-combustible wastes.

In 2002 MEL Research was commissioned to undertake an analysis of kerbside collected domestic wastes in Bradford. The overall aims were to look at:

- the composition and quantities of waste put out for disposal and to establish whether there were any differences between ethnic groups in the District;
- recycling potential in all areas.

The first comparison was felt important, owing to the findings of recent research in ethnicity and waste, which commented thus:

- ethnic minority communities are under-represented in environmental activities (Leese and Wavering 1996);
- ethnic minorities tend not to feel a sense of ownership for their local environment (Gibson 2001);
- awareness of waste management facilities and services is generally poor in minority communities (Coggins 1989).

MEL found that the average Asian household size was 4.58 people, while average for non-Asian was 2.40 people, and also the Asian households had a younger age profile.

In terms of overall weight of waste put out for disposal, Asian households produced 18.36kg / week, while non-Asian households 14.52kg / week. When household size is taken into account, residual weight per capita for Asian household was 4.01kg / week, as against 6.05kg / week for non-Asian households. Observation as to difference in waste composition showed there to be more kitchen waste and disposable nappies in Asian households, and conversely more glass in non-Asian households.

The survey found surprisingly similar levels of awareness of recycling facilities at household waste sites and drop-off recycling sites, but interestingly Asian



households tended to donate higher levels of clothing and textiles to charitable/fund raising collections. Despite higher levels of kitchen waste, Asian households tended not to compost their waste, even where they had a garden. The survey showed 37% of Asians and 48% of non-Asian households putting garden waste directly into the residual waste stream. The report found that enthusiasm for recycling is probably determined more by levels of deprivation than by ethnicity.

The overall waste composition for waste collected at the kerbside for Bradford is detailed below in Table A, with a breakdown per street of the sample taken given in Appendix 1.

Table A - Summary MEL Kerbside Waste Composition Analysis (Bradford)

<b>Material</b>	<b>Kg per household/week</b>	<b>% by weight</b>
Paper and card	33.9	23.5
Plastic film	7.2	5.0
Dense plastic	9.3	6.5
Textiles	5.0	3.5
Misc. combustible	10.6	7.4
Misc. non-combustible	2.8	2.0
Glass	9.8	6.9
Ferrous metal	4.6	3.2
Non-ferrous metal	2.3	1.6
WEEE	0.7	1.5
Putrescibles	57.0	38.6
Fines	0.4	0.3
<b>TOTAL</b>	<b>143.6</b>	<b>100</b>

It is interesting to compare with Bradford's own analysis reproduced below in Table A, the main differences being less paper and card at 23% compared to 32% above, but with greater putrescibles at 39.7% compared to 21% above.

In overall terms, the survey found the average biodegradable content of kerbside collected residual waste at 69.45%, (which is very close to the 68% being used by Government for the Landfill Allowance Trading Scheme (LATS)).

#### Household Waste Recycling Centres

Some 51,000 tonnes of waste (23% of the District's domestic waste) arises from Bradford's 7 Household Waste Recycling Centres (HWRC).

Again MEL Research was commissioned to undertake a survey of HWRC waste use and waste types, using the busiest site and sampling waste both weekdays and weekends, and undertaking interviews with public users. This survey took place during July 2002.

An overview of the HWRC materials deposited in July 2002 is given in Appendix 2. Survey data, plus data held by the department indicates that:

1. 50% of all HWRC inputs by weight arises on weekends.
2. around 60% of all inputs are delivered in summer months (April to September).
3. the heaviest fractions from the sample representing 75% of total weight are:
  - electrical and electronic equipment 15.6%
  - green waste 14.8%
  - mixed household (bin waste) 14.3%
  - hardcore/rubble 11.3%
  - textiles 10.3%
  - wood 9.1%

This suggests that well resourced and staffed HWRC sites should be able to achieve a landfill diversion rate of at least 60%.

The biodegradable content of the HWRC waste surveyed is reproduced in Table B below, which shows almost 50% of HWRC waste is biodegradable.

Table B - Biodegradable material, HWRC July 2002

<b>Primary Category</b>	<b>Sub Category</b>	<b>Friday %</b>	<b>Saturday %</b>
Paper and card	Recyclable paper	1.4	0.9
	Recyclable card	0.0	0.0
	Cardboard	4.5	2.7
	Non-recyclable paper	2.8	0.9
Textiles	Man made and natural fibres	4.1	6.6
Misc. combustible	Shoes	0.1	0.0
	Wood	8.9	9.2
	Other combustible	1.4	0.3
Misc. non-combustible	Soil	0.0	0.0
	Other non-combustible	0.8	0.1
Putrescible	Soft compostable garden waste	9.1	22.6
	Other putrescibles	1.6	0.0
Fines	Particles > 10mm	0.4	0.0
Mixed household	Normally material for the wheeled bin	7.8	10.6
<b>Total</b>		<b>42.9</b>	<b>53.9</b>

### Conclusion

The surveys undertaken in 2002, give indications as the nature and composition of Bradford's household waste, and will need to be taken account of in longer term waste strategy and procurement planning.

## 1.5 Present Operational Arrangements and Infrastructure

The Council as both a WCA and WDA has a duty to collect, treat and dispose of municipal waste. With the exception of certain specialised waste treatments and final disposal, this operation is undertaken "in-house".

### Scale of the current operation

In 2004/5 the Council processed 292,500 tonnes of municipal waste. This figure has increased steadily since 2000/1 with an overall increase of 11% for household waste.

This total approximate arisings from various sources as listed below:

	<b>Tonnes Per Year</b>
1. Refuse Collection	162,500*
2. Bulky Collections	3,000*
3. Sweepers & Gullies & Clean Ups	9,500
4. Other Council Departments	4,000*
5. Trade Waste Skips	5,000
6. Trade Waste Containers	21,000
7. Household Waste Recycling Centres	51,000*
8. Dry Waste Collection Contracts	16,500
9. Trade Waste Direct Inputs	16,500
10. Bring Sites	3,500*
<b>TOTAL</b>	<b>292,500</b>

Note:

- 1) \* Denotes waste classed as household (224,000 t/pa)
- 2) Trade waste includes commercial and industrial waste handled by the Council

### Disposal Routes for Waste

	<b>Tonnages Per Year</b>
1. Landfill	255,000
2. Material Reclamation Facility (MRF)	2,500*
3. Composting of Green Waste	14,000*
4. Dry recycling	17,500*
5. Bring Sites direct to recycling merchants	3,500*

\*Denotes recycling initiatives (37,500 t/pa)

## Facilities Used To Handle Waste

### Waste Collection Services

The Council operates 4 very different and discrete waste collection services. Operating from two bases, Harris Street at Bradford and Stockbridge at Keighley, 185 operational staff, utilising 60 frontline vehicles, collect approximately 210,000 tonnes of waste per annum.

### Domestic Refuse Collection

The domestic collection service is delivered with 31 operational rounds, of these 28 service the urban areas utilising 26 tonne vehicles with a driver and two loaders. The rural areas represent 60% of the district are serviced with 3 rounds operating on 11 tonne vehicles with a driver and loader.

The Authority began the introduction of wheeled bins in 1998 and completed the process in December 2000.

The weekly service collects 162,000 tonnes annually of domestic waste from 200,000 households.

### Recycling

The division collects paper and glass via separate 240 litre wheeled bins from 120,000 households across the District. The monthly service uses 26 tonnes compaction vehicles to collect over 10,000 tonnes of recyclates per annum.

### Bulky Household Collection

Three dedicated bulk collection crews of a driver and one operative collect 3,000 tonnes of bulky waste from around of 30,000 requests per annum.

### Trade Waste Service

The trade portfolio has 5,500 customers and a turnover of £3.7m. There are 22 operational staff operating 10 frontline vehicles. The service collects 43,000 tonnes of trade waste from a variety of commercial and industrial premises.

## Waste Treatment and Disposal Services

To handle all the waste collected by the above, the Council operates a number of facilities and functions.

### Transfer Stations

There are 2 transfer stations:

- (i) Royd Way, Keighley - handles approximately 70,000 t/pa
- (ii) Bowling Back Lane, Bradford - handles approximately 180,000 t/pa

These sites are purpose built facilities, providing weighing in and out of all loads, and categorising waste into type, source and destination. The sites utilise large items of plant and 44 tonne road going haulage and are open 362 days per year.

Currently Bradford transfer station hauls to Welbeck landfill near Wakefield, operated by WRG (contracted minimum of 160,000 t/pa): Keighley transfer station hauls to Skibedon Landfill near Skipton, operated by Yorwaste (contracted minimum of 60,000 t/pa). There are no suitable landfills in the Bradford area.

The transfer sites also receive waste directly from traders and commercial waste collections for which a charge is levied. They also offer a public weighbridge facility for which a charge is levied. A household waste recycling centre is also provided at each transfer station.

#### Materials Reclamation Facility (MRF)

A small MRF is located at Bowling Back Lane and processes waste for recycling.

Dry recyclables are received from Household Waste Recycling Centres, bring sites and wheeled bin recycling schemes.

The facility incorporates a sorting and picking station, magnetic separations, and metal, aluminium, card, paper, textile and plastic baling equipment.

Once recycling waste is received, the waste is cleaned up and sorted into various types and grades and put into a suitable form for onward transportation to specialist recycling merchants. Any reject or non suitable materials are deposited as a waste into the adjoining transfer station.

#### Household Waste Recycling Centres

There are 7 sites located throughout the District, (formerly known as Civic Amenity Sites). The sites are open for the public to use to dispose of bulky or excess waste and to deposit materials for recycling (these sites are not available for traders to use).

Appendix 3 lists their locations, operating times and the recycling facilities provided.

These sites are open 7 days per week, 362 days per year, and are serviced by a fleet of 4 x 32 tonne container handling vehicles.

The quality of the site infrastructures varies from well planned sites such as Sugden End, to ones with little space or facilities (e.g. Golden Butts, Ilkley). Significant infrastructure improvements have taken place recently, with further action planned for 2006.

## Chemical Advisory Service (CAS)

A chemical advisory service is offered to inspect, investigate, consign, transport and correctly dispose of small quantities or unwanted chemicals.

- Lab chemicals e.g., from schools, colleges etc.
- Pharmaceuticals.
- Herbicides.
- Poisons.
- Chemical reagents.
- Unidentified powders and liquids.

The service is offered at no charge to Bradford householders.

An inspection, collection and disposal charge is made to outside companies and organisations.

## Contract Management

Disposal contracts for deposit of waste to landfill are managed including:

- (i) two major contracts for landfill (described below);
- (ii) the disposal of difficult or special wastes to landfill e.g., tyres, asbestos;
- (iii) incineration of various chemicals from CAS or analysis of chemicals;
- (iv) incineration of clinical wastes;
- (v) recycling contracts for various types of products with recycling/reclamation merchants;
- (vi) composting of green wastes;
- (vii) other minor contracts associated with operations.

The service organises the procurement of new service contracts as required.

Brief details of the main waste management contracts are:

- landfill disposal - 2 contracts duration 5 years, 9 months to end 31/03/08, but with an option to extend by up to a further 2 years. No. 1 WRG for 920,000 tonnes minimum. No. 2 Yorwaste for 345,000 tonnes minimum;
- green waste composting - 5 year contract until 30.4.06 with SJB to compost all green waste arisings segregated via the HWRC and any kerbside collections;
- paper recycling - 5 year contract until 31.8.08 with Shotton Paper to recycle all newspapers and pamphlets collected via kerbside scheme, minimum annual tonnage of 7,000;
- glass and can recycling - ongoing contract with Glass UK to collect glass from bring sites, and to receive mixed glass and cans from kerbside scheme;
- fridges - 3 year contract until 31.3.06 with Ozone for collection, treatment and disposal of domestic fridges arising from HWRC and collection requests from the public;
- social enterprise - 3 year service level agreement with Aire Valley Recycling to collect mixed recyclate from 10,000 properties within the Worth Valley area.

## Landfill Aftercare

The service is also responsible for looking after the legacy of previous landfilling of municipal wastes within the District, including site restoration and maintenance, and environmental control measures for areas such as landfill gas and leachates.

This aftercare will continue for many years into the future and includes environmental monitoring, which involves the collection of field data via monitoring equipment, its subsequent collation and interpretation, culminating in a quarterly report to the Environment Agency. This service is also provided to some outside agencies for which a fee is levied.

Currently a landfill gas flaring system is operating at the Sugden End landfill, along with leachate pumping. Progressive capping and restoration continues at this site, other sites are now restored but still require monitoring and land management.

### Staffing Levels within the Service

Staff breakdown per service area as full time equivalent:

<b>Service Area</b>	<b>Staff FTE</b>
Refuse Collection	141
Recycling	35
Trade Collections	29
Transfer Stations	22
MRF	6
Household Waste Recycling Centres	15
CAS	2
Contract Management	2
Landfill Aftercare	1

## 1.6 Current Waste Management Performance Indicators

There are a number of statutory Best Value Performance Indicators (BVPI's) covering the waste sector which are reported to Government, and are used in assessing local authority performance as part of the Comprehensive Performance Assessment (CPA). Such BVPI's allow comparisons with other councils, and indicate trends and direction of travel.

Listed below in Table C are Bradford's BVPI's relating to Waste Management (predominantly household waste), for the years 2002/3, 2003/4 and latest 2004/5.

Table C Waste Management Best Value Performance Indicators

<b>BV Ref Indicator</b>	<b>Description</b>	<b>02/03</b>	<b>03/04</b>	<b>04/05</b>
82a	recycled (%)	6.4	8.0	10.4
82b	composted (%)	4.4	5.1	6.3
82a+b	recycling rate (%)	10.8	13.1	16.7
82c	energy recovery (%)	0	0	0
82d	landfilled (%)	89.2	86.9	83.3
84	household waste collected per person (kg)	470.0	452.0	469.0
86	cost of household waste collections per household (£)	26.50	33.34	33.44
87	cost of waste disposal per tonne (£)	33.70	36.11	37.77

The Government has set (and will continue to revise and review) performance standards relating to such areas as recycling and composting, along with specific guidance as to how definitions these indicators are to be calculated e.g., what materials count and how measured. The current statutory recycling target (2005/06) BV82(a) + (b) for Bradford is 24%. Clearly the achievement of BVPI targets will be a very important feature of any long term strategy for Bradford's waste.



## **2.0 STRATEGIC REVIEW**

### **2.1 National Context**

'Waste Strategy 2000' is the UK Government's strategy for complying with the EU Landfill Directive. It sets out a number of targets for local authorities, aimed at boosting recycling, composting and value recovery from waste, and in turn reducing reliance on landfill. The landfill tax escalator was introduced in 1996, starting at a tax rate of £7 per tonne for active wastes. In 2005 the rate has reached £18 per tonne, and will rise to £35/tonne by 2010/11, thus making other forms of end disposal more cost competitive, and promoting a shift away from landfill.

The introduction of Landfill Allowance Trading Scheme will further underline the movement away from landfill disposal. Bradford, like most other Councils, has relied heavily on landfill as its primary end disposal route.

In response to concerns that Councils would fail to reach their targets, in 2003 the Government published "Waste Not Want Not", which set out an action plan for sustainable waste management. This action plan has resulted in:

- funds being made available for Councils to bid for (which Bradford has had some notable success);
- an increase in the landfill tax escalator (from £1 to £3 per tonne per year);
- earlier than expected imposition of LATS from 2005 (rather than 2010 as was originally anticipated).

### **2.2 Regional/Sub Regional Situation**

The Yorkshire and Humberside Regional Waste Strategy was published in July 2003, entitled "Let's Take it from the Tip", and notes that regional municipal waste is rising by around 3% per year, so that by 2020 there will be twice as much as at 2003.

The main objectives of the Regional Waste Strategy are:

1. gain community support and involvement in the delivery of the strategy (e.g., to implement a regionally based waste awareness campaign);
2. reduce waste production and increase re-use, recycling and composting (e.g., reduce annual increase in municipal waste production to 2% by 2009);
3. manage residual waste in a sustainable way;
4. provide technical support and advice.

### **2.3 Best Value**

In 1999 Government introduced legislation implementing the 'Best Value' regime. The legislation requires Councils to improve the services they provide year on year, ensuring that the type and quality of services meet public demand, that the cost of services were reasonable, and efficient.

The waste management services of Bradford Council were subject to a Best Value Review during 2002, and were assessed by the external review team as “providing a good two star service which is unlikely to improve”.

The review noted the competitiveness of its current waste management arrangements (hence the 2 star rating), but tangible progress was needed to develop a meaningful and achievable longer term strategy (hence the “unlikely to improve” comment).

## 2.4 Planning Regime and Land Use

The Land Use Planning system is designed to control the development and use of land, in particular achieving sustainable development and waste management.

However a feature of waste planning is that its impact may not be restricted to one local authority area, but may cut across local and regional boundaries; therefore such issues cannot be considered in isolation by local planning.

It is Government’s view that waste should be treated or disposed of within the region in which it arises, and that each region should provide sufficient facilities to achieve this. Regional Technical Advisory Bodies (RTAB’s) will advise the region on waste planning and offer technical advice on policy implementation.

Through Planning Policy Guidance notes (PPG’s), European and national objectives are reflected in local waste policy and thus will influence decision making by local planning authorities. PPG10 (Planning and Waste Management) and PPG23 (Planning and Pollution Control) are those policy guidances pertinent to waste matters.

### PPG10 Planning and Waste Management

Provides advice on how land use should contribute to sustainable waste management via provision of suitable waste facilities. The guidance does not specify a particular waste technology, this being a local decision, but that the decision should be an informed one taking account of Best Practical Environmental Option (BPEO), Regional Self Sufficiency, Proximity Principle and the Waste Hierarchy.

The guidance sets out the criteria for the siting of waste facilities aimed at dealing with controlled wastes (which includes municipal wastes), and the relationship between planning systems on the one hand (land use) and the waste management licensing regime (controlled by the Environment Agency) on the other hand.

Paragraph 39 states that “the planning system should enable adequate provision to be made for waste management facilities in appropriate locations, without undue adverse environmental effects or nuisance”. The guidance recognises that the effects of waste management facilities on other land may be a material consideration e.g., proximity to other development, impacts on amenity and transportation impacts. PPG10 also cross refers to possible material considerations in connection with potentially polluting developments contained in PPG23.

## PPS23 Planning and Pollution Control

Provides advice on the relationship between controls over development under planning law, on the one hand, and under pollution control legislation on the other. It is particularly relevant to industrial development and waste treatment and disposal sites which have a potential for pollution, and the redevelopment of contaminated land. It also provides guidance on development proposals near such sites or land.

The planning and pollution control systems are separate but complementary, in that both are designed to protect the environment from the potential harm caused by development and operations. In recent years, increasing awareness of environmental priorities has led local planning authorities to take a greater interest in controlling potentially polluting activities. At the same time the effectiveness and scope of environmental protection legislation has expanded rapidly.

However PPG's are to be progressively replaced over time by Policy Planning Statement (PPS's), and the Government has already issued a consultation PPS10 (December 2004) to replace PPG10. PPS10 proposes the BPEO determination process be replaced with Sustainability Appraisals (SA) and Strategic Environmental Assessments (SEA).

## Regional Planning Guidance (RPG12)

RPG's provide regional strategic planning guidance. RPG12 aims to gain community support and involvement to help achieve sustainable waste management, reduce waste production and increase reuse, recycling and composting, manage residual waste in a sustainable way, provide technical support and advice. RPG12's waste content is currently under review (2005) and will be presented in a draft document, the Regional Spatial Strategy (RSS), for consultation in late 2005. The RSS will be the overarching document for which Local Planning Authorities must take account of when preparing their Waste Development Plan Documents.

## Bradford's Unitary Development Plan (UDP)

The Bradford Unitary Development Plan is currently being revised owing to changes in national and regional policies. The Replacement Unitary Development Plan will provide for the District's needs up to 2014. The Replacement Unitary Development Plan Revised Deposit 2002 aims to protect and enhance the District's environment through the management of pollution, hazards and waste (policy UDP 9). This also requires that any proposal is accessible to concentrations of households and that there is evidence that the proposal is the Best Practicable Environmental Option (BPEO) for the identified waste stream. However, fundamental changes in planning have recently taken place under the Planning and Compulsory Purchasing Act 2004, which requires the Council to now produce a Local Development Framework, which will gradually replace the Replacement UDP. A Local Development Statement has been submitted to the Government Office, which commits the Council to producing a Waste Development Plan Document (Waste DPD) by April 2008. The Waste DPD will be based on the RSS, be subject to a Strategic Environmental Assessment, look to drive the management of waste up the waste hierarchy and allocate sites for the management, treatment and disposal of waste.

## 2.5 Recycling Markets

Listed in Appendix 6 is the current (2005) recycling markets used by Bradford in placing material to merchants. As can be seen, markets vary for products from local, sub-regional to national and international.

It is desirable that recyclates are subject to the proximity principal, having local outlets and local job creation where possible. However it has to be recognised that some processing will take place in the wider region and nationally, with further onward shipments (trading) on an international scale. Markets remain under developed in the region, and in response, Recycling Action Yorkshire (RAY) was set up in 2005 to encourage the collection, processing, manufacturing and procurement of recyclable material within the region.

## 2.6 Bradford's Current Waste Strategy

Following the Best Value Reviews, the development of the Council's waste strategy has been through a series of committee reports, which have both highlighted actions taken/achieved, and sought approval to the next incremental steps.

The committee reports are listed in chronological order, with relevant extracts reproduced in Appendix 4.

Overview and Scrutiny Committee	-	13 December 2001
Executive Committee	-	29 January 2002
Executive Committee	-	12 March 2002
Executive Committee	-	10 September 2002
Executive	-	18 September 2003
Executive	-	9 November 2004

The Council's current strategy can be summarised as follows:

- a. continue to secure cost effective and guaranteed end disposal to landfill via contracts with the private sector until 2008, with options to extend to 2010, thus allowing flexibility to implement the successor to landfill prior to the first EU landfill directive target in 2010;
- b. maintain existing infrastructure (including all relevant permissions) needed to service these contracts;
- c. continue to identify and bid for relevant external funding to achieve inward investment in recycling/composting services;
- d. actions to reduce quantity of municipal wastes and amount sent for landfill disposal in order to satisfy Landfill Allowance Targets (LATS) from 2005-2008 and beyond;

- e. continue to develop recycling/composting performance in the short/medium term by:
- developing and maintaining an extensive waste awareness campaign to all sections of the community, utilising various funding streams and partnership working with local media and contractors;
  - continued capital investment to improve household waste recycling centres to boost recycling rate to 50%;
  - develop a new (8<sup>th</sup>) HWRC for north Bradford area;
  - continued expansion of number of bring sites with the district;
  - develop more partnership working with community groups/social enterprises involved in recycling;
  - continue to develop alternative kerbside collections schemes for hard to reach properties;
  - develop methods to capture more organic wastes for composting;
  - continue to promote waste issues in schools.
- f. seek to procure, from the private sector, long term waste treatment and disposal which will succeed landfill as the primary waste treatment/disposal options, taking account of targets placed upon the Council for municipal wastes, including Waste Strategy 2000 and EU Landfill Directive.

### **3.0 NEED FOR CHANGE**

The need for a change in the way that waste is dealt with in the Bradford District arises principally from legislation demanding a more sustainable approach to waste management. Such demands are consistent with the aims of both our local strategic partnership and our Corporate Plan.

#### **3.1 Key Legislative Drivers**

##### Waste Strategy 2000

The UK Government's response to the EU Landfill Directive is the Waste Strategy 2000 (WS2000). The main aim of WS2000 is to divert waste away from landfill in favour of more sustainable options in line with the waste hierarchy. Target setting is also a feature, and WS2000 has 2 sets of targets aimed at municipal wastes. The targets for local authorities to achieve are:

- reducing the amount of biodegradable municipal (bmv) waste going to landfill in line with EU Landfill Directive;
- recovering value from the bmv, with specific targets for recycling and composting, and the need to extract energy via some form of thermal conversion.

WS2000 advocates a number of principles as tools to assist in the decision making process aimed at achieving the desired outcomes. These are listed below.

##### Sustainability

“development that meets the needs of the present, without preventing future generations from meeting their own needs”.

##### Best Practicable Environmental Option (BPEO)

“the outcome of a systematic procedure which emphasises the protection and conservation of the environment across land, sea, air and water. The BPEO procedure establishes for a given set of principles, the option that provides the benefits of least damage to the environment as a whole at an acceptable cost, in the long term as well as the short term”.

The BPEO process should be used when considering the relative merits of various waste management options. The process also ensures that local, environmental, social and economic issues will be important in any decision.

BPEO has become a well established and powerful decision making tool, but, is to be replaced by Sustainability Appraisals (SA) and Strategic Environmental Assessments (SEA). However given the timescales for implementing future procurement process arising from this Strategy, it is more likely that BPEO will be used as an evaluation tool.

## Proximity Principle

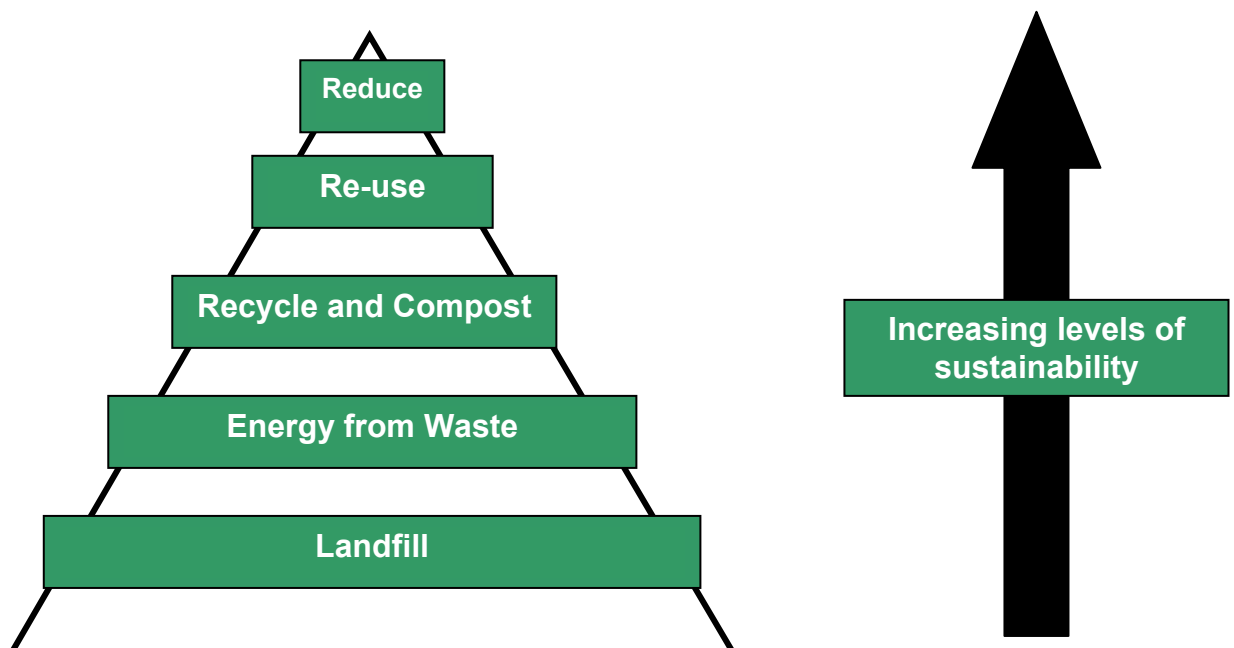
Waste should be disposed as close to the place of production as possible. The Proximity Principle is also intended to reduce the amount of transport used to move waste about, or how waste transport can be reduced or transferred to more sustainable modes, in order to limit its environmental impact. This principle can be taken into account in BPEO assessments.

## Regional Self-Sufficiency

Waste should be treated and/or disposed of within the region where it arises. It follows that there is an expectation that each region will provide sufficient treatment/disposal facilities for this to be the case. However it is recognised that BPEO for certain wastes will be its export outside of the region to specialised treatment facilities.

## The Waste Hierarchy

A framework which acts as a guide when assessing BPEO, and is founded on the idea that the higher levels of the hierarchy reflect a more sustainable way of managing municipal wastes, and therefore all waste management activities should be aimed at moving waste management up the hierarchy, taking account of costs and benefits. The waste hierarchy concept is illustrated below.



Reduce - is the highest point of the hierarchy, and makes a priority the prevention or reduction of waste generation in the first instance, such as ensuring goods are not over packaged unnecessarily. This level is the one which local authorities are least able to influence effectively.

Re-use - where reduction is not feasible, placing products back into use so that they do not enter the waste stream.

Recycle and Compost - where re-use is not feasible, the capture and reprocessing of certain materials, to be remade into the same product or differing products, or in respect of organic material to be degraded to make a compost material for use on land.

Recovery - where recycling/composting is not feasible, extracting value in the form of energy recovery should be undertaken, usually requiring some kind of thermal conversion.

Landfill - landfill end disposal is only appropriate if none of the foregoing higher options are feasible, and represents the bottom of the hierarchy, although there will inevitably be waste fractions and residues for which landfill disposal remains the BPEO.

The WS2000 makes it clear that it does not expect incineration with energy recovery to be considered before recycling and composting have been explored.

#### Landfill Tax

Since 1996 the Government has sought fiscal measures to reduce the amount of waste, particularly active wastes (generally biodegradable), going for disposal by landfill. This is being achieved by taxing its disposal, and making it a more expensive option, thus discouraging landfill as an option in favour of more sustainable ones.

This fiscal measure, the Landfill Tax Escalator, for active wastes started at £7 per tonne in 1996, in 2005 this reached £18 per tonne, and is expected to reach £35 per tonne by 2010/11. The rate of £2 per tonne for inactive wastes (generally inert) has remained constant throughout.

This tax will increasingly encourage more sustainable options for waste. However for local authorities, until such time as real waste treatment alternatives, (which can successfully cater for the large volumes of municipal wastes) are implemented, continued disposal to landfill will present in the shorter term very real increases in costs of the waste management service.

#### Landfill Allowance Trading Scheme (LATS)

In response to the requirements of the EU Landfill Directive, the UK Government has set the following overall mandatory reduction targets for the UK as a whole.

- By 2010 to reduce biodegradable municipal wastes landfilled to 75% of that in 1995.
- By 2013 to reduce biodegradable municipal wastes landfilled to 50% of that in 1995.
- By 2020 to reduce biodegradable municipal wastes landfilled to 35% of that in 1995.



Biodegradable Municipal Wastes (BMW) are controlled by local authorities (such as Bradford), and Government needs to ensure Council's will comply with the directive requirements. To achieve this compliance, the Government has established the Landfill Allowance Trading Scheme, as detailed in its final form in the Waste and Emissions Trading Act 2003.

For the purposes of LATS the Government has calculated that municipal waste is 68% biodegradable. It has allocated each local authority an annual landfill allowance (up to 2020), based on a profile which should ensure the UK as a whole will meet the EU Landfill Directive targets: thus avoiding the UK being fined for failure to meet the targets.

Although the first Landfill Directive target does not apply till 2010, the Government, has introduced LATS from April 2005 with an incremental reduction in allowances until 2010.

It is recognised some Local Authorities will not need all their allowances (e.g. those that have incinerators) whilst others, still developing their longer term strategies, will have a shortfall. In such cases landfill allowance trading will take place between Councils.

Local authorities landfilling quantities beyond that permitted by the allowances they hold, will be fined with the fine currently set at £150 per tonne for each tonne landfilled beyond the allowance limit.

All allowances allocated are based on local authority waste returns to Government for the year 2001/2, and take no account of any waste growth. Nationally waste has been growing at around 2-3%: this will have an increasingly onerous impact on the amount of diversion from landfill required as years go by. Bradford is no exception, with difficult years 2008-2010 as detailed in the report to Executive on 9<sup>th</sup> November 2004 (see Appendix 4).

There are further significant step changes down in 2013 and 2020, and these landfill reduction targets will need to be fully taken account of in the long term waste strategy development. This is further discussed below.

### Recovering Value from Municipal Wastes

Waste Strategy 2000 has set some very clear targets for recycling, composting and energy recovery from municipal wastes. A summary of the targets is set out below, and will over time present a considerable and demanding challenge to all Local Authorities.

#### a) Recycling/Composting Targets for Household Waste

- To recycle or compost at least 25% of household waste by 2005.
- To recycle or compost at least 30% of household waste by 2010.
- To recycle or compost at least 33% of household waste by 2015.

## b) Recovery Targets for Municipal Waste

- To recover value from 40% of municipal waste by 2005.
- To recover value from 45% of municipal waste by 2010.
- To recover value from 67% of municipal waste by 2015.

### Notes:

- 1) Household waste is waste produced from domestic sources (including HWRC). Municipal waste includes household waste together with council collected commercial waste.
- 2) Recovery can mean recycling/composting, or some form of energy extraction in order to derive additional value from the waste. Achieving the recycling/composting for household waste, will assist in counting towards the overall recovery target for municipal wastes.

It further follows that achieving the recovery targets will, in diverting wastes away from landfill, assist in meeting the landfill diversion targets and LATS obligations noted earlier.

The recycling/composting targets are mandatory, with each region, sub region and constituent local authority being set individual targets, based on previous performance.

The West Yorkshire sub-region target for 2005 is 21%. Bradford's individual 2005 target is 24% (the highest of all West Yorkshire authorities), and only exceeded in the Yorkshire and Humber Region by East Riding and Craven at 27%, and Ryedale at 33%.

### Summary

It will be very difficult to achieve the landfill reduction and recovery targets with Bradford's present recycling/composting operations, (in 2004/5 Bradford achieved a combined recycling/composting rate of 17% of household waste). Therefore some form of further extraction, treatment and energy recovery will be required both in the short term and longer term, and will be the major subject of the planned future procurement exercises.

## 3.2 Other Legislative Drivers

Listed below are some other items of legislation which need to be considered in the development of this Strategy: it should be noted that this list is not exhaustive.

### **Environmental Protection Act 1990 (EPA)**

The EPA is the primary legislation for dealing with all aspects of the waste management, including waste treatment and disposal, collection and cleansing. In addition the Act deals with pollution control, dumping, statutory nuisance and Duty of Care, which all, in their own right, will have some impact upon waste management strategy, and future procurement.

## **Local Government Act 2000**

The Local Government Act 2000 gives local authorities the power to promote or improve economic, social or environmental well-being. The Act requires that authorities have regard to their community strategy in exercising this power. The power is expected to help local contribution to national priorities and enable innovative and imaginary approaches to include sustainable development, tackling social exclusion, reducing health inequalities, promoting neighbourhood renewal and improving local environmental quality.

## **End of Life Vehicles (ELVs) Directive 2000/53/EC**

ELVs will require treatment by authorised dismantlers and shredders. This Directive will affect the disposal of ELVs and is likely to increase the level of abandoned vehicles, and the costs incurred by the Council in dealing with them. Costs to the Council are also likely to have increased from July 2005, when ELV will become hazardous waste under new regulations due to the fluids they contain.

## **Household Waste Recycling Act 2003**

Requires that, by 2010 local authorities collect at least two recyclates at the kerbside separate from the remainder of the waste.

## **Waste Electrical and Electronic Equipment (WEEE)**

The Directive requires producers of electrical and electronic goods to recycle them. The implementation date has been put back to mid 2006.

Initially it was the Government's intention that most WEEE would be dealt with by producer responsibility through retailer take back schemes. It is more likely that the bulk of this burden will fall on Local Authorities, and the role of Civic Amenity Sites (HWRC) playing a much more significant role than the Directive envisaged. Some WEEE will become hazardous wastes, with a ban on landfilling Cathode Ray Tubes (TV's and monitors) already in place.

Apart from the separate collections of fridges, Bradford currently does not separately collect WEEE (and therefore recycle it) as part of its Bulky Household Collection Service. However all 7 HWRC now have containers for a wide range of WEEE goods.

The Directive has set a recovery target for WEEE of at least 4kg per person per year (almost 2000 tonnes per annum in Bradford's case).

Closely connected to WEEE is the Batteries Directive, which will require separate collection and recycling of all batteries across the EU, harmonising very different schemes across the continent. This is likely to result in the Council having to provide separate collection facilities for batteries, most likely sited at HWRC's, and possibly some Bring Sites and supermarkets. Bradford has been experimenting with a battery collection bank at one of the HWRC.

## **New Hazardous Waste Regulations**

Effective from July 2005, these replace the previous Special Waste Regulations, which were last reviewed in 1996. The new Regulations alter the procedures for consigning hazardous wastes (formerly known as Special Wastes), but also significantly increase the items now classed as hazardous, in line with the European Waste Catalogue, and includes a number of routine household wastes as previously noted under WEEE, and ELV above. This legislation clearly has an operational and administrative cost for local authorities in how they consign and manage this waste.

## **Waste Minimisation Act 1998**

This Act has given powers to local authorities to introduce measures promoting waste minimisation; e.g., they can subsidise a nappy washing service, and provide information on how households can reduce the amount of junk mail that they receive. Waste minimisation efforts can therefore be considered from two perspectives:

- minimising the *input* to a household/business through use of purchasing power;
- minimising the *output* from a household/business from internal reuse or composting.

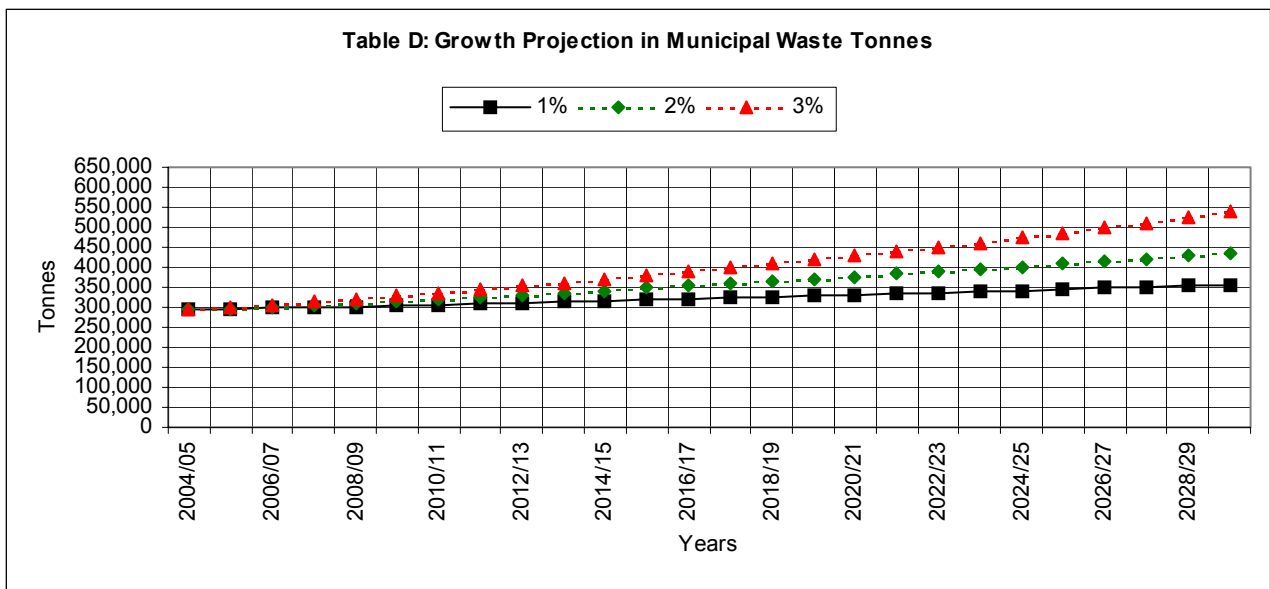
## **The Animal By-Products Regulations 2003**

These Regulations require catering wastes that are sent for processing to be treated to defined process conditions, ensuring that all pathogens are reduced to an acceptable level. The principal issue for the waste industry is that waste from commercial kitchens (such as restaurants), or waste that has been in contact with kitchen waste, is classed as catering waste. If composted or digested, these wastes will have to be processed to stringent conditions in an enclosed (in-vessel) environment. The main conditions are the segregation of the wastes from the product, ensuring that high temperatures are achieved, the enclosure of the process and the requirement that the process has two stages of sanitation.

The full implication for local authorities is still being understood, but could be significant, particularly where a Council's municipal waste contains material arising from food business covered by the Regulations.

### **3.3 Waste Growth Projections**

The quantities of municipal wastes managed by the Council, has been increasing steadily for many years in line with national average increases of between 2-3%. Table D shows waste growth projected in the District at 1%, 2% and 3%. The report to Executive on 9 November 2004 (noted in Appendix 4) assumed an annual growth rate of 2% up to year 2020, the final EU Landfill Directive target year. However any long term contract secured for waste treatment services to succeed landfill, is likely to extend significantly beyond 2020 – up to 2030.



The implications of the waste growth and over time the potential risks to the Council in respect of LATS fines, and how this influences future procurement strategy, are discussed in Section 8. Measures to slow down the rate of growth must be considered, and implemented where they are cost effective. However the Waste Strategy will need to have flexibility to accommodate the growth in both recycling and residual waste treatment.

### 3.4 Gap Analysis

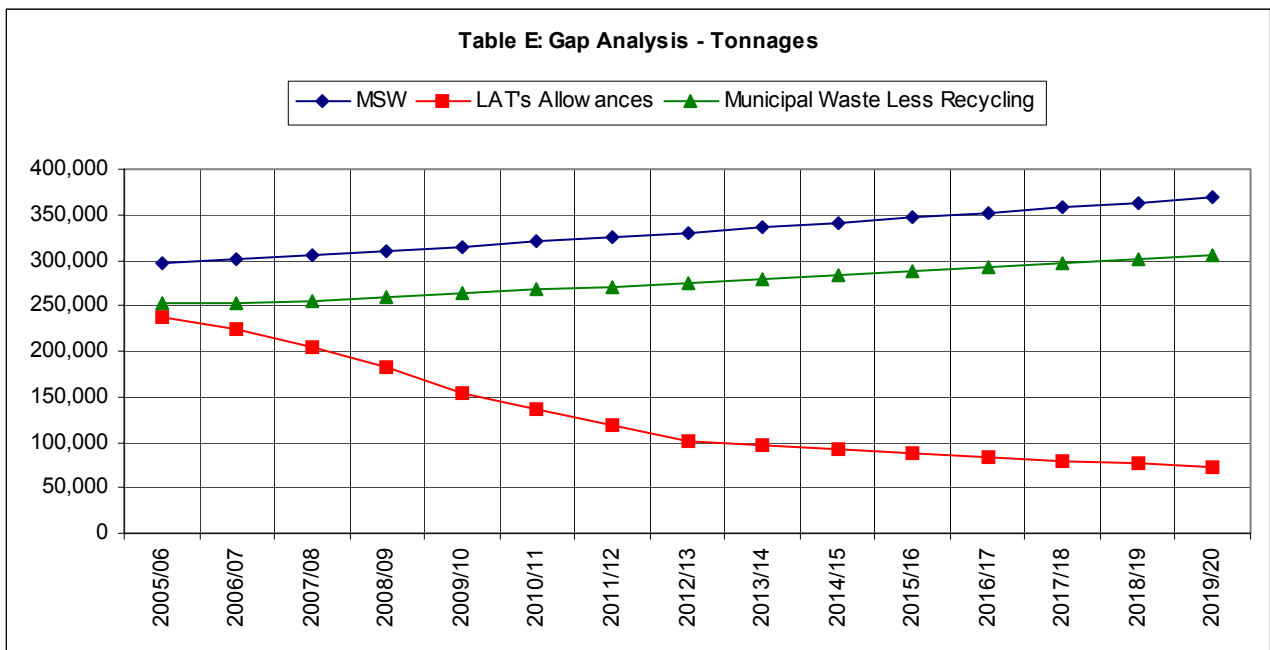
As can be seen in Table D, taking the middle range of 2% annual growth the overall MSW for Bradford is estimated to grow from around 300,000 tonnes pa in 2005 to over 400,000 tonnes pa by 2030

The Council is faced with:

- a) increasing production of household waste at 1-3% per year;
- b) steadily increasing recycling rate, but the rate is likely to peak at about 21% without further intervention;
- c) landfill allowances which will reduce the amount of biodegradable waste that is permitted to landfill.

This will result in the development of a gap between the amount of waste handled by the Council compared with that which can be landfilled. Table E shows the picture graphically. From 2020 the amount of mixed waste permitted to landfill will be approximately 71,000 tonnes.

Given a mid range of 2% annual growth in household waste, the Council will have, net of recycling activity, some 236,000 tonnes per annum required diverting from landfill via some form of waste treatment process, which if itself produces a 20% residue to landfill, will require a gross waste treatment input of approximately 283,000 tonnes per annum.



Although it is possible to purchase allowances from other local authorities in order to landfill beyond allowance allocation, LATS are likely to become increasingly scarce and expensive. Alternatively local authorities can bank or borrow allowances against future performances, though this will not be allowed to carry over settlement years (e.g. 2010 is a settlement year), or in the year prior to a settlement year.

The sanctions for landfilling beyond allowances held is currently a fine imposed on the council at a rate of £150 for every tonne exceeding the allowances. If Bradford landfilled just 10,000 tonnes in any one accounting year beyond its allowances, it would result in a fine of £1.5m. The gap in Table E at 2010 is around 100,000 tonnes (£15m fine).

It is clear from this that the future waste strategy and long term procurement must address this gap, and must, over the life of any procured contract, be capable of treating and diverting significant tonnes of BMW away from landfill equal to 2020 limits.

The financial risks to the Council of not achieving the landfill allowance targets are significant. Doing nothing is not an option. It can also be concluded with some certainty that costs of waste management will increase significantly over 2005 levels, whether it is paying the cost of landfill (including increasing levels of landfill tax, purchasing landfill allowances, or the possible payment of LATS fines) or investing in alternatives to landfill. This situation can be best summarised in the extract from the report to the Executive from the Director of Environmental Services 9<sup>th</sup> November 2004.

“The costs of such processes (waste treatment facilities) are estimated at £70-90 per tonne compared with current (2004) waste disposal costs of £36 per tonne. Whilst at first sight, this seems prohibitively expensive, the increases in Landfill Tax (to £35 per tonne by 2010) and the introduction of LATS regime (possible fines of £150/tonne) makes such a proposal attractive”.

## **4.0 STRATEGIC DEVELOPMENT**

### **4.1 Aims and Objectives of the Municipal Waste Management Strategy**

The overall aims and objectives of the MWMS are “to focus on the waste management issues facing the Council to 2020, determine what actions need to be considered to address the issues, and assess how this will influence the procurement of the long term waste treatment and disposal services for the Council’s municipal wastes”.

The Strategy should also:

- elevate the waste management activities up the waste hierarchy to more sustainable levels;
- achieve self-sufficiency and manage wastes in accordance with the proximity principal;
- contribute to achievement of corporate priorities;
- achieve local and national targets;
- improve public awareness of waste and environmental issues;
- link to other Council strategic documents;
- provide value for money.

The objectives of this review are therefore to:

- review where we are today;
- identify where do we want to get to by 2020 and beyond;
- identify what things we need to do to get there;
- consider how we will implement the necessary actions (procurement strategy).

### **4.2 Links to Spatial Planning**

Guidance from Defra suggests “that to ensure that the waste strategy is deliverable” it is vital that it both informs and is informed by spatial planning strategies”. This is particularly so if the MSWM becomes a Supplementary Planning Document.

Clearly such links between this Strategy and spatial planning will include shared data, community engagement and dialogue programmes etc, and could serve to avoid duplication of effort, and reduce areas of conflict.

However the Strategy and any future procurement of waste treatment facilities will depend on the local planning system delivering the sites upon which such facilities will be built and operated. This will be undertaken through the Local Development Framework and Waste Development Plan Document. The achievement of planning approvals within a reasonable time should not be taken for granted, there are now numerous examples nationally of severe delays being encountered in delivering planning for waste facilities (especially mass-burn and energy from waste plants).

However the new planning system (including PPS10, The Regional Spatial Strategy, Local Development Frameworks and Waste Development Plan Documents) is now required to have a plan led approach, allocating sites for the management, treatment and disposal of waste. The aim is to give more certainty to developers, achieving the right types of facility in the right place at the right time.

### 4.3 Establishing the Business Case

This document has thus far identified:

- profiled the District and its waste management service;
- identified the main drivers for change in the waste sector;
- established that change is a necessity.

As can be seen in Section 2, Bradford has been developing its present waste policy over time since 2001. The Executive decision on 9<sup>th</sup> November 2004 (as reproduced in Appendix 4) confirmed the need for change and, that this will be achieved via “..... a procurement process ..... to seek long term (25 year) alternatives to waste disposal by landfill”.

Political approval, in response to establishing a need for change (business case), is therefore clear, accepting that the significant inward investment needed will be achieved by partnering with a long term waste contract with a private waste company.

The technology options, associated land and planning issues and likely funding arrangements are explored in Section 5 with an options appraisal in Section 6 and options selection in Section 7.

The need for a radical change in the way that waste is dealt with is not unique to Bradford, and is faced by many other authorities in the UK. This scenario presents a risk to the Council in terms of capacity within the major private waste companies to service bids from local authorities. Companies will have the opportunity to prioritise which local authority contracts to consider, and Bradford will need to be attractive to potential contractors. This is explored below.

### 4.4 Attracting Contractors to Bid

A great deal of market soundings have been taken by the Council in order to understand better the private sector waste market. Such soundings have been taken using existing (and previous) contractual relationships with major waste companies; attending seminars held with waste companies, consultants, legal and financial experts; and telephone conference questionnaires to a selection of waste companies.

The collective view of the industry can be summarised as follows:

- there are only a maximum of 8 major waste companies in the market place;
- out of these only half are interested in bidding for an integrated waste treatment and refuse collection services;
- all only have the capacity to service between 2-3 bids at any one time;
- all wish to contract long term (minimum 15 year, typically 25 year term);
- all rate having political endorsement and backing for the process as essential;
- all would prefer that the public have “bought into the process”;



- all rate highly the ability of Council to identify suitable land in the district (especially with appropriate permissions) upon which to build facilities (spatial planning);
- all would prefer to contract based upon an output specification, rather than narrowly identified technological solutions.

However there are some differences worthy of note, for example:

- one would much prefer an integrated contract i.e., with refuse collection in along with HWRC sites;
- at least one would not consider mass burn incineration as a suitable waste treatment technology;
- another prefers mass burn incineration;
- two are not interested in taking on refuse collection, whilst another two are neutral;
- the critical mass of tonnages needed to be attractive started at 100,000 t/pa, though 200,000 and above seems to heighten interest.

It is clear that there are a number of common threads running through all the major companies which the Council needs to recognise if it is to ensure that it's tender is to be attractive to contractors, and encourage them to bid as part of the procurement exercise.

It has also become clear from the soundings that bankability is of utmost importance to the waste companies. In order to access the levels of capital sums needed by waste contractors to invest in long term waste treatment facilities, they will need to borrow resources. Financial institutions are cautious by nature, and are likely to be interested in waste treatment solutions that can demonstrate a proven track record. The risk to the Council is that this may serve to exclude environmentally friendly or developing technologies such as pyrolysis, gasification, autoclaving etc., thus leaving a much narrower field of options. The decision taken by the Executive on 29 January 2002 (and reproduced in Appendix 4) to exclude mass burn incineration as a waste treatment option, limits this field still further.

The issues and challenges to bring together the strategy development, procurement, technical solutions and economics into a credible business case to achieve the investment needed are set out further in Sections 5 onwards.

#### 4.5 Legal Powers

The powers of Local Authorities to enter into contracts are those which are expressly conferred upon it by legislative provision. If a Local Authority enters into a contract other than in furtherance of an activity expressly or impliedly authorised by statute, then the contract will be deemed to ultravires and unlawful.

The Local Government Act 2000 introduced the power for Local Authorities to do:

##### Section 2(1)

“Anything which they consider is likely to achieve the promotion or improvements of the economic, social and/or environmental well-being of their area”.

Further, the power permits Local Authorities to:

- incur expenditure;
- give financial assistance to any person;
- enter into arrangements or agreements with any person;
- co-operate with, or facilitate or co-ordinate the activities of, an person;
- exercise on behalf of any person any functions of that person, and
- provide staff, goods, services or accommodation to any person.

### Section 3

Restricts the use of the power to circumvent express current and specific prohibitions contained in legislation affecting local authorities. The well-being power does not empower Local Authorities to raise money by precepts, borrowing or otherwise, and the Secretary of State has a power to make an Order preventing Local Authorities from using the well-being power for certain activities.

### Section 4

Requires Local Authorities to produce a Community Strategy for promoting or improving the economic, social and environmental well-being of their area and contributing to the sustainable development of the community. Any exercise of the well-being power must be used to achieve the objectives specified therein.

As such this legislation would allow the Council in order to meet its targets, the ability to enter into a long term contractual relationship with a service provider.

Any procurement process to achieve waste treatment technologies involving private sector contractors, will involve both in-house, and external legal advisors at a very early stage, and will see the exercise to full closure. Such involvement both at high level and detail, will ensure the process is in full compliance with all pertinent legislation.

## 4.6 Council Decision Making Structures

The Council has 90 members and the present political composition is Conservative – 38; Labour – 29; Liberal Democrats – 15; British National Party – 4; Green – 4.

The Executive “takes decisions in the discharge of the Council’s functions, subject to the scrutiny of a number of improvement committees. The Executive is collectively responsible for the decisions it makes and its decision making arrangements are designed to be open, transparent and accountable”. The Executive is a single party body made up by members of the Conservative Group.

The Executive is charged with the day to day running of the Council and a decision to award a tender for long term waste processing will be taken by this body. That decision will be scrutinised by the Environment and Waste Management Improvement Committee.

A diagrammatical representation of decision making is reproduced in Appendix 7.

In respect of matters of waste management, reference has been made to several committee reports, and summarised in Appendix 4.

However pertinent to the strategy and procurement process, are the decisions of the Executive of (i) 29 January 2002, and (ii) 9 November 2004.

- (i) resolved "that the adoption of incineration of municipal waste should not be pursued".
- (ii) resolved "that a procurement process be now started to seek long term (25 years) alternatives to waste disposal by landfill".

The combined effect is for the Council to seek to procure the long term waste treatment solution to succeed landfill, but to exclude mass burn incineration.

Prior to any decision, it is likely that there will be a significant amount of information given to the public by way of press articles, items on Neighbourhood Forums, production of newsletters, etc. This work is already envisaged in the continuing five year waste awareness programme (see examples in Appendix 8).

The Council will manage the waste procurement using Prince2 methodology and has already allocated resources to supplement those existing within the waste services. External expertise will be sought on financial, legal and technical matters to bring the project to a satisfactory conclusion.

Any land use issues will be considered through the Local Planning Authority processes, including any public consultation needed.

#### 4.7 Public Engagement

There is a need for effective public engagement driven by requirements to minimise wastes, achieve recycling and energy recovery targets, and develop new waste treatment facilities (including identifying sites and obtaining planning permissions) in order to reduce landfill disposal in favour of more sustainable methods.

Any waste treatment facility has the potential to create noise, dust, smells and other pollutants, as well as road congestion and visual amenity issues. Good public engagement can help in overcoming these issues, as well as enthusing communities to positively engage in waste issues and achieve the culture changes needed on waste minimisation, reuse and recycling.

The Select Committee on Environment, Transport and Regional Affairs (2001) suggests

"the case for extensive and detailed public consultation makes itself: a sceptical public will not be convinced by simply being told that such facilities are required and planning for waste facilities can easily stagnate if proper consultation is shirked. It will take real consultation with a better informed public to achieve a consensus on local waste strategies and the facilities required to implement them".

In Bradford, it was identified that there was a need to engage more effectively with the public, and improve understanding of waste issues facing both individuals themselves and the Council.

In 2001 the Council began a sustained 5 year Waste Awareness Raising campaign. This has been funded from a variety of sources, including in-house, Defra, WRAP and Landfill Tax Credits, and has used a number of media, including:

- a joint campaign with local newspapers;
- regular environmental supplements in Council's newspaper;
- radio advertising;
- bus and poster adverts;
- theatre presentations in primary schools;
- door stepping promotions.

Examples of activity are reproduced in Appendix 8, and it can be seen that the whole campaign has been branded as "Let's Get It Sorted!". A tabulation of specific activities, target audience and messengers is given in Appendix 9.

In respect of specific public consultation, Bradford can point to a number of initiatives.

- 2001 Speak Out Panel - a representative sample of 1000 citizens showed that 93% would accept large scale recycling within the district and 73% would have such facilities close to their neighbourhoods. Furthermore only 6% were not prepared to recycle, with 79% saying they would be willing to have an additional wheeled bin for a kerbside recycling scheme.
- 2002 Community Pride - Council newspaper delivered to every household within the district (200,000) included an Environmental Extra supplement that highlighted some of the waste issues facing the Council and invited feedback on waste issues via a pre paid response card. Around 9,000 responses were received which confirmed the views expressed in the earlier Speak Out.
- 2004 Neighbourhood Forums - these represent one of the main mechanisms the Council uses regularly to consult with local communities, and during 2004 a power point presentation was given to every forum on waste recycling issues.
- 2005 Website - from start of 2005 a dedicated website for waste management was set up and linked to the Council's main website, to promote the Council's waste services and provide information on waste issues, the uses of this site are still developing.
- 2005 Community Pride - a second "Environment Extra" supplement has been produced to re-emphasise the waste issues facing the District, and provides a "rewarding recycling" voucher, which the public can place in their recycling paper bin, the winner being the one whose voucher is drawn out of the paper mountain. In respect of the longer term, a reply slip is provided, seeking comments back from the public via 3 questions on recycling/composting, the relative merits of treatment using MBT or similar technology, and incineration facilities. Results are expected to be known by Autumn 2005, however interim results are reproduced in Appendix 13.

## Conclusion

The Council has an established consultation culture. As the waste strategy and procurement is developed, early, frequent and detailed public consultation and education will be needed.

## **5.0 WASTE MANAGEMENT OPTIONS**

This section will primarily deal with the Council's response to the legislative drivers outlined in Section 3 and the need to avoid landfill by increasing recycling, compost and energy extraction. The available options for waste treatment are briefly described. However, waste reduction and reuse will be briefly considered first.

### **5.1 Waste Reduction**

Continual growth in waste, has the potential to undermine any environmental benefits achieved by recycling and composting. It is not clear how well authorities will perform in terms of waste minimisation. Evidence from the Integra Project suggests that, at best, councils can slow down the rate of growth in waste. The council has committed itself to a 5 year waste awareness campaign which is currently in its third year. Nationally and regionally further action is needed to promote waste reduction/minimisation, particularly by supporting home composting, packaging reduction, and real nappy projects etc.

Further information on waste reduction is included in Appendix 5.

### **5.2 Waste Reuse**

The Council has supported a number of waste reuse projects in the District including furniture, white goods, paint, computers and textiles. It has considered the merits of extending recycling credits to reuse projects and awaits government guidance on this issue. Whilst such projects have only a marginal effect on the amount of material in the waste stream, they provide a valuable social service to the District.

### **5.3 Recycling/Composting**

The Council has achieved a significant improvement in its recycling performance to date (2005), and many of the initiatives (such as improvements to HWRC sites) will take some time before they result in improved recycle and composting rates. These continued efforts will see the combined recycling/composting rate reach 21%. Further short term actions beyond present levels will be needed to attain the desired 24-25% rate.

Even if Bradford could limit and sustain waste growth to zero, and achieve and sustain a 25% recycle/composting rate for household waste, there would still be a requirement to landfill around 230,000 t/pa of MSW, (equivalent to 156,000 t/pa of bmw). However, the Council will be allowed to landfill only 71,000 tonnes (49,000 tonnes bmw) by 2020.

It is clear from the foregoing that continued efforts in recycling/composting and waste minimisation will not satisfy our LATS obligations on their own. Therefore investment in waste treatment technologies is required.

A review of likely available technologies follows:

## 5.4 Waste Treatment Technologies

This section seeks to briefly review and describe the type of possible technology available, its scale in terms of minimum or maximum annual tonnages, whether modular in design, and likely land take, and time taken to develop. An options appraisal summary is shown in Appendix 12.

### Materials Reclamation Facility (MRF)

A MRF is usually a waste plant capable of receiving dry recyclables (paper, glass, food cans, textiles, etc.) either pre segregated, or co mingled, prior to further sortation and polishing (removal of contaminants) to create suitable “product” that will meet a specification set by specific recycling merchants.

The design of a MRF falls into 2 categories:

A low-technology MRF; where majority of all sorting is done by hand via a picking station, but will employ a magnet extraction unit to remove steel cans. This approach has a low capital cost, but high labour costs, and is of the type currently used in Bradford.

A high-technology MRF; which makes as much use as possible of mechanical sorting equipment, e.g., eddy-current separator to separate aluminium cans. This results in a higher capital cost, and although labour costs are lower, some hand pickers are still required to meet specifications of merchants.

An alternative scenario to the above is a dirty MRF, where the total waste stream (crude waste) is fed through the plant. The main advantage is that there are no additional collection costs. However, the disadvantages are many, such as it does not promote sustainable values amongst the public (throw everything away in the same bin), produces low grade products (often contaminated with other wastes) which attracts less income than clean equivalent, also provides a very undesirable and unhealthy working environment.

Such Dirty MRF plants have not proved very attractive to the UK market, in contrast to the cleaner ones.

The residues from MRF can either go for landfill disposal or on for further treatment (MBT), with the MRF possibly representing the M (mechanical) part of MBT.

### Mechanical Biological Treatment (MBT)

MBT is not a single concept, but rather is a generic term for a number of possible varying technological options and combinations for waste treatments. It follows that their respective performances will also vary, as will their capital set up and operating costs.

The basic aim of MBT is to provide a centrally located plant in which delivered dustbin waste is mechanically sorted in order to segregate some wastes for recycling such as metals and plastics, and prepare other wastes for biological treatment, which may involve shredding or pulverising, wetting or drying the waste,

with the output from this producing a more stable reduced volume residue, which can then be sent to landfill (least acceptable option), subject to some type of energy recovery such as burning as a refuse derived fuel (rdf) to produce power, and composted aerobically to produce a soil or an anaerobically to produce a biogas.

Finding suitable end use markets for the outputs (particularly as such potential end uses are not well developed in the UK) is one of the main drawbacks of MBT. Capacity to burn RDF in cement kilns is limited, and uptake as an alternative fuel in power station is slow to take off (possible issues of salts in RDF causing corrosion problems in combustion plant), this means that specialised plants dedicated to burning RDF may need to be developed.

There will always in any event, remain some residues (typically 10%-20%) that will require landfill disposal.

MBT can be regarded as flexible and able to adapt to changes due to their often modular construction, where extra lines can be added, or worked longer or shorter depending on differing shift patterns. A typical land take for a 200,000 t/pa plant is around 15,000m<sup>2</sup> for the building.

A typical MBT process could be described as follows:

Mixed waste is firstly sorted through a series of mechanical treatment operations into recyclable materials (for example metals and glass), refuse derived fuel (rdf) and an organic rich fraction (green waste, kitchen waste, some card or other materials). rdf typically comprises materials with good combustion properties, such as paper, plastics, card, textiles and other miscellaneous materials. The organic fraction is biologically treated to reduce the volume and stabilise it so it can be used as a soil conditioner. There will also be a reject fraction, which will require landfill disposal.

MBT is becoming the most widely adopted alternative waste treatment option to mass burn incineration, and though well established on the Continent, and in some states in the USA, it still has to prove itself operationally in the UK waste market.

MBT often utilises a number of treatment technologies such as MRF, in vessel composting, advanced thermal treatment, rdf. These are discussed individually below.

### Incineration

This can have a number of varying meanings, but in today's waste management industry, it is taken to mean "energy from waste - mass burn incineration"

Energy from Waste (EfW) facilities combust waste under controlled conditions, to reduce its volume and hazardous properties, and to generate electricity and/or heat. The majority of EfW plants operating in the UK are designed to process significant quantities of municipal solid waste with no need to pre-treat the wastes before processing, although some oversized items arising from bulky waste collections and HWRC sites may not be suitable for placing through an incinerator.



Significant capital expenditure can be anticipated. Running costs for a plant having an annual throughput in excess of 200,000 tonnes are proving competitive as a waste treatment option in today's market. Such a plant would have a typical land take of 10,000m<sup>2</sup> for the building.

Owing to the high capital costs involved, such plants require the entry into a long term (20+ years) contract to supply a guaranteed minimum quantity. Therefore such plants can be regarded as inflexible in being able to easily react to changes in waste quantities and composition over time.

The main advantage of energy from waste is that it is proven technology with a solid track record all over the world, including the UK. Most of the residual outputs i.e., bottom ash, are inert and can be landfilled without the disadvantages of further degradation and production of greenhouse gases such as methane. However bottom ash can be further treated to readily extract ferrous metal content for recycling, and use of the ash itself as a secondary aggregate (displacing use of quarried virgin ores) for which markets in the UK are developing.

Only a small proportion of the ash i.e., fly ash requires specialised disposal treatment. The other main output is that of energy (electric power) and possibly residual waste heat in some kind of district heating scheme, both of which can replace the consumption of conventional fossil fuels such as natural gas and coal.

The main disadvantage with incineration of waste is potential risks to public health through pollution and particularly the production of dioxins. Waste incineration has a very low acceptability from the public and environmental pressure groups. In an attempt to inform the industry and public on the health impacts of incineration, the Government recently published its review of health impacts, and in respect of incineration, concluded that it:

“did not find a link between the current generation of municipal solid waste incinerators and health effects. Adverse health effects have been observed in populations living around older more polluting incinerators ..... We considered cancers, respiratory diseases and birth defects but found no evidence for a link between the incidence of disease and the current generation of incinerators”.

(Review of the Environmental and Health Effects of Waste Management - HMSO)

### Composting

Composting processes for municipal waste management primarily fall into two categories; windrow composting, for green, or garden derived wastes, and more contained 'In-vessel' composting, some examples of which can (subject to regulatory approval) process both garden and kitchen/catering derived organic wastes.

Windrow composting is an established technology for dealing with green wastes, where the material is shredded and then piled in elongated rows (windrows), and is aerated through either turning of the windrows or by air forced through the material. Windrow composting may take place in buildings or externally. Bradford's green garden waste is currently composted using external windrow

system. There are also other techniques, such as static pile composting, where air is forced through the waste mass to promote biodegradation. Windrow composting is however by far the most prevalent composting technique used in the UK and these operations are likely to increase over the coming years.

In-vessel composting (IVC) embraces a variety of techniques whereby the kitchen and garden wastes may be composted together in an enclosed vessel or tunnel. The advantage of these processes is that they are more controlled and can be designed to achieve and maintain specified temperatures over a set residence time to facilitate bacteria destruction (in accordance with the requirements of the Animal By-Products Regulation which governs the management of wastes arising from animal sources, including food and catering wastes). It is this enhanced level of control that makes approved IVC systems appropriate for processing kitchen type municipal wastes in addition to green wastes. Not all IVC systems will be capable of processing kitchen wastes. Each process type would require approval from the Regulator (the State Veterinary Service). There is limited experience of In-vessel composting in the UK to date, but due to Animal By-Products legislation and the need to meet both landfill diversion and statutory recycling and composting targets, it is likely that this will be a growing area of biodegradable waste treatment.

External windrow systems require a substantial land take, in-vessel plant of 200,000 t/pa capacity would typically require 50,000m<sup>2</sup> upwards.

### Anaerobic Digestion

Anaerobic Digestion (AD) is in-vessel biodegradation in the absence of oxygen where organic wastes, such as garden and kitchen waste, are converted into a 'digestate' (containing biosolids and a liquid) and biogas. In AD systems, biodegradable material is placed into an enclosed vessel under controlled conditions and processed at elevated temperatures.

Following the anaerobic digestion process the digestate containing biosolids and liquid can be used as a biofertilizer subject to market availability and suitable quality. Alternatively, the biosolids can be dewatered from the digestate and treated aerobically. The resultant compost like material can be used as soil conditioner. The use of both the digestate and dewatered biosolids will depend on the quality of the input material (source segregated organic material will generally produce a 'cleaner' product than material from a mixed waste stream) and the management/operation of the process. The availability of the markets will influence the required level of processing of the digestate material.

The liquor or filtrate resulting from any dewatering stage is rich in organic compounds and can be recirculated through the process, used as a fertiliser, treated or disposed to sewer dependent on the nature of the process and the characteristics of the liquor.

The decomposition of the biodegradable material leads to the release of a biogas. The biogas (mostly carbon dioxide and methane) can be sold as fuel or combusted to generate electricity. The sale of this electricity will be eligible for Renewables Obligation Certificates (ROCs). ROCs provide a financial incentive for the production of electricity from renewable sources.

Typical land take for a 200,000 t/pa plant would be in the order of 50,000m<sup>2</sup>.

### Advanced Thermal Treatment

This is a term covering a number of emerging technologies for treating MSW, but as yet remain unproven on a commercial level in the UK for treating MSW. The land take will vary depending on type/combination of ATT technologies, but could be similar to that of incineration i.e., 10,000m<sup>2</sup>.

### Autoclaving

Autoclave technology has been used to sterilise certain hospital type wastes (clinical waste) for many years and is essentially a steam treatment process. It may be used in a municipal waste context where it shares similarities with MBT. Delivered dustbin waste is shredded, processed in a pressurised sealed drum under the action of steam. The steam is injected into the waste often under pressure combined with tumbling action of the drum degrades the waste very quickly. After around an hour of processing the waste is reduced to a 'floc' like material, with metals and glass partially cleaned for extraction as recyclables, the process deforms plastics making them either more or less difficult to recycle, depending on the process and the polymer type. The remaining material may be sorted and the high calorific fraction thermally treated as a type of refuse derived fuel (rdf) or composted/digested as the market demands. There are also other markets and uses being investigated for this floc material. It should be pointed out that these processes are at the early stages of development and are likely to take some time to reach full scale commercial development. There will typically be a residue for disposal from mixed MSW processing.

### Pyrolysis

Pyrolysis, often incorporating gasification (see below), is a medium temperature thermal process where organic derived materials in the waste are broken down under the action of heat and in the absence of oxygen. Pyrolysis is similar to the process which produces charcoal. Only carbon based materials can be pyrolysed. Where waste is to be used it is normally pre-sorted to remove the majority of the non-organic material and may be mechanically processed to homogenise the feedstock. A prepared Refuse Derived Fuel (rdf) from another appropriate process like MBT may also be used. The pyrolysis process heats the wastes, typically to around 500°C, and breaks down plastics, paper and other organic derived materials to produce a pyrolysis oil. The pyrolysis oil or the gas may be used as a fuel to generate electricity or in an engine. Flue gas clean up measures would be required for pyrolysis facilities. A solid slag (pyrolysis char) is also produced which may require disposal or additional processing.

### Gasification

Gasification operates at a higher temperature range than pyrolysis, typically 1000 - 1200°C. Air or oxygen is used to partially combust the waste to achieve higher temperatures. Gasification is equivalent to the process which produced 'town gas' from coal. Additionally for gasification, water is added to the gasifier, either as steam or as water included in the feedstock. At these high temperatures the water 'cracks' in to hydrogen and oxygen. The oxygen reacts further with the carbon in

the feedstock (waste) material. The differentiation between pyrolysis and gasification is the high concentration of hydrogen in the gas produced by the process. As with pyrolysis the gas produced (known as syngas) can be combusted to generate electricity. A solid residue (char) is also produced which usually requires disposal if no markets for recycling are available. Flue gas clean up measures would be required for emissions from gasification facilities.

## Landfill

Though at the bottom of the sustainability list (waste hierarchy), it will remain an integral part of any waste strategy for the foreseeable future, as there will always remain fractions from all waste treatment processes, for which landfill is the only Best Practicable Environmental Option (BPEO).

The regulation and engineering of landfills has now reached a high level aimed at reducing their environmental impact, and it is considered that this development will continue in the future to further reduce their impacts, and offer the continued renewal, restoration and reuse of large areas of otherwise despoiled land (quarries etc).

## 5.5 Land Availability and Status

All contractors with which the Council has had discussions rated the availability of land suitable for constructing waste treatment plants as a key factor in their decision to bid for contracts.

The Council needs to give early considerations to land issues and the identity of sufficient suitable land, and understand on what likely terms such land would be made available for bidders exclusive use in pursuant of any contract won for waste services.

If suitable land is not made available there is a risk to the Council that contractors will not bid. If a contractor takes the risk to bid leaving the finding of suitable land to later in the process, this will run the risk of delays and LATS fines.

The Council's Minerals and Waste Planning Team, through the Waste Development Plan Document will identify the need for sites, allocating land where necessary for the management, treatment and disposal of waste. Until the Waste DPD is complete (April 2008) the Team will play a role in assessing any sites, that may be put forward, through the Development Services pre-application protocol and through the determination of planning applications.

The Council's Asset Management Department may also be able to identify suitable Council owned land, including that leased to a third party, or take options out on privately owned sites.

In order to build certainty into the process, it is proposed that the sites currently used by the Council for waste management are made available to the contractor. These sites include depots (or depot space) at

- Wakefield Road, Bradford, potential available surface area of 14,000m<sup>2</sup>;
- Shearbridge, Bradford, potential available surface area of 15,000m<sup>2</sup>;

- Harris Street, Bradford, potential available surface area of 9,000m<sup>2</sup>.
- Stockbridge, Keighley, potential available surface area of 26,000m<sup>2</sup>;

and specific waste sites with existing planning permissions and waste management licences for municipal waste activities such as:

- Bowling Back Lane, Bradford, potential available surface area of 21,000m<sup>2</sup>;
- Royd Way, Keighley, potential available surface area of 9,000m<sup>2</sup>.

## 5.6 Possible Funding Arrangements

For any procurement of waste treatment, it is difficult to say what the likely value of any contract will be, as this will depend on its scope and length of time, however a typical 25 year contract to design, build finance and operation of waste treatment facilities and associated WDA operations for Bradford's MSW could have a value of up to £500m.

For a contract of this magnitude there is a significant in-house procurement cost which must not be overlooked. Funding of £300,000 has been made available in 2005/6 and 2006/7 to commence this process and appoint external technical, legal and financial consultants to advise on such a procurement.

Possible funding arrangements will include:

- Private Finance Initiative (PFI);
- Public Private Partnership (PPP);
- Service Contract (Gate Fee);
- Prudential Borrowing (PB);
- Other.

### PFI

This is a Government initiative to assist local authorities to raise money to pay for services, requiring long term contracts with the private sector which have significant levels of capital investment.

The private sector operator is normally contracted to design, build, finance and operate a public facility (e.g., a waste treatment plant), and will normally set up a Service Company, also known as a "Special Purpose Vehicle" (SPV) to deliver the contract and take on the risk of doing so, leaving parent companies free of such risks.

The private sector will borrow the required capital funds (from banks) for the scheme, and the local authority will pay the SPV on annual fee over the contract period. The Government (DEFRA) will repay to the Local Authority an agreed sum known as "PFI credits" which will have been agreed to assist in repaying the capital. In borrowing from banks, the waste contractor will need to demonstrate to the banks satisfaction that the proposed waste treatment technologies are robust.

DEFRA has set certain parameters for PFI credits. For example they will not consider PFI for waste schemes where capital involved is less than £20m, and will pay credits up to a £40m ceiling for any single project, though joint working with

other neighbouring authorities can attract more. To date (2005) 9 PFI contracts have been awarded in the waste sector.

PFI requires the private sector to put up the capital at its own risk, and has to deliver to clear and defined service level goals (output based specifications) to the public over a long term contractual period. Specifically in waste service PFI's, DEFRA will set minimum levels for recycling often at 50%.

PFI is complicated and requires longer procurement time (and therefore expense), to set up, and attract Defra performance targets.

#### PPP

PPP are the same as PFI, but without the funding credits from Government and the additional performance targets from Defra, and are therefore less time consuming and cheaper to procure.

#### Service Contract

A private contractor may be willing to enter into a contract to provide and operate waste treatment facilities. The contractor will then charge the local authority for using such a facility, usually on a gate fee basis (e.g., similar to existing landfill contracts, where the private sector landfill operator charges a rate per tonne of waste delivered to the gate). The charges levied are usually structured to achieve a smooth profile over the life of the contract.

#### Prudential Borrowing

The Local Government Act 2003 allows local authorities greater freedoms to raise external capital finance, subject to the "prudential code". Local authorities can set their own borrowing limits provided they can afford to repay the debt, without any additional central government support, and therefore without any central government approval to do so. Local authorities can borrow capital at lower rates than the private sector waste contractors, and may view the circumstances as an "invest to save", opportunity.

#### Other

It is possible that capital sums could be raised by local authorities from a variety of other sources such as other EU and Government grants, own capital receipts, Public Works Loans Board.

### 5.7 Affordability of Options

In order to put into context (and for comparability purposes) the costs of any possible future waste treatment options, it is worth considering the likely costs of a "do nothing" option i.e., do nothing more that is already being done. This will effectively establish an affordability base line for appraisal purposes.

Appendix 10 shows information based on that included in the 9<sup>th</sup> November 2004 report to Executive, and predicts the "do nothing" costs to 2020. Assuming the mid range rate of increase (2% per year) MSW will grow from around 290,000

tonnes to 370,500 tonnes per annum by 2020. Maintaining recycling at 21% will increase quantities from 43,000 tonnes per annum to 63,000 tonnes per annum; leaving quantities to landfill increasing from 250,000 tonnes to 300,000 tonnes per annum by 2020.

The 'do nothing' option assumes the Council purchases surplus landfill allowances from other authorities or pays the fine of £150 per tonne to dispose of waste over its allowances.

The landfill gate fee costs of this are illustrated in Table F below. It is assumed that landfill tax increases to £35 per tonne by 2010/11 and remains at that level, all other costs associated with waste disposal operations (e.g., transfer loading, HWRC sites etc) along with attendant refuse collection service costs, remain constant in real terms.

Table F Waste disposal contractual costings "do nothing" option.



It can be seen that the approximate landfill gate fee (including landfill tax) will rise to £11m by 2009/10, £13m by 2012/13 and £16m by 2019/20. However when LATS fines of £150/t are included, these costs rise to £28m, £39m and £51m respectively. Costs from 2020 - 2030 will increase with growth in the quantity of waste handled.

Broken down to a rate per tonne (i.e., the costs including LATS divided by the total waste landfilled in the same year), produces the following (rounded) figures:

<b>Year</b>	<b>Gross cost (inc landfill tax) £Ms</b>	<b>Gate Fee £ per tonne</b>	<b>Total cost and LATS £Ms</b>	<b>Gate Fee + LATS £ per tonne</b>
2009/10	11	42.00	28	88.00
2012/13	13	48.00	39	119.00
2019/20	16	51.00	51	137.00

In any procurement process the Council should seek to achieve a waste treatment solution to succeed landfill (and meet of statutory targets) that is as close to the existing gate fee as possible but, in any event, is lower than the costs associated with the “do nothing” option. Therefore any procurement process needs to be as competitive as possible, which means attracting as many contractors to bid, as is possible.

Advice produced by Defra, and shown in Appendix 11 illustrates the indicative timescales involved in the successful bidder delivering the waste treatment option and thus the “step change” in the Council’s waste management performance. Given the Council’s current policy of no incineration (EfW), the type of facility suitable for Bradford is likely to take 4 years. Therefore it can be assumed any new facility will not come on-line before April 2010.

This means that in the short term to 2010, the Council faces the increasing annual disposal costs as shown in Appendix 10 and illustrated in Table F.

#### Short Term Actions

The “do nothing” option will also fail to meet statutory recycling/ composting target of 24% for Bradford in 2005/6. The Council has approved £2.2m budget to spend to save in the short term to improve recycling performance and thereby reduce waste to landfill. The existing landfill contracts require 220,000 t/pa minimum delivery; the District produces almost 300,000 tonnes of MSW; accordingly short term proposals are being sought that will enable this excess waste to be processed and allow the Council to improve it’s recycling rate and meet its landfill allowances.

An indicative guide as to the maximum affordable cost of any new spend to save initiatives, which can meet targets and avoids LATS, can be derived from the costs outlined above. This would suggest £57 per tonne as the maximum affordable over the short term period to 2010 (calculated by dividing gross disposal cost + LATS fines between 2005-2010 by total tonnages in the same period).

Therefore any new spend to save initiatives will be worth pursuing if the cost is less than £57/tonne, and achieve recycling/composting targets and LATS allowance tonnages to landfill.



In summary such spend to save options could include one or more of the following:

- waste minimisation suggestions outlined in section 3;
- new kerbside collection rounds to collect green garden waste;
- other dry recyclables e.g., paper, cans and glass;
- mixed dry recyclables;
- develop kerbside recycling options for hard to reach properties that cannot readily accept a wheeled bin;
- improvement to MRF to sort commingled recyclables;
- short term contracts to 2010 for alternative treatment options to extract more recycle/and or compost/and or energy from unsorted MSW.

## 5.8 Procurement Model for Long Term Contract

There are 4 elements to be considered in achieving the desired outcome of new waste treatment facilities.

- Design (D)
- Build (B)
- Finance (F)
- Operation (O)

How these elements are blended together will dictate the ultimate nature of the contract, and will themselves be influenced in part by the type of funding arrangements agreed.

### Procurement Model

#### 1. Private Finance Initiative – usually DBFO

A typical PFI contract would see the Council have one single contract with a contractor who would design build finance and operate via a long term 25 year contract. In order to develop an integrated PFI contract other services such as refuse collection could be included in the contract scope. Most of the risk is transferred to the contractor in such arrangements.

The contract will see the contractor receive regular payments to cover both its capital outlay and running costs, plus agreed performance payments (or penalties). Usually at the end of the contract the waste treatment facility becomes the property of the Council, subject to certain return conditions.

#### 2. Public Private Partnership – usually DBFO

A PPP arrangement could be very much the same as PFI.

However if the Council wished to retain more control and therefore more risk, variations could be considered:

- a. letting of a number of service specific contracts e.g., refuse collection, HWRC sites, waste treatment etc., fully funded by the private sector, the management and co-ordination of such several contracts rests with the Council;

- b. letting contracts for design, build and finance, but the Council operates the new facilities, and thereby retains operational control for the waste management service elements.

3. Prudential Borrowing – usually DB

Very similar to 2b, however the Council raises the finance itself via prudential borrowings, and therefore owns the new waste treatment facility.

- 3a. As 3 above but includes operation of new facilities with the contractor i.e., becomes a DBO arrangement, the Council retains ownership of the new facility but allows the contractor to use it on some type of exclusive basis.

4. Service Contract – usually DBFO

The single contractor provides and operates a waste treatment facility, and the Council contracts to deliver to that facility agreed annual tonnages over a period of time, for which it pays a “gate fee” for each tonne delivered as per an agreed schedule of rates (similar to existing landfill contracts).

Where 3 and 4 are considered, it will require the Council to be much more specific as to the type of waste treatment technology it desires, thus moving somewhat away from an output based specification arrangement.

Timing & Resources

These different contract options have different timescales associated with them. Construction of plant can take up to 2 years (Appendix 11) and it will be seen that PFI might exclude itself because new processes would not be in place by the desired 2010 deadline.

The following gives an indication of procurement time and resources.

	Service Contract	Prudential Borrowing	Public Private Partnership	Private Finance Initiative
Timescales for tendering to commence construction	12 to 18 months	12 to 18 months	24 to 36 months	30 to 48 months
Staffing	Small client team with specialist advisory support	Larger client team with legal, financial, technical and insurance advisers	Large client team with legal, financial, technical and insurance advisers	Large client team with legal, financial, technical and insurance advisers
Client external costs	£50k to £150k	£50k to £150k	£250k to £1M	£500k to £1.5M

## **6.0 OPTIONS APPRAISAL**

### **6.1 Introduction**

It is anticipated that the procurement exercise will result in a number of waste treatment solutions being proposed to the Council (see Appendix 12). These will need to be appraised. This document will be used to inform potential contractors of the key aspects that will be considered in this appraisal.

The following pages identify the scale of the waste treatment processed required to deal with waste from the Bradford District and the type of criteria against which options put to the Council will be appraised. Output specification, cost and procurement model are considered of primary importance in this process.

### **6.2 Developing a Specification Based on Outputs**

The Council will procure waste treatment facilities that enable it to:

- a) meet its statutory recycling targets (including those proposed in WS2000);
- b) comply with its landfill allowance allocations;
- c) maximise disposal to landfill within allowances; and
- d) provide flexibility to respond to the predicted increases in waste quantities.

Tenderers will be asked to identify the extent to which their solutions better both the recycling rates and landfill allowances, and the extent to which future proofing has been built in to cope with the increased quantities of waste predicted to arise.

Establishing the scale of waste treatment facilities required for the District.

#### **1. 25% Recycling**

As it is unlikely that any new waste treatment facilities for the longer term will be available before 2010, it is assumed that, in the interim to 2010, the Council implements short term actions which have the effect of raising the recycling/composting rate of household waste to 25%, and that this level (though not necessarily the same activities) is sustained to 2010 and possibly beyond. In 2005/6 this will require the recycling/ composting of some 57,000 tonnes/pa, continuing to rise in line with waste growth to 62,000 tonnes/pa by 2010. It is the view of waste managers that 25% recycling will not be achievable without a short term contract for waste treatment being secured in advance of the longer term procurement.

From 2010 to 2020 and beyond given the need to comply with the Household Waste Recycling Act from 2010 (see 3.2 above) it is assumed that 25% can be sustained in line with waste growth (without the benefit of any short term waste treatment which would terminate at 2010); therefore 75,000 tonnes will need to be recycled/composted by 2020. Compliance with the Act will possibly require more sophisticated collection of multi dry recyclables, perhaps requiring alternate week collections, or specialised multi compartmentalised containers and/or collection vehicles to achieve 25% recycling of household waste.

The Council may wish to vary the materials collected for recycling to identify the most cost effective recycling operations for the District having regard to the waste treatment technologies proposed by the contractor.

The Council will also wish to work towards the recycling targets contained in WS2000, 33% by 2015. The contractor will need to demonstrate how its proposal will enable this target to be met and sustained.

## 2. Maximise Use of Landfill Allowances

The spreadsheet in Appendix 10 anticipated a landfill disposal rate in 2010/11 of £47/tonne, rising to £51/tonne by 2019/20, with associated transfer loading costs at approximately £11/tonne rising to £14/tonne respectively. Unless, over the same period, any procured waste treatment option can better the landfill price added to the transfer loading cost per tonne, it will be assumed that landfilling up to the limit of the allowances (71,000 t/pa MSW as shown in Appendix 10 by 2020) is the most economically advantageous option.

## 3. Possible Output Specification

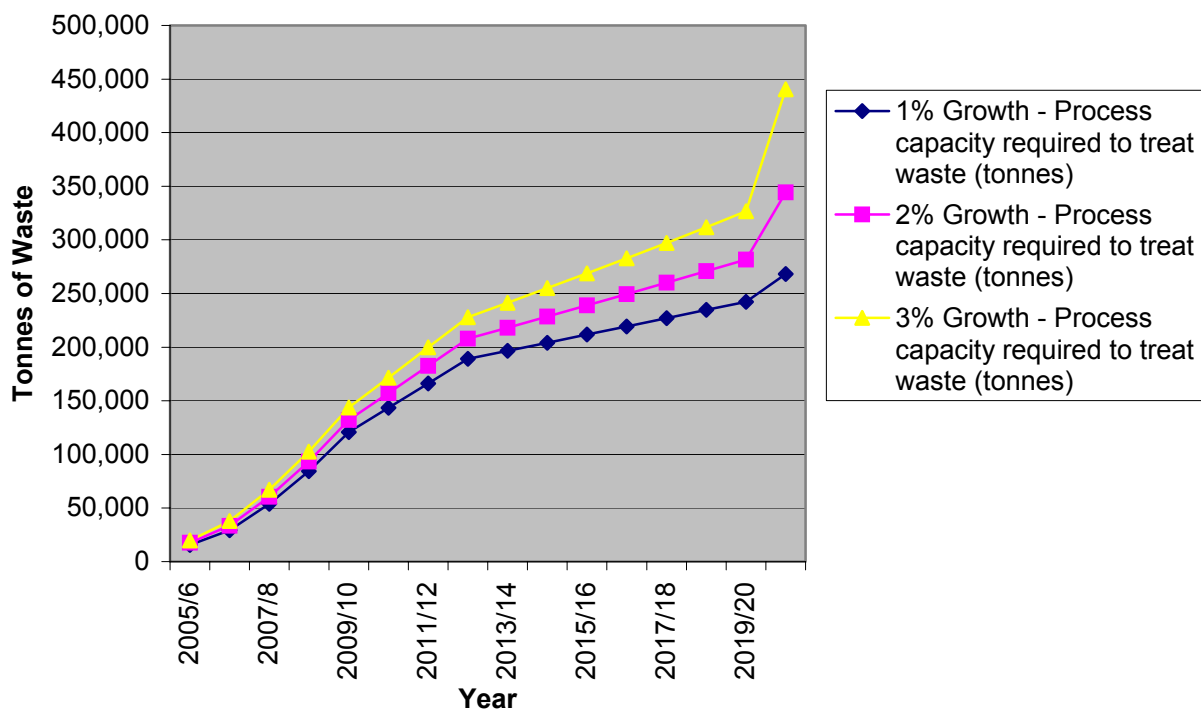
The Council believes that potential bidders for the contract to procure waste treatment facilities for the District would prefer an output based specification based on the achievement of the targets identified earlier, rather than identifying specific technologies or processes.

### 6.3 Treatment Capacity Required

In order to achieve the targets referred to earlier, and taking account of the need to consider future waste growths, it is possible to predict the capacity of treatment facilities needed to deal with municipal waste from the Bradford District.

TABLE G below shows indicative process capacity of waste treatment facilities required to deal with municipal waste in the Bradford district (assuming 1, 2 and 3% growth in household waste per year). Base data is from the spreadsheets in Appendix 14.

**Table G -  
Process Capacity required to treat waste (assuming 1-3% growth  
in household waste) (tonnes)**

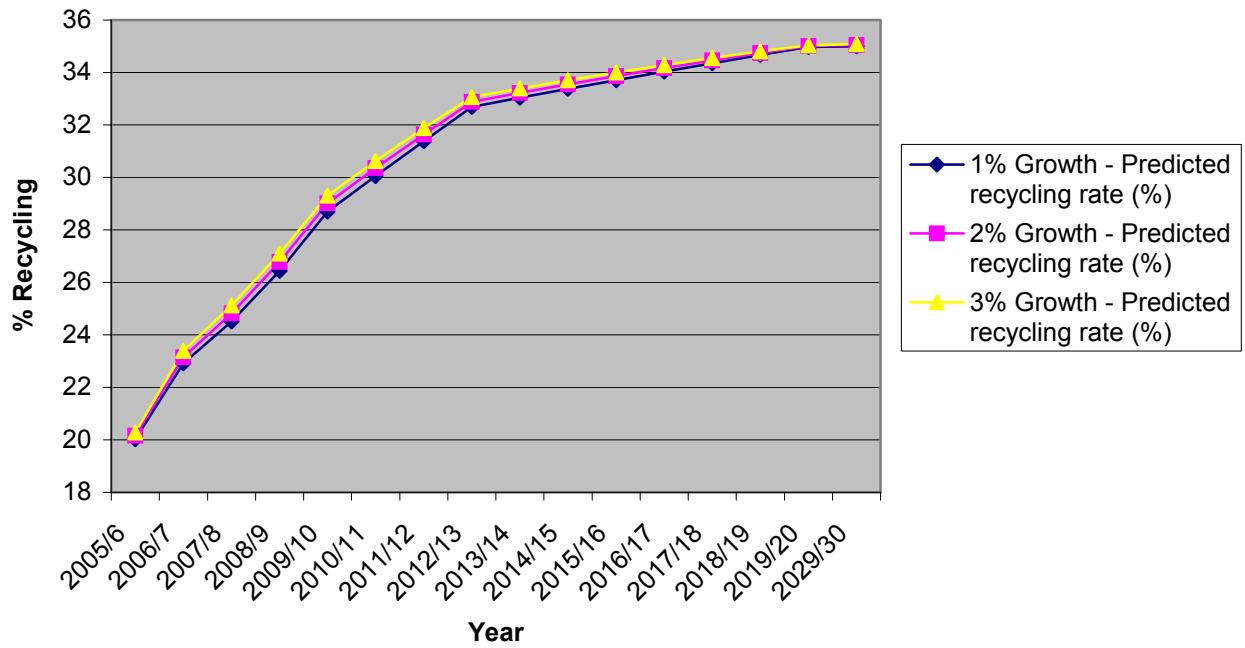


This information suggests the size of processing capacity required either within or close to the District. There are four significant issues arising from this analysis:

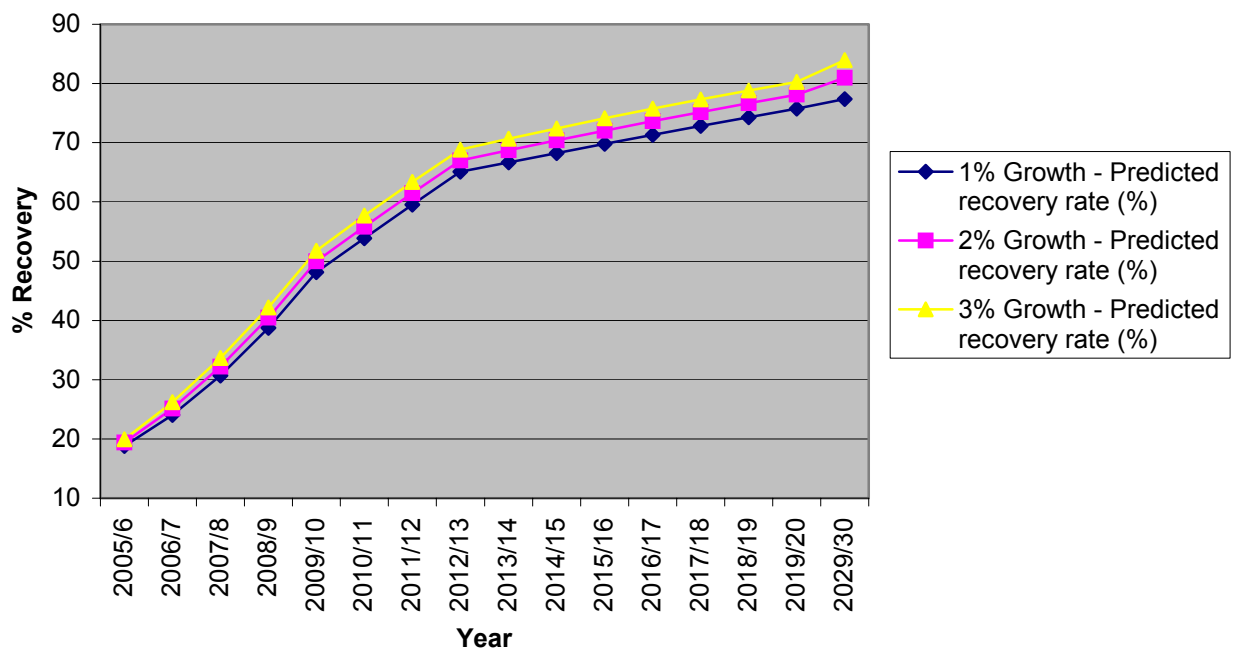
- (a) facilities may be designed for efficient throughput at rates greater than required in the early years: accordingly it may be necessary to deliver more waste to the processing facilities than is strictly needed to comply with landfill allowances;
- (b) additional facilities may be needed midway through the contract period: the length of the proposed contract and the uncertainty about waste quantities in future years suggest that contracts will need to reflect the likelihood of significant changes during the contract period;
- (c) there is a need for processing capacity from either 2006/7 or 2007/8 in advance of the anticipated long term contract start date of 2010; and
- (d) landfill contracts will be needed in the event that new processing capacity is not available by 2010.

The treatment capacity described will also have to enable the Council to comply with the targets outlined in Section 3. The data in the spreadsheets at Appendix 15 shows the impact on overall recycling and recovery levels in the District based on an assumed processing achievement at any proposed plant of 65% recovery; 15% recycling; 20% to landfill. This is summarised in the Tables H1 and H2, which show that outputs from the process plant (at these assumed levels) will enable the Council to meet its recycling and recovery targets. Accordingly they set the parameters for the contribution that any plant(s) proposed will have to achieve.

**Table H1 Predicted Recycling Rates (%)**



**Table H2 Predicted Recovery Rates (%)**



## Comments

The scenario given above:

- account for all MSW arisings.
- fails to meet 2005/06 WS2000 recycling target for Bradford of 24%;
- does not dispose to landfill tonnages exceeding allowances;
- seeks to maximise use of landfill allowances by minimising surpluses;
- anticipates certain MSW will not be suitable for waste treatment but goes to landfill;
- delivers significant quantities of treated wastes.

## 6.4 Other Appraisal Criteria

The following criteria will need to be considered in any option appraisal together with the output specification described above.

### Environmental

- Land take - area needed.
- Land use - other alternative uses e.g., bringing brownfield land back into use.
- Emissions to atmosphere - e.g., toxicity, ozone depletion, greenhouse gases.
- Emissions to water - e.g., discharges to sewer.
- Amenity issues - noise, dust, litter, visual.
- Transport impacts - transport distances.
- Resource consumption - power and water needed to operate facility.

### Socio-Economic

- Local employment - creates jobs to construct and operate.
- Local training - improve skills base to achieve above.
- Inward investment in local economy - capital need to construct.
- Operational benefits to local economy - benefits of ongoing operation, e.g., sustained job creation, local markets for recycling/composting etc.

### Cost

- Is the solution affordable and does it represent value for money

### Overall Acceptability

- to the public
- to Members of Council
- to planners.
- to Environment Agency.

## 6.5 Other Considerations

It is likely that the following issues will need to be considered depending on the desired shape of any procurement exercise and proposal from bidders in response.

### Scope

Some bidders will wish to include the refuse collection service (including recycling collections), The trade waste service, operation of HWRC, operation of bring sites, plus possible transfer stations and associated transport.

Bidders may wish to improve or develop HWRC's to improve recycling rates and enable WEEE to be recovered.

Residual waste disposal (to landfill) may be in or out of the scope. There will be wastes arising from residues from waste treatment facilities, and some wastes not suitable for treatment (e.g., HWRC waste) that require landfilling.

### Partnership

The Council has been exploring possible joint working arrangements with neighbouring authorities. The conclusion of these are that whilst there may be possible synergies, only Calderdale and Leeds are at the same point in procurement. Calderdale is likely to make a formal request in the near future to be considered in Bradford's future procurement. Clearly a waste treatment facility located to the south of the district (e.g., at Bowling Back Lane, Bradford), capable of receiving waste delivered by Calderdale, would be an attractive option to Calderdale.

Partnership working may offer economics of scale through greater quantities of waste, with larger regionally based facilities. Risks of such partnerships could cause delays in requiring partners to "sign up" to any new contract. Any regional facility developed outside Bradford would require continued use of existing transfer loading operations to deliver to a distant facility, and therefore add cost (see Appendix 10).

### Scenario Fit

Consideration needs to be given to how any proposal fits with existing arrangements. Is it complementary, enhancing existing operations, or will it have adverse impacts, and therefore hidden added costs (e.g., the location of any new disposal facility may require revisions to existing refuse collection vehicle routes when it comes to tipping)?

Current refuse collection arrangements are based on two operating centres, (Bradford and Keighley). Contractors may suggest other options based on a single site which could:

1. be located centrally within the District (although no land is offered by the Council that would facilitate this);



2. be external to the district in which case some or all of the transfer loading network would be needed; or
3. be based on one of the two existing sites, requiring retention of one transfer station (e.g., new plant located at Bowling Back Lane, requiring waste at Keighley be transfer loaded in from existing transfer station).

#### Timing

Can the waste treatment solution be delivered on time? The Government's targets in 2010 and 2015, rises in landfill tax peaking in 2010/11 and reductions in biodegradable content to landfill with target dates of 2010, 2013 and 2020, require that any alternative waste treatment option for Bradford needs to come on line by 2010/12 at the latest. If the procurement cannot deliver facilities by this date, there is a significant risk of failing to meet targets and the costs of LATS fines as a result.

#### Transfer of Undertakings, Protection of Employment

The scale of any TUPE rights will depend on the scope of the procurement, and thus how many staff would need to transfer to any successful bidder. The staffing listing given in Section 1 indicates possible numbers.

### 6.6 Cost Model

With the exception of mass burn incineration, which has an existing track record within the UK, predicting costs of other waste treatment options is difficult. More new technologies such as autoclaving have as yet no track record in the UK, and therefore understanding their capital set up and operating costs is more speculative. Many of the alternative technologies, including MBT, require the placement of waste treated material e.g., floc or rdf, into markets, which again in the UK are not well developed. Therefore it is difficult to predict whether outputs such as rdf will be a net income or net cost.

However, the following is considered as a guide as to the Council's waste in 2010, and can be used to evaluate whether any proposed bids represent value for money, as part of the overall options appraisal.

#### Landfill

The likely future costs of landfill can be used as a reliable guide to competitive waste treatment costs. Appendix 10 indicates the expected gate fee for landfill disposal, including landfill tax. It can be seen prices in 2010 are of approximately £47/tonne rising to £51/tonne in 2020. Landfill tax is expected to peak at £35/tonne in 2010/11. This can, therefore, be taken as an indicator as to the point where the landfill gate fee achieves parity (or indeed starts to become more expensive) than alternative treatment options

## LATS Fines

During the introduction of LATS, Defra suggested that the fine was based on the premise that its value would represent twice that of the most expensive waste treatment technology. Therefore if £150/tonne is twice the most expensive waste treatment option, it must be assumed such an option is £75/tonne.

Taking 2010 as the probable year one of any new waste treatment contract, the procured “target” price per tonne should fall between £47-75/tonne. Energy from waste (for a typical plant of around 200,000 tonnes/pa capacity on a 25 year contract) suggests a price at the lower end of this scale, of £45/tonne (2005 prices).

## 7.0 OPTIONS SELECTION

### 7.1 Summary

From the information provided in Section 6, a number of key points become clear:

- waste management costs are going to rise significantly in any event;
- do nothing is not an option - as it will be both the most expensive cost option and will fail to meet all targets;
- the Council will need to procure a long term contract for its municipal waste management to satisfy all long term targets;
- the soonest any long term contract can commence is 2010;
- the Council is likely to fail to meet some of its annual recycling and LATS targets to 2010, without some waste treatment intervention;
- a short term waste treatment contract on a simple gate fee basis (for 4-5 years) needs to be implemented as soon as possible to treat all surplus waste tonnages beyond current landfill contract guarantees, thereby achieving additional recycling, and diversion away from landfill;
- landfill contracts beyond present contractual breakpoint of 31.03.08 will need to be secured until the start of the long term contract, taking account of tonnages required of any short term waste treatment option.

### 7.2 Selection

#### Short Term

In 2005/6 the Council will fail to meet the 24% recycling target by approximately 12,000 tonnes and is vulnerable to LATS penalties from 2007/8 onwards, until the major procurement is in place. Therefore it requires short term solutions.

Action needs to be taken in 2005 or 2006 to further increase the Districts' recycling rate. The recycling rate is now a national priority Best Value Performance Indicator and will influence the Council's Comprehensive Performance Assessment score. Although the judgement in 2006/7 will be based on performance in 2005/6 (which is for all purposes fixed) a positive direction of travel will help the overall judgement.

Action should be two fold:

- a) continue the waste awareness campaign, the planned expansion on the number of households offered kerbside recycling and the range of recyclate collected;
- b) seek a short term contract for processing mixed waste to generate a recyclable product (e.g., for land reclamation).

The latter action should be undertaken as part of the next proposal.

A contract is required to reduce the Council's exposure to penalties for failing to keep within its landfill allowances. Action taken to date will enable the Council to keep within allowances in 2005/6 and 2006/7. In 2007/8 a process capacity of 40,000 tonnes will be needed, rising to 100,000 tonnes by 2009/10.

The contract should be on a simple gate fee basis, offering 'spare' tonnes beyond landfill contract limits, and will utilise either an existing waste treatment facility, or one which is currently being developed independently of any long term contract from the Council. The contract period will be of around 4-5 years duration, with there being no commitment by the Council to the facility, such that upon completion of any contract, the way is clear for the commencement of the longer term contract.

## Long Term

The long term contract will be more complicated to procure and therefore take longer to achieve. This process needs to commence by end of 2005.

Such a contract will have the following characteristics:

- has a start date of 2010 - 2012 at the latest;
- will deal with all the Council's Municipal Waste;
- have a contract period of 25 years duration: the contract period should match the design life of any new facility;
- the contract will also define the ends but not the means: it will not specify waste technology solutions, but will be based upon an output based specification which will meet specified targets in WS2000 and EU Landfill Directive, yet maximising disposal to landfill in compliance with LATS;
- allow for flexibility, ranging from a single plant, to which the Council delivers waste, through to the contractor operating other waste related services, such as HWRC, refuse collection, trade waste collections, and residual waste disposal to landfill;
- place as much risk as is reasonable and cost effective to do so onto the contractor;
- suggest that such output based specification, and scope and risk allocation will require a design build finance and operate contractual solution. The funding vehicle will therefore be one which suits a DBFO contract, typically either PFI or PPP, and will in turn dictate the type of procurement undertaken;
- allow for the development of contractual solutions involving neighbouring Council's, where beneficial for Bradford to do so, should not be ruled out;
- adhere to the proximity principal, and the Council will need to make land in its ownership within the District available upon which to construct new facilities, but this should not prevent consideration of regional/sub regional facilities which could be outside of the District, particularly where any bidder has strength nearby.

The contract award will be based upon the most economically advantageous bid that best meets criteria set out by the Council.

Although the contract will be output based, the analysis of the available technologies (see earlier) suggests that mechanical and biological treatment or Autoclaving are the likely processes for which bids will be received.

### 7.3 Justification

Doing nothing is not a realistic option. The waste treatment required will need both short and long term contractual arrangements. The long term contract will need significant investment and expertise from the private sector in order to bring about the step changes to meet targets set for the Council in respect of household and municipal wastes to 2020 and beyond. The short term contract will have less risk but may still involve significant changes within the existing waste management system.

The shape of the arrangements set out in 7.2 are such as to create enough 'critical mass', to be attractive to private sector contractors, which favour output specifications over a long term contract of a design build finance and operate arrangement, funded by the familiar PFI or PPP arrangements. In such arrangements, contractors will take on significant levels of risk.

Clearly it is in the Council's interest to attract as many bidders as possible (given the capacity limitations within the private waste market) in order to provide for the long term the most economically advantageous arrangement, which satisfies the targets and other criteria set for and by the Council.

Part of any procurement under PFI/PPP funding arrangements will require a business case justification for the long term procurement. This document will make a significant contribution to the business case and other procurement, as well as being part of the data provided by the Council to both educate and inform the public and other interest groups.

## 8.0 **RISKS**

Risk is the uncertainty of outcome, both positive and negative; however it is usually taken to mean a negative outcome. The development, procurement and execution of the long term waste strategy are susceptible to a number of key risks, which could have significant negative impact on the Council.

### 8.1 **Identification of Risk**

Though this should not be taken as exhaustive, the main key risks are identified below.

#### A. Procurement Risk

1. Insufficient interest from the private waste market (approximately 8 contractors), resulting in few or no bidders - the number of contract providers is small and competition from other Council's for similar arrangements high.
2. Insufficient resources and skills in procurement team - possible delays in achieving timely and qualitative procurement.
3. Changes to key staff - causing delays and lowering procurement consistency issues.
4. Change within the Council - could cause its own delays and changes to priorities and objectives.
5. Change in government strategy - new administration with new waste legislation and targets.
6. Financial - unable to secure required funding - particularly if PFI credits are being sought.
7. Bids are unaffordable - bids do not represent value for money.

#### B. Regulatory Risks

1. Site identification failure - unable to find suitably designated, sized and located sites upon which new facilities can be developed.
2. Planning constraints - inability to obtain required planning permissions to develop new facilities on identified sites.
3. Planning delays - planning application process delays resulting in significant delays to the project.
4. Waste licence undeliverable - inability to obtain required waste licence permissions to operate new facilities.
5. Waste licence delays - waste management licence application process delays resulting in significant delays to the project.

### C. Performance Risk

1. Specification incorrect - criteria upon which specification is based proves inaccurate, e.g., waste flows and waste growth projections, resulting in inability to deliver targets.
2. Construction delays - unexpected delay issues of civil engineering or supply chain delays cause ultimate delay in delivering new facilities beyond target dates.
3. Dovetail issues - handover of existing operational arrangements to the new causes short term disruption to service delivery and performance.

### D. Technology Failure

1. Energy from Waste (EfW) - the Council has approved a policy not to pursue mass burn incineration as an option. This may result in the Council receiving no viable alternative bids for the contract.
2. Bids combining EfW with other technologies - contractors may decide to submit viable options linked to EfW in the form of mass burn incineration or the burning of refuse derived fuel (rdf). This strategy would carry a varying degree of risk both in terms of planning issues and policy as the acceptance would need a review of the Council's published policy. These risks may be influenced by the location of the proposed facilities (within or outwith the District).

## 8.2 Evaluation

It is possible to use established risk assessment methodology in order to evaluate the identified risk in terms of its likelihood of occurring, and its impact if it does occur. In this way it is possible to understand risk management, to know what should be avoided, and what could be acceptable.

Given below in Table I is an example of a risk assessment as applied to those risks identified in 8.2.

Table I Risk Assessment

Risk Identified	Likelihood			Impact			Comments
	H	M	L	H	M	L	
A1		☹		☹			Significant implications (performance and financial) if fail to deliver new waste management arrangement
A2			☹	☹			Any significant delays in securing new waste facilities will have major performance and target consequences
A3			☹	☹			Any significant delays in securing new waste facilities will have major performance and target consequences
A4			☹		☹		Any realignment of priorities could have negative delaying impact
A5			☹			☹	Unlikely - certainly without full consideration of consequences to local authorities by Government beforehand
A6			☹			☹	Issues of funding acceptability should have been fully address in the procurement business case beforehand - less of an issue if not pursuing PFI funding
A7			☹	☹			Providing procurement is competitive, this should not arise, considering that do nothing will be more expensive in any event
B1		☹		☹			This is possible for waste facilities - such failure has high impact, can be mitigated by the Council identifying suitable sites up front
B2	☹			☹			Likely with waste facilities with high impact - whole exercise fails
B3	☹			☹			Planning permission is achieved only after delays, results in missed targets and financial costs (LATS)
B4			☹	☹			Although cannot be taken for granted, obtaining waste licence should not be an issue
B5		☹		☹			That delays in obtaining waste licence are likely if for no other reason of capacity issues within the EA to process them, again delays can result in missed targets and financial costs
C1		☹				☹	Though waste growth is difficult to predict accurately over such a long term, predictions would need to be significantly wrong to have a medium to high impact
C2			☹		☹		Not thought to be likely, or cause significant project delays unless technology supplier problems are encountered, in which case delays may affect target hitting
C3			☹			☹	Provided management of handover is done well, this will not be an issue
D1			☹	☹			EfW is the tried and tested technology. However discussions with contractors suggest that MBT and Autoclaving are viable options
D2		☹			☹		Rdf is an output of many MBT plants and could be a product of Autoclaving. Alternative disposal routes for some products may require further market developments.



### 8.3 Risk Management

Inevitably in a project of this size and complexity, there will be risks in delivering the long term waste management solutions for the Council. The Council, and therefore the procurement process itself, will need to have an understanding of, and a view towards risk.

Such considerations will cover areas of:

- Risk Tolerance - how much risk is the project to take on, how much will be with the contractor, how much retained by the Council?
- Risk Mitigation - can the risks be prevented, or their impact reduced, or indeed transferred elsewhere?
- Acceptance - the Council will have to accept some risk, therefore will need to plan contingencies if happens.

Risks will be allocated to whichever party is best able to manage them. The nature and complexity of the technological solutions outlined in Section 7.0 (Options Selection) suggests that the contractor is best placed to carry most of the risk. However the Council will wish to ensure that it does not lose control of a very public facing service (particularly if contractors suggest that refuse collection should be included in scope). As such, during the contract negotiations, it will be important to establish the extent to which the Council is able to balance process demands (from the technology adopted) with customer needs.

## **List of Appendices**

1. MEL refuse sampling results
2. MEL HWRC site waste data survey results
3. Locations of Household Waste Recycling Centres
4. Extracts from Council Committee Reports
5. Waste Minimisation
6. Recycling Markets - destination of Bradford's Recyclate 2005
7. Diagram of Councils Member Decision Making Structure
8. Examples of Waste Awareness Campaign
9. Tabulation of Public Engagement Actions
10. Spreadsheet - Tonnages/Costs
11. Defra Bar Chart - Treatment Facilities Timescales
12. Options Appraisal Summary
13. Provisional results of Community Pride survey (2005)
14. Spreadsheets G1, G2 and G3.
15. Spreadsheets H1, H2 and H3.

## **Abbreviations**

AVR	Aire Valley Recycling
BEAT	Bradford Environmental Action Team
BMW	Biodegradable Municipal Waste
BPEO	Best Practicable Environmental Option
BVPI	Best Value Performance Indicators
CA	Civic Amenity
CAS	Chemical Advisory Service
CPA	Comprehensive Performance Assessment
CRT	Cathode Ray Tubes
ELV	End of Life Vehicles
EMAS	Eco Management and Audit Scheme
EPA	Environmental Protection Act
EU	European Union
HWRC	Household Waste Recycling Centre
KPI's	Key Performance Indicators
LATS	Landfill Allowance Trading Scheme
MSW	Municipal Solid Waste
MWMS	Municipal Waste Management Strategy
PPG	Planning Policy Guidance
PPS	Policy Planning Statement
RAY	Recycling Action Yorkshire
RPG	Regional Planning Guide
RSS	Regional Spatial Strategy
RTABs	Regional Technical Advisory Boards
SA	Sustainability Appraisal
SEA	Strategic Environmental Assessments
UDP	Unitary Development Plan
WCA	Waste Collection Authority
WDA	Waste Disposal Authority
WS2000	Waste Strategy 2000
WYWMJC	West Yorkshire Waste Management Joint Committee

## **GLOSSARY OF TERMS**

### **Anaerobic Digestion**

A process where biodegradable material is encouraged to break down in the absence of air. Materials are placed into an enclosed vessel and in controlled conditions the waste breaks down into gas and solids.

### **Best Value**

A legal obligation on local authorities to give high quality services and to seek continuous improvement in them. Government vision for ensuring services are efficient and of high quality to be responsive to the needs of citizens, not the convenience of service providers.

### **Biodegradable Municipal Waste**

Waste collected by the Waste Collection Authority, including trade wastes and Civic Amenity wastes. Material that can be broken down usually by micro-organisms into basic elements. The Government has declared that municipal wastes is 68% biodegradable.

### **Biological Treatment**

Any biological process that changes the properties of waste (e.g., anaerobic digestion or composting).

### **Bring Sites**

A network of mini-recycling sites, e.g., bottle banks, textile banks, etc., located in public areas such as supermarket car parks where the public can deposit their recyclable items.

### **Civic Amenity Waste**

In Bradford, civic amenity sites are referred to as Household Waste Recycling Centres. Civic Amenity Waste is household waste, normally delivered by the public direct to sites provided by the local authority. Consists generally of bulky items such as beds, cookers and garden waste as well as recyclables.

### **Clinical Waste**

Waste arising from medical, nursing, dental, veterinary, pharmaceutical or similar practices, which may present risk of infection. Local authorities have a duty to collect clinical wastes arising in the home and may offer trade waste collection contracts to collect clinical wastes from commercial establishments such as those above.

## **Commercial Waste**

Waste arising from premises that are used wholly or mainly for trade, business, sport, recreation or entertainment (excluding industrial waste), for which a Local Authority may have waste collection arrangements in place, in which case it will become municipal waste.

## **Composting**

The biological process in which organic wastes, such as garden and kitchen waste are converted into a stable granular material which can be applied to land to improve soil structure and enrich the nutrient content of the soil.

## **Controlled Waste**

Is used to describe waste that must be managed and disposed in line with waste management and other related regulations. It includes municipal, commercial and industrial waste. It can be from a house, school, hospital, shop, office, factory or any other trade or business. It may be solid or liquid; scrap metal, old newspapers, a used plastic bottle, etc. It does not need to be hazardous or toxic to be a controlled waste.

## **Dry Recyclable Material**

Clean contaminant free materials such as glass, paper, metals which have been segregated from the waste stream.

## **Energy Recovery from Waste**

Includes a number of established and emerging technologies, though most energy recovery is through incineration technologies. Many wastes are combustible, with relatively high calorific values. This energy can be recovered through, for instance, incineration with electricity generation. All modern incinerators, known as energy from waste plants, are highly fuel efficient, providing both electricity and heat and also known as combined heat and power.

## **Environment Agency**

Established in 1996, it combined the functions of former local waste regulation authorities, the National Rivers Authority and Her Majesty's Inspectorate of Pollution. Intended to promote a more integrated approach to waste management and consistency in waste regulation. The agency is responsible for issuing and inspection of licensed waste facilities, including those used to manage municipal wastes.

## **Gasification**

A type of pyrolysis.

## **Hazardous Waste**

Hazardous waste, previously known as Special Waste, is controlled waste which is considered so dangerous or difficult to keep, treat or dispose of that special provision needs to be made by regulations.

## **Household Waste**

Is defined in the Environmental Protection Act 1990, supplemented by the Controlled Waste Regulations 1992. It includes waste from refuse collection rounds, bulky waste collection, hazardous household waste collection (including clinical wastes) and separate garden waste collection, plus waste from services such as street sweeping, litter and household waste recycling centres. The definition also covers waste from schools.

## **Incineration**

This is the controlled burning of waste, either to reduce its volume, or its toxicity. Energy recovery from incineration can be made by utilising the calorific value of paper, plastic etc to produce heat or power. Current flue-gas emission standards are very high. Some ash can be recycled or landfilled, other require specialist treatment.

## **Industrial Waste**

Waste arising from factories and industrial plants.

## **Inert Waste**

Waste which, when deposited into a waste disposal site, does not undergo any significant physical, chemical or biological transformation and that complies with the criteria set out in Annex III of the EC Directive on the Landfill of Waste.

## **Kerbside Recycling Collection**

A system whereby recyclable material is collected from separate containers presented by householders to either the boundary of their property or the kerb outside their property.

## **Landfill**

Landfill is the disposal of waste in disused quarries or aggregate workings, where it is buried. These sites are subject to strict controls to prevent contamination of water supplied with leachate and to control the emission of greenhouse gases, such as methane, from the rubbish as it decomposes. This has been the main method of disposal for rubbish in the UK. The EU has set strict targets to reduce the amount of biodegradable landfill, which contributes to greenhouse gas emissions.

## **Landfill Aftercare**

The monitoring of the physical and chemical condition of closed landfill sites to ensure that these sites do not pollute or damage the environment.

## **Landfill Tax**

A tax levied by Central Government on every tonne of waste disposed of at landfill.

## **Materials Recycling Facility**

A system whereby waste is sorted for recycling, re-use and composting prior to disposal, or further treatment.

## **Municipal Waste**

Includes all waste under the control of local authorities. It includes all household waste, street litter, waste delivered to Council recycling points, Council office waste, hwrc site waste, and some commercial waste from shops and smaller trading estates where local authority waste collection agreements are in place.

## **Prevention**

Combined efforts to reduce and re-use waste to prevent it entering the waste stream and having to be recycled, treated or disposed of.

## **Producer Responsibility**

Producers and others involved in the distribution and sale of goods taking greater responsibility for those goods at the end of the product's life.

## **Proximity Principle**

Suggest that waste should generally be disposed of as near to its place of production as possible.

## **Pyrolysis**

The process of heating waste in the absence of air to break the waste down into three separate fractions of gas, solid and liquid. The gas can be used for energy recovery from tyres and waste plastics.

## **Recycling**

Involves the reprocessing of wastes, either into the same product or a different one. Many non-hazardous industrial wastes such as paper, glass, cardboard, plastics and scrap metals can be recycled. Special wastes such as solvents can also be recycled by specialist companies or by in-house equipment.

## **Reduction**

Achieving as much waste reduction as possible is a priority. Reduction can be accomplished within a manufacturing process involving the review of production processes to optimise the utilisation of raw (and secondary) materials and recirculation processes. It can be cost effective in terms of lower disposal costs, reduced demand for raw materials and energy costs. It can be carried out by householders through actions such as home composting, re-using products and buying goods with less packaging.

## **Regional Self-Sufficiency**

Dealing with wastes within the region or country where they arise.

## **Re-use**

Can be practised by the commercial sector with the use of products designed to be used a number of times, such as reusable packaging. Householders can purchase products that use refillable containers, or re-use plastic bags. The processes contribute to sustainable development and can save raw materials, energy and transport costs.

## **Sustainable Waste Management**

Means using material resources efficiently, to cut down on the amount of waste we produce. Where waste is generated, dealing with it in a way that actively contributes to the economic, social and environmental goals of sustainable development.

## **Trade Waste**

Waste collected by the Council from businesses in the district, some of which is part of Municipal Waste.

## **Transfer Station**

A site to which is delivered for sorting prior to transfer to another place for recycling, treatment or disposal.

## **Treatment**

Involves the chemical or biological processing of certain types of waste for the purposes of rendering them harmless, reducing volumes before landfilling, or recycling certain wastes.

## **Unitary Authority**

A local authority that provides the full range of local government services. Bradford is a unitary authority.



## **Waste**

This is the wide ranging term encompassing most unwanted materials and is defined by the Environmental Protection Act 1990. Waste includes any scrap material, effluent or unwanted surplus substance or article that requires to be disposed of because it is broken, worn out, contaminated or otherwise spoiled. Explosives and radioactive wastes are excluded.

## **Waste Arisings**

The amount of waste generated in a given locality over a given period of time.

## **Waste Collection Authority**

A local authority charged with the collection of waste from each household in its area on a regular basis. Can also collect, if requested, commercial wastes from businesses.

## **Waste Disposal Authority**

A local authority charged with providing disposal sites to which it directs waste collection authorities for the disposal of their controlled waste, and with providing civic amenity facilities. Bradford MDC is both a Waste Collection Authority and a Waste Disposal Authority.

## **Waste Hierarchy**

This is a framework which suggest that the most effective environmental solution may be to reduce the amount of waste generated; where that is not practicable, to re-use products, either for the same or different purpose; failing that, value should be recovered from waste through recycling, composting or energy recovery from waste; only if none of these offer an appropriate solution should waste be disposed of.

## **Waste Management Licensing**

Licences are required by anyone who proposes to deposit, recover or dispose of waste. The licensing system is separate from, but complementary to, the land use planning system. The purpose of a licence and the conditions attached to it is to ensure that the waste operation that it authorises is carried out in a way that protects the environment and human health.

## **References**

1. 20/20 Vision
2. Animal By Products Order 2003
3. "Better Quality of Life" - Govt's 1999 Strategy for Sustainable Development in the UK
4. Consultation Paper 2 Document D on MWMS
5. Consultation Paper on MWMS 2004
6. Corporate Plan
7. Defra Funding Bid 2004
8. Defra Practice Guidance on preparation of MWMS
9. EC Landfill Directive (99/31/EC)
10. ELV Directive
11. Environment Act 1995
12. Environment Agency
13. EPA 1990
14. Household Waste Recycling Act
15. INCPEN
16. L Govt Act 1999
17. Leeds University Report on recycling trials in Cottingley
18. MEL research document on Bradford's waste analysis
19. MEL Waste Survey - Bradford 2002
20. RL IWM Project
21. WEEE Directive
22. WET Act 2004
23. WY Waste Disposal Plan
24. Yorkshire and Humberside Regional Waste Strategy 2003

## APPENDIX 1

	Rupert Road	Cleasby Road	Chippendale Rise	Sangster Way	Sheridan Street	Peterborough Terrace	Duchy Avenue	Fencote Crescent	Heath Terrace
Acorn Category	A	B	B	D	D	E	E	F	F
Number of h/h	25 (1)	22	30 (4)	33 (1)	28	29 (4)	29	28 (1)	33 (2)
Total weight of waste sample	312.06	508.02	389.56	530.73	474.17	320.19	606.75	466.37	442.66
Kg/hh/wk	12.48	23.09	12.99	16.08	16.93	11.04	20.92	16.66	13.41
Greatest weight recorded	31.15	49.88	31.56	58.34	74.49	28.57	41.93	38.04	44.35
Least weight recorded	1.36	5.09	1.3	4.75	0.78	0.81	6.76	4.3	0.84
Households with under 10 kg	11 h/hs	5 h/hs	9 h/hs	10 h/hs	9 h/hs	11 h/hs	1 h/h	H/hs	6 h/h
Households with over 10 kg	15 h/hs	18 h/hs	18 h/hs	22 h/hs	18 h/hs	14 h/hs	28 h/hs	H/hs	20 h/h
WEEE	None	NR	Telephone, remote control car, circuit board	Radio	Headphones, telephone	Kettle	Hedge trimmer, video lcd game, slow cooker, kettle, heater	Phone, lamp, phone charge	Jump cables

## APPENDIX 1

Kg per household per week - Bradford August 2002									
Primary Category	Rupert A	Cleasby B	Chippendale B	Sangster D	Sheridan D	Peterborough E	Duchy E	Fencote F	Heath F
Paper and card	2.94	5.30	3.19	4.17	2.86	2.58	5.34	4.40	3.01
Plastic film	0.51	1.61	0.76	0.64	0.89	0.57	0.86	0.78	0.62
Dense plastic	0.58	1.47	0.88	0.97	1.45	0.90	1.10	1.06	0.85
Textiles	0.11	0.55	0.24	0.41	0.52	0.85	0.80	1.25	0.29
Misc. combustible	0.79	0.64	1.19	0.88	1.21	0.61	1.46	1.61	2.25
Misc. non-combustible	0.04	0.17	0.09	0.23	0.69	0.19	0.38	0.67	0.34
Glass	1.18	1.53	0.83	1.56	1.01	1.37	0.83	1.19	0.33
Ferrous metal	0.20	0.50	0.34	0.37	1.59	0.35	0.50	0.57	0.22
Non-ferrous metal	0.09	0.40	0.14	0.40	0.27	0.22	0.23	0.40	0.10
WEEE	0.00	0.13	0.06	0.04	0.05	0.10	0.26	0.06	0.04
Putrescibles	6.04	10.75	5.25	6.41	6.02	3.32	9.17	4.66	5.35
Fines	0.00	0.02	0.02	0.00	0.36	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>12.48</b>	<b>23.09</b>	<b>12.99</b>	<b>16.08</b>	<b>16.93</b>	<b>11.04</b>	<b>20.92</b>	<b>16.66</b>	<b>13.41</b>

## APPENDIX 2

## OVERVIEW OF TOTAL MATERIALS BROUGHT TO THE HWRC SITE JULY 2002

Description of material	Number of visitors disposing material	% of visitors disposing material	Weight of material	Weight as % of total
Recyclable paper	7	8.64	27.04	1.16
Recyclable card	0	0	0	0
Cardboard	22	27.16	86.70	3.72
Non-recyclable paper	10	12.35	47.38	2.03
Plastic film	7	8.64	9.80	0.42
Dense plastic	15	18.52	68.09	2.92
Textiles	23	28.40	240.48	10.33
Shoes	3	3.70	2.80	0.12
Tyres	2	2.47	15.16	0.65
Wood	17	20.99	211.19	9.07
Other combustible	6	7.41	43.31	1.86
Hardcore/building rubble	8	9.88	264.12	11.34
Soil	0	0	0	0
Other non-combustible	2	2.47	21.48	0.92
Glass containers	5	6.17	38.43	1.65
Other glass	6	7.41	16.35	0.70
Compostable garden	18	22.22	344.89	14.81
Other putrescibles	1	1.23	21.02	0.90
Ferrous metal cans	1	1.23	0.86	0.04
Other ferrous	15	18.52	82.47	3.54
Non ferrous metal cans	0	0	0	0
Other non ferrous	7	8.64	16.72	0.72
Oil	0	0	0	0
Lead acid batteries	2	2.47	41.78	1.79
Other batteries	0	0	0	0
Fines	1	1.23	10.11	0.43
Mixed household	33	40.74	334.01	14.34
Hazardous	7	8.64	20.78	0.89
WEEE	24	29.63	363.96	15.63
<b>Total</b>			<b>2328.93</b>	<b>100.00</b>

**BRADFORD MDC - HOUSEHOLD WASTE & RECYCLING CENTRES****RECYCLING FACILITIES AT BRADFORD MDC HWRC CENTRES (SEPT 2003)**

	Car Batteries	Brick & Rubble	Cans	C/Board	CFC Recovery	Glass Bottles	Oil	News Papers	Plastic Bottles	Scrap Metal	Textiles	Paint	Green Waste	Book Banks	Wood	Waste Electrical
Bowling Back Lane, Bradford																
Royds Way, Keighley																
Sugden End, Cross Roads, Keighley																
Wilson Road, Dealburn Road, Wyke																
Dowley Gap, Wagon Lane, Bingley																
Ford Hill Depot, Hill End Rd, Queensbury																
Golden Butts Depot, Ilkley																

		Facility Present
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Address of Site	Weekdays	Saturdays	Sundays
1. Sugden End Household Waste Site A629 Cross Roads, Keighley, BD22 9DQ	8.00am to 5.00pm *	8.00am to 4.00pm	9.00am to 4.00pm
2. Keighley Household Waste Site Royd Way, Keighley, BD21 4BZ	8.00am to 5.00pm	8.00am to 12 noon	9.00am to 4.00pm
3. Dowley Gap Household Waste Site Wagon Lane, Bingley, BD16 1TP	8.00am to 5.00pm	8.00am to 4.00pm	9.00am to 4.00pm
4. Wilson Road Household Waste Site Dealburn Road, off New Works Road, Low Moor, Bradford, BD12 0RG	8.00am to 5.00pm *	8.00am to 4.00pm	9.00am to 4.00pm
5. Bradford Household Waste Site Bowling Back Lane, Bradford, BD4 8SZ	8.00am to 5.00pm	8.00am to 4.00pm	9.00am to 4.00pm
6. Ford Hill Depot Household Waste Site Hill End Road, Queensbury, BD13 2NQ	8.00am to 5.00pm *	8.00am to 12 noon	9.00am to 1.00pm
7. Goldenbutts Depot Household Waste Site, Goldenbutts Road, Ilkley, LS29 8HS	8.00am to 5.00pm	8.00am to 4.00pm	9.00am to 4.00pm

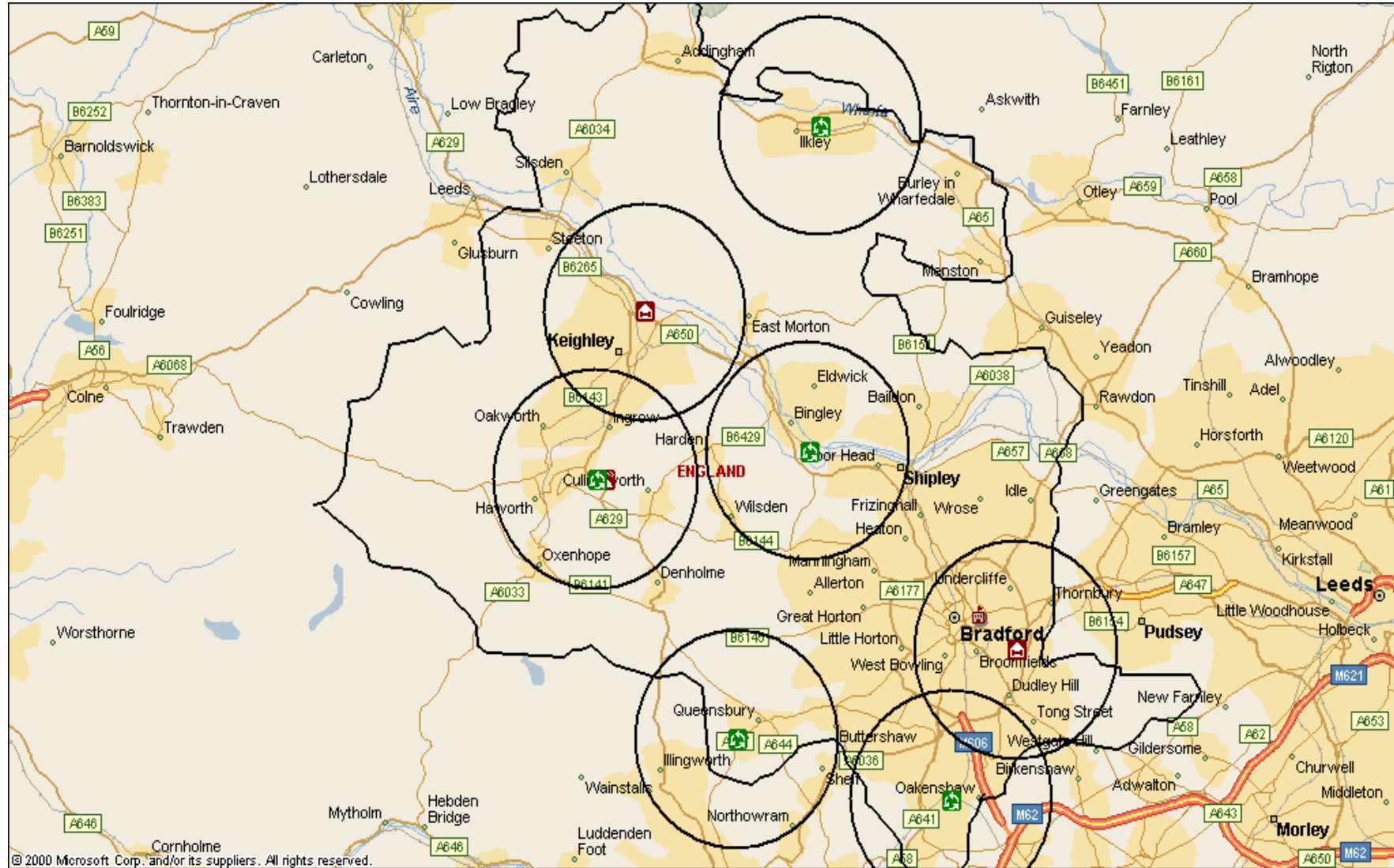
\* These sites close at 4.00pm Monday to Friday in winter (GMT hours)

NB All sites are closed on Christmas Day, Boxing Day and New Years Day, but on other Bank Holidays are usually open as per Sunday hours.  
Sites 1, 2, 3 and 7 are responsibility of Area Manager, North, Mr Keith Denneny (07801) 247994 or (01535) 681482  
Sites 4, 5 and 6 are responsibility of Area Manager, South, Mr David Copeland (07799) 348910 or (01274) 432441

HAZARDOUS WASTES

- NB:
1. Facilities exist at all sites for receipt of redundant household chemicals.
  2. Used gas bottles can only be deposited at Bowling Back Lane, Bradford, and Royd Way, Keighley.
  3. Asbestos bonded sheets can only be deposited at Bowling Back Lane, Bradford by prior arrangement. Tel (01274) 431000.

APPENDIX 3



**EXTRACT FROM OVERVIEW & SCRUTINY COMMITTEE – 13 DECEMBER 2001**

The Environmental Protection and Waste Management Director submitted a report (Document “AC”), which proposed a framework for developing a Municipal Waste Management Strategy for Bradford. The report also proposed short term action needed to 2005 and a methodology for engaging waste management companies in order to enable the district to meet the waste management targets set by the Government.

Resolved –

- (1) That the detailed framework for developing a Municipal Waste Management Strategy for Bradford be welcomed and it is noted that both the clear implication that the cost of disposing of the waste we produce will rise substantially and that future policy will require considerable consultation with local people, the Voluntary Sector and the waste industry.
- (2) That it be recommended to the Executive Committee that the Council:
  - Accepts the proposals for short term actions to achieve recycling targets for 2003 and 2005. Develop options which implement the required changes at a cost that is affordable with joint venture partners, waste management companies and the voluntary sector.
  - Reviews the proposals in the light of the recently announced DEFRA Waste Minimisation Fund.
  - Addresses the need to achieve, or better, longer term recycling and recovery targets beyond 2005 by seeking expressions of interest from companies offering to achieve government and EU targets on recovery of value from waste.
  - Should ensure that in-house waste minimisation and recycling policies are fully adopted throughout the Council and this should include the resources for education and training.



**EXTRACT FROM EXECUTIVE COMMITTEE – 29 JANUARY 2002**

## 9.0 Conclusions

The following framework for the development of the Municipal Waste Management Strategy is proposed.

## 9.1 Short term actions to achieve recycling targets for 2003 and 2005

- (a) improvements to household waste sites and transfer stations, including provision of one additional facility.
- (b) kerbside recycling scheme to be costed and evaluated.
- (c) discussions to continue with recycling companies and organisations to expand recycling across the district.
- (d) funding issues to be explored with joint venture partners/waste management companies in order to develop options which implement the changes required, at a cost that is affordable.

## 9.2 Actions to achieve longer term recycling and recovery targets beyond 2005:

- (a) Action currently ongoing
  - Residents' view gained via Speak Out!
  - Business and voluntary sector views sought in parallel.
  - Confirm whether any neighbouring authorities wish to work as a partner on the project (Leeds and Calderdale).
  - Secure landfill contracts for the District's waste and ensure that these are available to contractors if required.
- (b) Action to be taken
  - Expressions of interest sought (via OJEC) from companies seeking proposals for achieving the government targets on recovery of value
  - Companies/organisations expressing an interest to be short listed on agreed criteria which will include:
    - practical operational experience of providing service,
    - long term financial viability (minimum 25 years),
    - broad environmental assessment of company and proposals,
    - which ancillary services (if any) to be included as part of contract.
- (c) Analysis of company proposals undertaken including planning considerations on proposed options. Viability of proposals will be dependent upon planning status.

- (d) Formal invitation to tender from select list established through process above with a target date of completion by March 2004.

**EXTRACT FROM EXECUTIVE COMMITTEE – 29 JANUARY 2002**

The Environmental Protection and Waste Management Director gave a presentation in connection with this item.

Resolved –

- (1) That the framework proposed for the development of the Council's Municipal Waste Management Strategy as described in paragraphs 9.1 and 9.2 of Document "DF", be agreed.
- (2) That the recommendations of the Environment Overview and Scrutiny Committee be accepted.
- (3) That officers produce a feasibility study on the separation of green waste and other putrifiables and that a system of recycling credits involving the voluntary sector be investigated.
- (4) That the adoption of incineration of municipal waste should not be pursued.

The decision of the Committee had been called in for consideration by the Environment Overview and Scrutiny Committee, which had considered the matter at its meeting on 14 February 2002.

The report of the Scrutiny and Performance Management Director (Document "EJ") reported on the decision of the Environment Overview and Scrutiny Committee.

The Chair of the Environment Overview and Scrutiny Committee attended the meeting and spoke in support of his Committee's decision on the basis that the Executive Committee's decision was premature and ill-informed with no reasoning as to why that decision had been reached, a viewpoint disputed by Members of the Executive Committee.

A representative of Action for a Sustainable Bradford spoke in support of the Executive Committee's decision.

Resolved –

That the views of the Environment Overview and Scrutiny Committee be noted and the previous decision of the Executive Committee of 29 January 2002, be re-affirmed.

**EXTRACT FROM EXECUTIVE COMMITTEE – 10 SEPTEMBER 2002****Executive Summary**

1. Bradford Council has to meet a series of demanding waste recycling and recovery targets so that by 2015 the District is recycling 33% of household waste and recover value of 67% of municipal waste. Recycling and composting are familiar terms; recovery value is less so. It means a process by which the energy value is released by processes such as incineration or substituted where materials are reused and recycled. Therefore the recovery target includes the recycling target. At the same time the amount the waste produced by households has grown at up to 3% per year. This trend is expected to continue. Overall the costs of waste management in the UK and in Bradford will, inevitably, increase.
2. In order to deal with these two issues, the District needs to adopt a waste strategy. The report proposes a two stage approach – Phase 1: action to 2005 with phase 2 – action beyond 2005.

3. Phase 1: Action to 2005

It is proposed that recycling and composting are prioritised for action. Government targets can be achieved by an expansion of kerbside recycling (concentrating initially on paper) and greater recycling/composting from household waste sites. Waste minimisation and awareness efforts will also continue. Discussions with waste companies will continue, with the advantages of joint venture approach being evaluated.

4. Phase 2: Action beyond 2005

In the longer term the Council will need to evaluate the tried and tested technology available to enable it to meet the target for the recovery of value. Owing to current uncertainties about the public health effects of incineration, it is not recommended that this be considered as an option for Waste Disposal at this point in time. Instead, expressions of interest will be sought from companies to test all the options available before the Council comes to any decision on this issue.

**EXTRACT FROM EXECUTIVE COMMITTEE – 10 SEPTEMBER 2002**

Resolved:

- (1) That the successful bid for £825,000 to the District from the DEFRA Recycling Fund be noted.
- (2) That the likely cost implications of a multi-material kerbside recycling scheme in the District be noted and further consideration be given to this as part of the budget for 2003/04.
- (3) That, in the meantime, action should continue to improve the District's recycling rate by:
  - (a) expanding kerbside recycling based on a paper only scheme
  - (b) seeking support from the DEFRA Recycling Fund for an expansion of kerbside recycling and improvements to recycling facilities at household waste sites
  - (c) continuing dialogue with voluntary organisations particularly for recycling bulky household waste, and
  - (d) developing the waste awareness campaign outlined in the report
  - (e) retaining the multi-material recycling pilot schemes
  - (f) referring the issue of recycling to the Overview and Scrutiny Committee (Environment) to develop future policy on recycling.
- (4) That the Overview and Scrutiny Committee (Environment) be provided with regular reports on the implementation of the kerbside recycling scheme, these should include details of when implementation will begin, in what areas, scheme monitoring and evaluation and links to the waste awareness programme

**EXTRACT FROM EXECUTIVE COMMITTEE 18 SEPTEMBER 2003**

The report of the Environmental Protection and Waste Management Director (Document "AZ") proposed that tenders were sought for a waste disposal plant, capable of processing household waste in a manner that met the European Union Directive on the disposal of biodegradable waste to landfill. It suggested that a pilot be established to test the reliability and effectiveness of the plant and the trial was undertaken for approximately two years.

Resolved –

That tenders be sought for the provision of a pilot waste disposal plant that is able to achieve the value recovery targets of the EU Landfill Directive without the use of incineration.

**EXTRACT FROM EXECUTIVE COMMITTEE – 9 NOVEMBER 2004**

The Environmental Services Director presented a report (Document “AC”) that explained the changes that the Council faced in the way that it dealt with its waste.

The report also explained the implications of the proposed introduction by the Government of a Landfill Allowance Trading Scheme (LATS) and proposed a strategy to contain costs in the long term but acknowledged the inevitable and significant increases in overall waste costs over the foreseeable future. The Environmental Services Director gave a Powerpoint presentation at the meeting.

Members discussed the implications of the introduction of the Landfill Allowance Trading Scheme.

Resolved –

- (1) That a procurement process be now started to seek long term (25 years) alternatives to waste disposal by landfill.
- (2) That the actions outlines in Document “AC” to reduce cost control waste and encourage new recycling initiatives be taken forward.
- (3) That the cost implications of waste disposal are included in the Council’s long term financial strategy.
- (4) That, on behalf of the Executive, the Environmental Services Director make representations to the Government in support of the position put forward by the LGA (Local Government Association).

## Waste Reduction

Local authorities find themselves at the “end of pipe” with regards to waste quantities i.e., they have to manage whatever the householder puts out, and only have limited ability to influence matters further “up the pipe”. Much of the increases in household waste are due to changes in lifestyles - increased wealth, more consumerism, more people living on their own. Studies have shown that people living on their own produce more waste per capita than if they were in family groups. Further studies show that an average 35-40% of household waste is from supermarket purchases and that 25% of household waste is packaging.

Given the above, it is no surprise that pressure is now being applied to reduce levels of packaging in household consumer goods. The Courtauld commitment for example aims to design out packaging waste growth by 2008, with absolute reductions from 2010.

However there are a number of initiatives the Local Authorities can take (and are taking) to minimise waste, which given the consequences of LATS (as previously discussed in 3.3), becomes ever more important over time.

Typical waste minimisation actions for consideration are:

1. Make greater use of Waste Minimisation Act (referred to in 3.2 above).
2. Continue to raise awareness, via media campaign, of waste issues, with greater emphasis placed on improving understanding of personal environmental impact.
3. Being an exemplar - following “green” purchasing policies, and being at the forefront of having extensive recycling facilities, achieving accreditation to Eco Management and Audit Scheme.
4. Leadership - taking on from point 3 above, the Council can then promote waste minimisation to the wider business community.
5. Performance rewards for waste reuse and or recycling, this is at a very early stage of development both within mainland UK and at Bradford, and further understanding of how such schemes could work within the district need to be understood.
6. Greater partnership with reuse sector and possible consideration of paying “Reuse Credits” needs to be considered for Bradford, particularly as applies to certain goods as currently collected by the Bulky Waste Service.

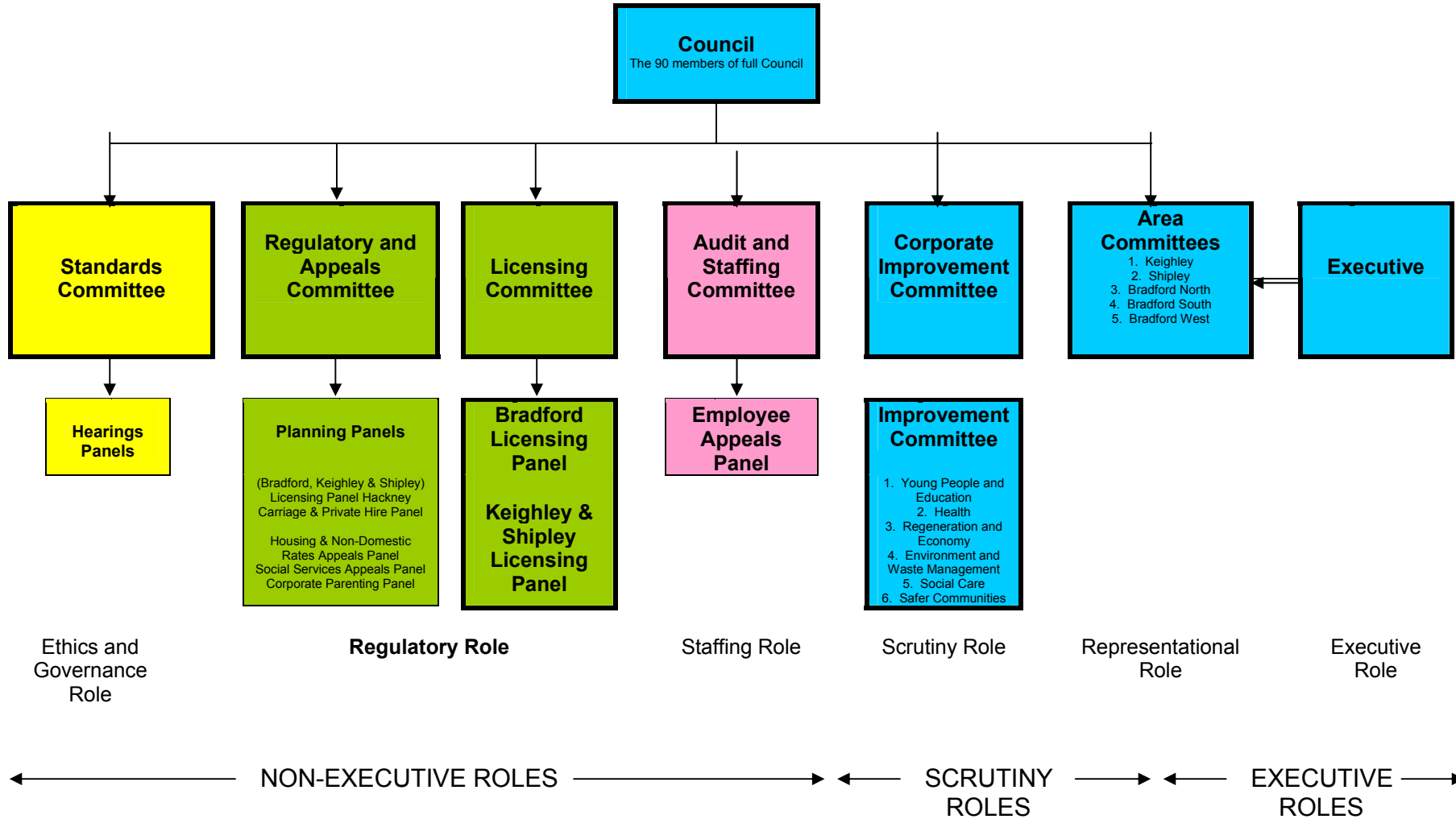


7. Greater partnerships with Social Enterprises, such as recent one developed with Aire Valley Recycling (AVR), to develop kerbside recycling/composting scheme, particularly in those areas which present particular difficulties for the Council with their unsuitability to accommodate existing scheme formats (e.g., multi occupancy/high rise, old cottage dwellings).
8. Develop operational access policies relating to prevention of all non household waste entering HWRC e.g., van ban, introduction of height barriers and permit scheme. (up to 20% reductions in HWRC inputs have been achieved by neighbouring Councils as a result of such policies - about 10,000 tonnes pa in Bradford's case).
9. Promote Real Nappies - although the Council via Bradford Environmental Action Trust (BEAT) is supporting a small real nappy scheme, more ambitious work could be done to expand this option to a wider audience.
10. Promote Home Composting - the Council has arrangements for sale of reduced rate home composter bins, but more needs to be done. More ambitious targets should be set: for example to have a composter in all domestic properties with a garden above a defined surface area, and also to develop local compost champions, and have more follow up information/news letters.

**RECYCLING MARKETS - DESTINATIONS OF BRADFORDS MUNICIPAL RECYCLATE**

<b>Recyclate</b>	<b>2004/5 Annual Tonnage</b>	<b>Where it goes</b>	<b>Comments</b>
Paper (news + pams)	10236	Shotton - Flintshire	Made into new newspaper
Glass Bottles	2542	Glass UK - Barnsley	Sorted and made into new glass
Tins/Drinks cans	59	EMR (steel) Bradford Alcan (aluminium) Bradford	Smelted down into base metal/alloy
Textiles	280	Randisi –Bradford	Garments sorted for resale, export or shoddy
Plastic Bottles	265	BDM – Liverpool	Washed, flaked and exported to China
Green Waste	8648	S J Butterfield Bradford, and Dewsbury	Composted to make soil improver
Wood	1821	Envirowaste – Bradford	Chipped for use in chipboard manufacture
Car Batteries	93	Danhaul - Wakefield	recycle heavy metals and acids
Rubble	1548	Envirowaste – Bradford	Crushed and screened into secondary aggregates
Cardboard/Mixed Papers	2549	Blackburns – Dewsbury	Re-sorted and baled into different categories for onward shipment to merchants made into lower grade paper
Fridges	783	Ozone – Oldham	Recycles/CFC recovery
Oil	69	Goodwins – Leicester	Made into new oil
Scrap Metal + White Goods	1873	} EMR – Bradford } T Holmes – Keighley	General scrap metal merchant
Small WEEE	428	T&M Recycling – Leeds	Re-use, repair/reuse, recycled/exported abroad
Paint	14	Repaint	Sold on (given away) for community use
Domestic Batteries	1	Via Biffa or Cleanaway	Recovery of heavy metals
Push Bikes	1	Casper – Bradford	Community based scheme – reuse
Shoes	26	Randisi – Bradford	Resale or export
Books	6		Resale or export
Chemicals	25 (est.)	Various Merchants	Recovery
Fluorescent Tubes	1		Recover gas and heavy metals
Tyres	57	Velco – N Yorks.	Retread or fuel in cement kilns
Gas Bottles/Beer Kegs	10 (est.)	Various Merchants	Recovery by manufacturers
Secondary Composting	5500	Envirowaste	Screen it to make topsoil substitute

**Responsibility for Decisions**



City of Bradford Metropolitan District Council  
**Paper Recycling**  
 www.bradford.gov.uk

## Let's Get it Sorted!



Paper Recycling

### Let's Get it Sorted!

Everyone wants a safe and healthy environment to live in but may not know just what to do, or be able to find the time. Recycling is one of the ways of achieving this, by simply following a few easy steps and taking just a moment of time daily – recycling can become a way of life.

#### Good News!

Bradford Council will provide a free wheeled bin for all households in the district over the next couple of years. Your area will be one of the first to benefit. So as well as using your local Recycling Centres, the Council can collect the paper from your home, making recycling much easier for you.

- |                      |                 |
|----------------------|-----------------|
| ✓ YES PLEASE!        | ✗ NO THANK-YOU! |
| ✓ Magazines          | ✗ Envelopes     |
| ✓ Brochures          | ✗ Cardboard     |
| ✓ Catalogues         | ✗ Telephone     |
| ✓ Newspapers         | ✗ Directories   |
| ✓ White Office Paper | ✗ Plastic Bags  |
| ✓ Junk Mail          |                 |

NO envelopes please – because of the glue and plastic in the windows.

#### When will my paper recycling bin be delivered?

Your new bin will be delivered during January or February 2003.

#### Will I still keep my old bin?

Yes – you will have two – one for paper recycling and one for normal household waste.

#### What are the collection days?

Your recycling bin collection will be once every four weeks and will be on the same day as your household waste bin collection. You will just need to wheel it out alongside your normal bin on the collection dates listed.

#### How will I know when to put my bin out?

There will be a sticker on your new bin with the dates that your recycling bin should be put out. It will also remind you about the type of paper you can put in for recycling.

#### What if I don't want a bin?

There may be a very good reason why you cannot accept one of these new bins. If so, simply let us know by Friday 10th January 2003. You can contact us by:

- Tel: 01274 438863
- Fax: 01274 726430
- Email: gerry.mcdermott@bradford.gov.uk

Or you can return the attached reply paid slip and post it straight back to us.



Please return this reply paid card if you cannot accept a paper recycling bin.

Name :

Address :

Postcode :

Telephone number :

If you would like someone to contact you to discuss any concerns you may have, please tick here ( )

### Did you know?

By using waste paper products to produce new paper disposal problems are reduced.

The amount of paper going to landfill sites from Bradford households weighs over 30,000 tonnes.

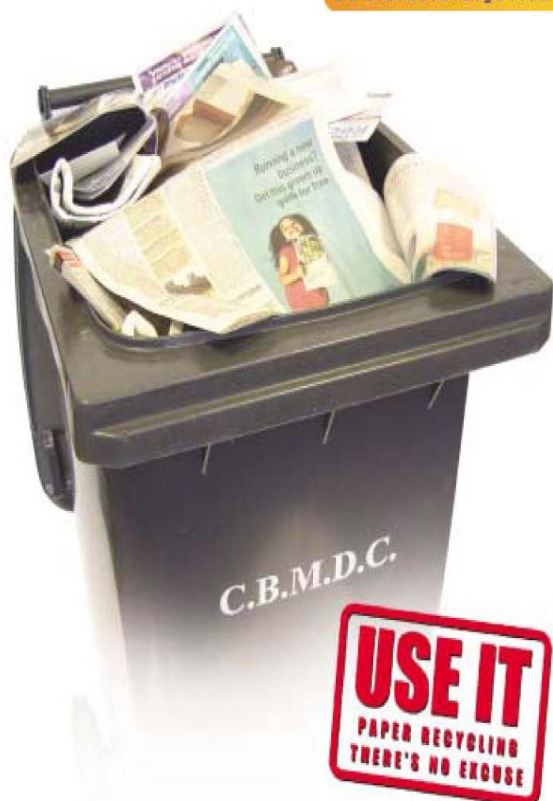
Each family uses about 6 trees worth of paper every year in the UK.

On average, every person in the UK gets through 70kg of newspapers and magazines a year – that's a lot of news!



City of Bradford Metropolitan District Council

# Paper Recycling

[www.bradford.gov.uk](http://www.bradford.gov.uk)


## Good News!

Your free paper recycling wheeie bin has arrived and is ready for you to use. So, as well as using your local Recycling Centres, the Council can collect the paper from your home, making recycling even easier for you!

On top of your bin is a sticker, which tells you when your collection day is, you just need to wheel it out alongside your normal bin on the dates listed.

### YES PLEASE!

- ✓ Magazines
- ✓ Newspapers
- ✓ Brochures
- ✓ Junk Mail
- ✓ Catalogues
- ✓ White Office Paper
- ✓ Letters

### NO THANK-YOU!

- ✗ Envelopes (because of glue and plastic windows)
- ✗ Cardboard
- ✗ Telephone Directories
- ✗ Plastic Bags

So, just put all your paper into your new bin and the Council can collect it, making recycling much easier for you.

Please use your bin **carefully** and **thank you** for doing your bit to help the environment.

If you need any further information or have any queries regarding the Paper Recycling scheme please ring the Recycling Office on 01274 438883 or email [letsgetitsorted@bradford.gov.uk](mailto:letsgetitsorted@bradford.gov.uk)

Printed on recycled material

Produced by Bradford Councils  
Department of Marketing and Communications © 2003.

City of Bradford Metropolitan District Council

# Paper Recycling - Let's get it sorted!

[www.bradford.gov.uk](http://www.bradford.gov.uk)


## YOUR COLLECTIONS WILL BE:

15/10/03	03/03/04	21/07/04	08/12/04
12/11/03	31/03/04	18/08/04	
10/12/03	28/04/04	15/09/04	
07/01/04	26/05/04	13/10/04	
04/02/04	23/06/04	10/11/04	

## NO THANK-YOU!

- ✗ Envelopes
- ✗ Cardboard
- ✗ Telephone Directories
- ✗ Plastic Bags
- ✗ Bottles
- ✗ Tins
- ✗ Glass
- ✗ Plastic
- ✗ Garden Waste

**PLEASE REMEMBER** that the contents of your paper recycling bin will be checked regularly. If your bin is found to contain any items that are not paper, we will not be able to empty it and it may be removed.

For further information please call: 01274 431000

*Working in partnership with the Department for Environment, Food and Rural Affairs*

(101/Wed)

**CLEAN AND DRY PAPER MATERIALS ONLY PLEASE.**



City of Bradford Metropolitan District Council

# Paper Recycling

[www.bradford.gov.uk](http://www.bradford.gov.uk)

## Let's Get it Sorted!

**Congratulations! You have had your paper recycling bin for several months now and thanks to everyone's efforts we have managed to recycle hundreds of tonnes of paper already!**

Just to remind you - only put clean and dry paper materials in your bin. We want your magazines, newspapers, brochures, junk mail, catalogues, white office paper and letters. Check the sticker on the top of your bin for another reminder and list of collection dates.

Once again, thanks for joining your neighbours and helping us to reduce costs and protect the environment by removing such waste from landfill sites, which produce greenhouse gases and harmful liquids that cause pollution on a worldwide scale.



**If you need any further information or have any queries regarding the Paper Recycling scheme please ring the Recycling Office on 01274 438883, or e-mail [letsgetitsorted@bradford.gov.uk](mailto:letsgetitsorted@bradford.gov.uk)**









Get in touch...

Contact numbers for environmental problems:  
 Fly tipping - Environmental Agency on Freephone 0800 087008  
 Flooding - Environmental Agency Floodline 0845 905 1180  
 Waste supply enquiries - Yorkshire Water on 0845 126204  
 Storage enquiries - Yorkshire Water on 0845 126209  
 Consumer advice - West Yorkshire Trading Standards Service on 0113 248 044 or visit <http://www.wytradingstandards.gov.uk>  
 Abandoned cars - contact your local police station  
 Council Cooled - on 01274 431008 for Bradford Council services including:  
 Refuse collection, street sweeping, bulk refuse, intelligent disposal, recycling, household waste sites, graffiti removal, blocked street gutters, Environmental Health services, private sector housing, asbestos, dust, noise, street lighting, highways and highways, public art landscapes, emergency calls  
 Bradford Council Trade Waste Service - 01274 431225

# Rubbish – get the message

"Warning - litter breeds". That's the stark message contained in the advert from the Council's "Don't drop it, bin it!" campaign.  
 The Bradford district has no greater problem with rats than anywhere else but the advert aims to attract people into understanding that if they drop litter it could encourage rats.  
 Richard Wiley, Bradford Councils Waste Management Director, explained that the campaign had the backing of thousands of people who had reported rats to the department.  
 He said: "Last year, an average 10,000 people in our district reported they spotted a Coon, muntjac, fox or badger in their own areas. We're still working our way through the reported areas along with many others. Just 'Service' about clearing up below."

"Thousands of incidents are sent back to us also and people needed to take pride in their own community by not dropping litter."  
 "That's why we've launched this drive to get the message across in the hope of changing people's behaviour."  
 "The aspect of the campaign is to encourage all kinds of people. We start from a certain point with rats, but if we don't sound one, people have to stop dropping litter."  
 The last phase is aimed at those with a paper recycling bin and second at employers in the district.  
 Called "Don't drop it, bin it", the campaign was launched on August 1 at 16 Wake Avenue, Cop in Bradford's Coleridge Square, including street performances and workshops where children made masks and hats from waste materials.



Richard Wiley

## £2m for better tips

Better facilities at Household Waste Sites and Recycling Centres are on the cards with the start of a £2m improvement programme.  
 The Council is investing most of its money to make it easier for people to unload rubbish from their cars into containers, and to dispose of their recycling.  
 It also aims to make the sites run more smoothly by reducing bottlenecks which cause traffic jams.  
 At present the Doves Gap site in Embsay is undergoing improvements which include the new wheelie bins and the new site in Houghton (previously where cars can be driven up a ramp and rubbish collected into skips).



Doves Gap will also get better signs and surfacing and will offer a wider range of recycling containers, including ones for paint, books, shoes, batteries, and mobile phones.

## Pesticides ban

More than 800 common pesticides and weedkillers that used to be available over the counter have now been banned from sale in the UK.  
 Details on pesticides must be read up by the end of this year and be safely disposed of by next March (2004).  
 Most pesticides containing crotothol and coal tar crotothol have also been banned.  
 The Council's chemical safety service has more information on the chemicals concerned and will also collect and dispose of them free of charge. Contact them on 01274 432447.

## Clean sweep

Harrogate School pupils are making a clean sweep with a drive to cut down on litter and boost recycling.  
 The school, at Sutton Avenue, Bradford, has set up a paper recycling scheme which is used by pupils and staff. It has also taken on two groundkeepers to monitor up the surroundings and keep on top of litter.  
 Bradford Council aims to encourage other schools across the district to take rubbish-pick-up seriously.  
 Campaigns involve groups playing a central role by getting children in schools across the district thinking about rubbish. Campaigns also include presentations and interactive workshops, followed up in the classroom with specially designed teaching materials.  
 Harrogate's Year Seven pupils took an artistic approach to recycling by designing and making containers and restaurants from materials which could otherwise end up in the bin. They also designed dance routines on the same theme.  
 Twelve-year-old Tanya Bhagwat

remembers leaving about recycling in primary school and hoped making restaurants from rubbish.  
 She said: "If you can use something again, you should!"  
 Classroom Artistic Manager, who designed a skirt from metal stoppers, said: "People can cut what they like, but they should make sure they put the rubbish they make in the bin!"  
 Ricky Coates, Assistant Head of Year Nine, set up the paper recycling scheme along with Susan May who organises co-ordinator activities. Pupils put waste paper in special boxes in every of the classrooms. They collect it up in a paper recycling wheelie bin for collection by the Council.  
 Ricky said: "The recycling scheme has been a big success and we want to spread it if we can. But we have a big lesson of rubbish, they are making it through school all the time which means we need to keep doing the message here."



Harrogate pupils with their recycled coffee containers and the paper bin - back left Jonathan, Emy, Megan, Sarah, Ben, Alisha, and Alisha Marston.



Harrogate pupils from left Scott Howard, Ashwina Springs and Liana Paul.

## Got a bin? Use it!

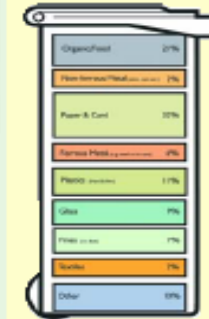
A scheme to persuade half the households in the district to recycle paper has got off to a flying start – with a target for 50 percent of those asked saying 'yes'!  
 The next push will be to get those who have recycling bins to use them. So far a tiny half of those who can see actually recycling.



Erin Goss with her children, here left Jack, Alexander and Lucy.

She said: "Once you've got a second bin, it's easy – you just have to remember to use it and the Council does the rest."  
 When you think how much money it costs to get rid of rubbish, everyone should use the scheme for making the effort to recycle as much as they can."  
 Over the last few years Bradford Council has supplied 10,000 homes with a second household bin for newspapers, newspapers, brochures, junk mail, letters, catalogues, and office paper.  
 It is now in the process of offering a second bin to another 10,000 homes which will mean that, in a year, around 100,000 households will be able to recycle paper.  
 Nearly 52,000 households across Bradford have been asked to join the scheme since Christmas, with an aim of 100,000 by the end of the year.  
 Paper and card make up about a third of the rubbish in everyone's bin.  
 In addition, since Christmas, an extra 3,000 households have also started

composting which could help to reduce household rubbish by up to a quarter.



## The soaring cost of rubbish

It has been two years since the bill for getting rid of a rubbish wheelie bin shot up by around 70 percent.  
 In 2005, the Government will increase the landfill tax the Council pays on every tonne of rubbish we need to go to landfill instead of recycling it. This extra cost will get even bigger if people don't make every effort to recycle. Recent figures show that the amount of household waste in the district is recycling:  
 • 210,800 tonnes in 2001-02  
 • 220,800 tonnes in 2002-03  
 However, recycling is growing at a much slower rate:  
 • 10,445 tonnes in 2001-02 – 18 per cent of our total waste  
 • 22,050 tonnes in 2002-03 – 11 per cent of our total waste  
 Richard Longcake, Principal Waste Management Officer, said: "Although recycling is slowing it makes an impact,

the amount of rubbish is still growing each year."  
 "The only answer is for us all to be recycling more seriously so we will likely pay less."  
 The contents of an average household bin are shown right. The vast majority of these materials could be recycled, saved or composted to reduce the amount of waste going to landfill (Source: Environment Agency).  
**Composting offer**  
 If you have a garden, you can make a big contribution to recycling waste by composting household waste. Composting, including vegetable and lawn clippings, is a great way to reduce the amount of waste going to landfill. Contact the Council's Composting Service on 01274 431008 or visit [www.getcomposting Bradford](http://www.getcomposting Bradford).

## Serious about clearing up

Bradford Council is spending an extra £200,000 this year on clearing up across the district.  
 Councils have agreed to fund the contractors or groups created by the clearing up of rubbish. The campaign began last year when 10,000 residents responded to an invitation in Community Pride to identify their top concerns.  
 The Council has decided to spend an extra £200,000 on 200 special litter bins which will be placed outside businesses across the district. The bins will have a large opening making it easier for them to take place bins.

An extra £115,000 has also been allocated for enforcement work.  
 At the same time street cleaning staff are making more changes to their working pattern to allow them to clear up litter more effectively. Littered about clearing teams are continuing to target litter problems, such as areas where litter can build up.  
 Extra workers and vans are now deployed from 5.30 am and again after office hours so they can make a difference to the worst areas. They are also working extra hours of weekends.

These changes build on the successful new 'stitch' system introduced by mechanical street cleaning teams last year which means pavements and roads are swept from clean to clean.  
 Principal Cleaning Officer, Denise Fisher, said: "Our commitment to keeping the environment clean and safe is our top priority and we will continue to do our best to help it."  
 "Nobody wants to spend more money clearing up rubbish. People need to stop dropping litter and changing behaviour. The district will never look better and the cost of trying to clean it up will mean





## APPENDIX 9

<b>Audience</b>	<b>Media</b>	<b>Activity</b>	<b>Messages</b>	<b>Background</b>	<b>Timing</b>
Householders	Kerbside paper recycling leaflet	Awareness raising / information	Kerbside paper recycling - coming to this area soon	Operate an opt-out scheme with tear off slip as part of leaflet. Distribute 4 weeks before paper recycling bins are delivered.	Ongoing
Householders	Bin collection stickers	Information	Your collections will be on ..... reinforce contents message	To be weather proof - stick on recycling bin lids. Coded for rounds.	Ongoing
Householders	Bin contamination stickers	Information	Your bin load is contaminated .... reinforce contents message	To be degradable	Ongoing
General Public	Paper collection vehicles	Advertising	Paper recycling - use your bin!	Signs produced on thin aluminium and placed on paper collection vehicles	Ongoing
General Public	Photography	Awareness raising	Specific rubbish, recycling, litter shots	For use on any future materials, articles etc	Ongoing
Householders	Flyer	Information / call to action	Lets get it sorted! - Here's your bin	Posted through letterbox when paper - recycling bin is delivered	Ongoing
Householders	Flyer	Information / call to action	Lets get it sorted! - 3 months on	Posted through letterbox 3 months later - encourages people to keep up good work & carry on using the bin	Ongoing
General Public, Young People, Teachers	Website	Information	Waste management website with specific recycling site within	Updated website with specific areas for yp, householders etc. Forms part of <a href="http://www.bradford.gov.uk">www.bradford.gov.uk</a> promoted through all the other materials	Ongoing
General Public	Community Pride	Editorial	Lets get it sorted!	Different features each edition continuing focus on relevant elements/topics	Apr / Mar

## APPENDIX 9

<b>Audience</b>	<b>Media</b>	<b>Activity</b>	<b>Messages</b>	<b>Background</b>	<b>Timing</b>
General Public	Posters - JCD	Advertising	Lets get it sorted! Composting	Use Council sites in Bradford City Centre. 3 week campaign - 40 sites	April
General Public	Buses	Advertising	Lets get it sorted! Composting	Rears and headliners	April
General Public	Radio	Advertising	Lets get it sorted! Composting	1 month campaign - 120 x 30 second adverts per month on Pulse, plus 44 x 10 second call to actions	April
General Public	Practical guide to composting	Awareness raising / information	Lets get it sorted! Composting do's and don'ts, facts and figures, general recycling info etc	Distributed via garden centres, with delivery of compost bins, public info points, roadshows etc	April
Schools	Flyer	Information	Lets get it sorted!	Promote recycling offer to schools to provide infra structure to introduce paper recycling in classrooms	Apr / May
Householders in 'low participation / high contamination areas'	Door to door canvassing	Information / Research / Dialogue	Lets get it sorted!	Interactive communication with householders to establish barriers to participation and increase their understanding of how to use their bin. Will need to be multi-lingual	Apr / May / June
Council Employees	Pride @ Work	Editorial	Some jobs are not quite what you imagine!	Distributed to all Council employees - focus on someone's job within waste management/enhanced kerbside collection scheme	May
Businesses / local p'ships / SRB	Leaflet	Awareness raising / information	Lets get it sorted!	Promote recycling and visible services teams role, their remit, who to contact etc	May



## APPENDIX 9

<b>Audience</b>	<b>Media</b>	<b>Activity</b>	<b>Messages</b>	<b>Background</b>	<b>Timing</b>
General Public	Merchandising	Promotion	Lets get it sorted!	Pens, pencils, balloons etc - products made from recycled materials for 'giveaways' - publicise web address	May
General Public	Waste mobile roadshow	Awareness raising / information	Lets get it sorted!	Attendance of roadshow throughout the District, at supermarkets, community events, promoting recycling, smart shopper etc	May / June / Sept
Primary School Children - Key Stage 2	Cragrats Theatre Group	Awareness raising / information	Lets get it sorted! Litter, waste and recycling awareness	Extend last years programme into other 50% of primary schools. Lesson plans developed for teachers to use as part of curriculum	June / July / Sept
General Public	Bus shelters (4 and 6 sheet)	Advertising	Lets get it sorted!	1 month campaign on sites situated in problem areas to follow door to door canvassing	July
Asian families	Asian Eye	Advertising supplement	Waste management issues	Written by T&A focusing on agreed issues - double page spread	July
Asian families	Community Radio	Advertising	Lets get it sorted! Paper recycling - there's no excuse! Use it!	Sunrise / BCB - focus on encouraging ethnic minorities to recycle	July
General Public / Young People	Waste awareness day	PR stunts / awareness / dialogue	Lets get it sorted!	Event in Centenary Square, recycling workshops for playschemes, street theatre, etc	August

## APPENDIX 9

<b>Audience</b>	<b>Media</b>	<b>Activity</b>	<b>Messages</b>	<b>Background</b>	<b>Timing</b>
General Public	Community Pride Environment Extra	Editorial	Articles and info on departments services	Include campaign info, refuse collection, bulky household waste service etc. Also contain useful telephone numbers to report fly tipping, abandoned cars etc	Aug / Sept
General Public	Presentations / posters / copies of all materials	Awareness raising / information / dialogues	Lets get it sorted!	Update given at all Neighbourhood Forums a year on. Provide materials to support	Sept to Nov
Asian families	Asian Eye	Advertising supplement	Waste management issues	Written by T&A focusing on agreed issues - double page spread	Oct
Asian families	Community Radio	Advertising	Lets get it sorted! Paper recycling - there's no excuse! Use your bin!	Sunrise / BCB - focus on encouraging ethnic minorities to recycle	Oct
General Public	T&A / Keighley News / Ilkley Gaz. Supplement	Editorial	Articles and info on waste management issues and departments services	4 page pull out in T&A. Full page editorial in others. Update on last years campaign articles	Oct
Asian families	Community Radio	Awareness raising / Dialogue	Introduce recycling ideas	Broadcast series of features on different areas of recycling over a given length of time	Oct / Nov
Householders	Flyer	Awareness raising / information	Lets get it sorted! Green Christmas leaflet	Leaflet to be delivered through the door on paper recycling rounds and through libraries, info points etc. Will include guide to a green Christmas, practical info and collection dates for bins	Dec



## APPENDIX 9

<b>Audience</b>	<b>Media</b>	<b>Activity</b>	<b>Messages</b>	<b>Background</b>	<b>Timing</b>
Householders	Posters	Awareness Raising / information	Lets get it sorted! Green Christmas	Sent to all retailers of Christmas trees to display. Message to promote recycling your tree and cards etc	Dec
Householders	Posters - JCD	Advertising	Lets get it sorted! Green Christmas message	How to recycle Christmas!	Dec - Jan

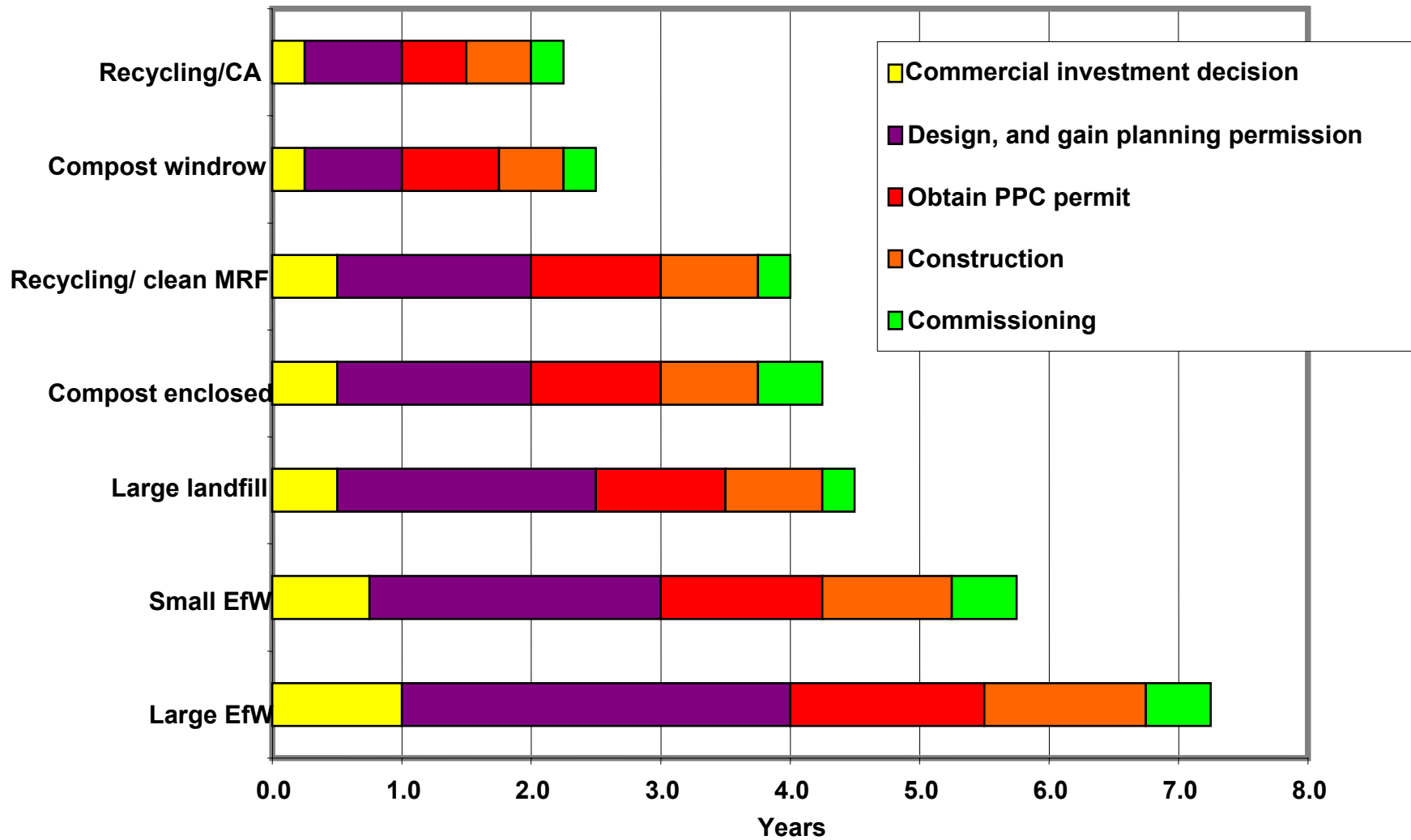
<b>Audience</b>	<b>Media</b>	<b>Activity</b>	<b>Messages</b>	<b>Background</b>	<b>Timing</b>
Householders	Flyer	Call to action	Lets get it sorted! Thanks for being green!	Competition - flyer given to everyone who takes tree to be recycled. Collect personal info, ideas for future, enter competition to win recycled fleece etc	Dec - Jan
New parents	Various marketing materials	Awareness raising / information	Lets get it sorted! Nappy leaflet	Leaflets / posters and displays produced to support Real Nappy Worker, inform parents of benefits and encouraging usage etc	March

- a) *Need to be clear about what this is saying*
- b) *Needs to go for 25 years – length of contract*

APPENDIX 10

1	2	3	4	5	6	7	8	9	10	11	12	13
Year	MSW	Household Recycling Tonnage	Balance to Landfill	LAT's Allowances	Net Weight over Allowances	Gate Fee per tonne	Landfill Tax per tonne	Total Gate Fee	Gross Landfill Disposal Cost	Impact of LAT's Fines	Gross Fines & Costs	Transfer Loading Costs
	Based on 2% growth in HW and static Non-HW	At 21% of HW Total	Col 2-3	Statutory Targets	Col 4-5	Based on 3% Inflation	Statutory Targets	Col 7+8	Col 9x4	Based on £150 per tonne	Col 10+11	Based on 3% Inflation
2004/05	292,000											
2005/06	296,480	43,411	253,069	238,438	14,631	£10.40	£18.00	£28.40	£7,187,154	£2,194,620	£9,381,774	£9.27
2006/07	301,050	48,940	252,109	224,245	27,864	£10.71	£21.00	£31.71	£7,994,886	£4,179,628	£12,174,514	£9.55
2007/08	305,711	49,919	255,791	205,329	50,462	£11.03	£24.00	£35.03	£8,961,231	£7,569,355	£16,530,586	£9.83
2008/09	310,465	50,918	259,547	181,685	77,862	£11.36	£27.00	£38.36	£9,957,362	£11,679,329	£21,636,691	£10.13
2009/10	315,314	51,936	263,378	153,310	110,068	£11.71	£30.00	£41.71	£10,984,262	£16,510,221	£27,494,483	£10.43
2010/11	320,260	52,975	267,286	136,245	131,041	£12.06	£35.00	£47.06	£12,577,516	£19,656,105	£32,233,622	£10.75
2011/12	325,306	54,034	271,271	119,180	152,091	£12.42	£35.00	£47.42	£12,863,187	£22,813,712	£35,676,899	£11.07
2012/13	330,452	55,115	275,337	102,116	173,221	£12.79	£35.00	£47.79	£13,158,537	£25,983,127	£39,141,664	£11.40
2013/14	335,701	56,217	279,484	97,735	181,749	£13.17	£35.00	£48.17	£13,463,956	£27,262,287	£40,726,243	£11.74
2014/15	341,055	57,341	283,713	93,355	190,358	£13.57	£35.00	£48.57	£13,779,851	£28,553,738	£42,333,589	£12.10
2015/16	346,516	58,488	288,028	88,975	199,053	£13.98	£35.00	£48.98	£14,106,646	£29,857,878	£43,964,524	£12.46
2016/17	352,086	59,658	292,428	84,594	207,834	£14.40	£35.00	£49.40	£14,444,786	£31,175,110	£45,619,896	£12.83
2017/18	357,768	60,851	296,917	80,214	216,703	£14.83	£35.00	£49.83	£14,794,736	£32,505,394	£47,300,130	£13.22
2018/19	363,563	62,068	301,495	75,833	225,662	£15.27	£35.00	£50.27	£15,156,981	£33,849,294	£49,006,275	£13.61
2019/20	369,475	63,310	306,165	71,452	234,713	£15.73	£35.00	£50.73	£15,532,029	£35,206,929	£50,738,958	£14.02

- Growth in MSW based on 2% p.a., as illustrated in Table D.
- BMW is set at 68% biodegradable. }
- Landfill allowances based on those provided by Government. } as illustrated
- Recycling/composting (BV 82a + 82b) remains at 20% of all household waste, taking account of growth rates in household waste. } in Table E
- Balance of waste after recycling/composting is landfilled at current contract rates plus annual inflation uplift of 3% p.a. The Landfill Tax escalator will peak at £35/tonne in 2010/11 and remain constant thereafter. }
- That the commercial (trade waste) element of MSW does not bear the full costs of any LATS fines as commercially it would be unrealistic to do so, given that private sector competitors don't need to account for LATS on face value it would seem sensible to sell off the trade waste business, but in such an event, the Government would still expect Local Authorities to account for such trade waste tonnages in its overall MSW tonnages).



Source: DEFRA Waste Implementation Programme New Technologies

**TREATMENT TECHNOLOGIES - OPTIONS APPRAISAL (APPROXIMATE/INDICATIVE VALUES)**

Technology	Annual Tonnage Throughput	Capital Expenditure	Operating Costs/Tonne	Staff Numbers	Advantages	Disadvantages
Autoclave	200,000	£12m	£45	25	<p>Sterilises waste - can be regarded as clean process, recovers dry recyclables that are clean. Produces a floc which can be used as compost and/or RDF, though other uses may develop. Flexible to waste growth changes as modular in construction. RDF capable of being burnt or gasified to extract energy. No known specific public concern/perception issues. Claims are that the process will meet recycling/composting recovery and landfill diversion targets.</p>	<p>Unproven technology on MSW in UK. Uncertainty of end markets for floc and therefore costs. Will not achieve landfill diversion without end market for floc, and therefore cannot be regarded as a total solution on its own.</p>
Pyrolysis and gasification	100,000	£20m	£60	35	<p>Public perceptions unknown, though believed to be more acceptable means of thermal treatment than incineration.</p>	<p>Unproven technology on MSW in UK, though some demonstrator plants planned. Not regarded as total solutions of themselves, but rather a possible sub component of MBT or autoclaving, to recover value from residuals i.e., RDF or floc.</p>
Anaerobics Digestion	100,000	£15m	£60	20	<p>No known adverse public perceptions</p>	<p>Rather like ATT, not regarded as a total solution, but a sub component of MBT and possibly autoclaving, to recover value from residuals. Unproven technology on MSW, though likely to work much better on already segregated rather than crude MSW.</p>

**TREATMENT TECHNOLOGIES - OPTIONS APPRAISAL (APPROXIMATE/INDICATIVE VALUES)**

Technology	Annual Tonnage Throughput	Capital Expenditure	Operating Costs/Tonne	Staff Numbers	Advantages	Disadvantages
Materials Reclamation Facility (MRF) (clean)	30,000	£3m	£60	30	No known adverse public perceptions, will assist in meeting recycling targets and can compliment other kerbside and bring site schemes	Not a total solution on its own and will not meet landfill diversion targets
Mechanical & Biological Treatment (MBT)	200,000	£20m	£50	30	Technology now being "proved" in UK on MSW. Flexible to waste growth changes as modular in construction. Recovers dry recyclables and produces a biological residue for composting and on RDF fraction. No known specific public concerns/perceptions. Will meet recycling/composting, recovery and landfill diversion targets provided residuals are composted/RDF and not landfilled.	Uncertainty of end markets for residual products of compost/RDF, and therefore costs. Will not achieve landfill diversion targets if residual products are landfilled, therefore cannot be regarded on its own as a total solution.
Incineration	200,000	£40m	£45	40	Proven technology including heat and power recovery. Replaces consumption of other fossil fuels when heat and power recovery is used. Meet all recovery and landfill diversion targets. However may require some front end recovery technology in order to enable Council's to meet recycling/composting targets. Can be regarded as a near total solution.	Public perception very poor, if not hostile and achieving planning likely to be difficult and lengthy. Requires longer term 25 contracts and expensive upfront capital costs over contract period. Inflexible to changes in waste quantities.

Interim Results of public responses to questionnaire contained in latest Environmental Supplement to the Community Pride Newspaper.

3 questions were posed for comment. Comments were framed as Strongly Agree, Agree, No Opinion, Disagree, Strongly Disagree.

- Question 1 - We will need to build a facility to separate different recyclable waste. Would you support the development of that sort of recycling facility?
- Question 2 - We will need to have sites for composting in the District. Would you support the development of compost works in the District?
- Question 3 - After increasing the amount of recycling and composting, would you support the development of facilities to process the rest of the waste by
- a) mechanical biological treatment;
  - b) incineration.

**NB** an explanation of mechanical biological treatment and incineration were given, with further information available on Council website.

To date, 208 replies have been received, producing the following results.

Question Number	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
1	394	122	1	3	1
2	348	139	15	9	1
3a	193	153	103	39	15
3b	161	151	86	61	45

Early interpretation shows clear support for separation technology followed by biological (composting) solution. It is no surprise that the highest levels of disagreement are the incineration solution, though not as extensive as expected.



## APPENDIX 14

Indicative capacity of waste treatment facilities required to deal with municipal waste from the Bradford district (assuming 1% growth in household waste pa).

Year	Household waste (tonnes)	Non household waste (tonnes)	Municipal waste (tonnes)	Recycling @ 21% household waste (tonnes)	Quantity of waste requiring processing (tonnes)	Landfill allowance in real terms (tonnes)	Net weight over allowances (tonnes)	1% Growth - Process capacity required to treat waste (tonnes)
2004/5	224,000	68,000	292,000					
2005/6	226,240	68,000	294,240	42,986	251,254	238,438	12,816	15,380
2006/7	228,502	68,000	296,502	47,986	248,517	224,245	24,272	29,126
2007/8	230,787	68,000	298,787	48,465	250,322	205,329	44,993	53,992
2008/9	233,095	68,000	301,095	48,950	252,145	181,685	70,460	84,552
2009/10	235,426	68,000	303,426	49,440	253,987	153,310	100,677	120,812
2010/11	237,781	68,000	305,781	49,934	255,847	136,245	119,602	143,522
2011/12	240,158	68,000	308,158	50,433	257,725	119,180	138,545	166,254
2012/13	242,560	68,000	310,560	50,938	259,622	102,116	157,506	189,008
2013/14	244,986	68,000	312,986	51,447	261,539	97,735	163,804	196,564
2014/15	247,435	68,000	315,435	51,961	263,474	93,355	170,119	204,143
2015/16	249,910	68,000	317,910	52,481	265,429	88,975	176,454	211,744
2016/17	252,409	68,000	320,409	53,006	267,403	84,594	182,809	219,371
2017/18	254,933	68,000	322,933	53,536	269,397	80,214	189,183	227,020
2018/19	257,482	68,000	325,482	54,071	271,411	75,833	195,578	234,694
2019/20	260,057	68,000	328,057	54,612	273,445	71,452	201,993	242,392
2029/30	287,265	68,000	355,265	60,326	294,939	71,452	223,487	268,185

### Assumptions

1. Recycling rate is 19% in 2005/6 and rises to 21% in 2006/7 and is sustained.
2. Non household waste quantities remain stable.
3. Treatment facilities result in 20% of output to landfill.

## APPENDIX 14

Indicative capacity at 2% growth pa.

Year	Household waste (tonnes)	Non household waste (tonnes)	Municipal waste (tonnes)	Recycling @ 21% household waste (tonnes)	Quantity of waste requiring processing (tonnes)	Landfill allowance in real terms (tonnes)	Net weight over allowances (tonnes)	2% Growth - Process capacity required to treat waste (tonnes)
2004/5	224,000	68,000	292,000					
2005/6	228,480	68,000	296,480	43,411	253,069	238,438	14,631	17,557
2006/7	233,050	68,000	301,050	48,940	252,109	224,245	27,864	33,437
2007/8	237,711	68,000	305,711	49,919	255,791	205,329	50,462	60,555
2008/9	242,465	68,000	310,465	50,918	259,547	181,685	77,862	93,435
2009/10	247,314	68,000	315,314	51,936	263,378	153,310	110,068	132,082
2010/11	252,260	68,000	320,260	52,975	267,286	136,245	131,041	157,249
2011/12	257,306	68,000	325,306	54,034	271,271	119,180	152,091	182,510
2012/13	262,452	68,000	330,452	55,115	275,337	102,116	173,221	207,865
2013/14	267,701	68,000	335,701	56,217	279,484	97,735	181,749	218,098
2014/15	273,055	68,000	341,055	57,341	283,713	93,355	190,358	228,430
2015/16	278,516	68,000	346,516	58,488	288,028	88,975	199,053	238,863
2016/17	284,086	68,000	352,086	59,658	292,428	84,594	207,834	249,401
2017/18	289,768	68,000	357,768	60,851	296,917	80,214	216,703	260,043
2018/19	295,563	68,000	363,563	62,068	301,495	75,833	225,662	270,794
2019/20	301,475	68,000	369,475	63,310	306,165	71,452	234,713	281,655
2029/30	367,496	68,000	435,496	77,174	358,322	71,452	286,870	344,244

## APPENDIX 14

Indicative capacity at 3% growth pa.

Year	Household waste (tonnes)	Non household waste (tonnes)	Municipal waste (tonnes)	Recycling @ 21% household waste (tonnes)	Quantity of waste requiring processing (tonnes)	Landfill allowance in real terms (tonnes)	Net weight over allowances (tonnes)	3% Growth - Process capacity required to treat waste (tonnes)
2004/5	224,000	68,000	292,000					
2005/6	230,720	68,000	298,720	43,837	254,883	238,438	16,445	19,734
2006/7	237,642	68,000	305,642	49,905	255,737	224,245	31,492	37,790
2007/8	244,771	68,000	312,771	51,402	261,369	205,329	56,040	67,248
2008/9	252,114	68,000	320,114	52,944	267,170	181,685	85,485	102,582
2009/10	259,677	68,000	327,677	54,532	273,145	153,310	119,835	143,802
2010/11	267,468	68,000	335,468	56,168	279,299	136,245	143,054	171,665
2011/12	275,492	68,000	343,492	57,853	285,638	119,180	166,458	199,750
2012/13	283,756	68,000	351,756	59,589	292,168	102,116	190,052	228,062
2013/14	292,269	68,000	360,269	61,377	298,893	97,735	201,158	241,389
2014/15	301,037	68,000	369,037	63,218	305,819	93,355	212,464	254,957
2015/16	310,068	68,000	378,068	65,114	312,954	88,975	223,979	268,775
2016/17	319,370	68,000	387,370	67,068	320,303	84,594	235,709	282,850
2017/18	328,952	68,000	396,952	69,080	327,872	80,214	247,658	297,189
2018/19	338,820	68,000	406,820	71,152	335,668	75,833	259,835	311,802
2019/20	348,985	68,000	416,985	73,287	343,698	71,452	272,246	326,695
2029/30	469,006	68,000	537,006	98,491	438,515	71,452	367,063	440,476

Contribution to recycling and value recovery targets from the proposed waste treatment capacity (assuming 1% growth in household waste per annum).

Year	Outputs from treatment plant					Contribution to WS 2000				
	Household waste (tonnes)	Non household waste (tonnes)	Municipal waste (tonnes)	Recycling @ 21% household waste (tonnes)	Process capacity required to treat waste (tonnes)	15% recycling or composting (tonnes)	65% value recovery (tonnes)	20% residuals to landfill (tonnes)	1% Growth - Predicted recycling rate (%)	1% Growth - Predicted recovery rate (%)
2004/5	224,000	68,000	292,000							
2005/6	226,240	68,000	294,240	42,986	15,380	2,307	9,997	3,076	20	19
2006/7	228,502	68,000	296,502	47,986	29,126	4,369	18,932	5,825	23	24
2007/8	230,787	68,000	298,787	48,465	53,992	8,099	35,095	10,798	25	31
2008/9	233,095	68,000	301,095	48,950	84,552	12,683	54,959	16,910	26	39
2009/10	235,426	68,000	303,426	49,440	120,812	18,122	78,528	24,162	29	48
2010/11	237,781	68,000	305,781	49,934	143,522	21,528	93,289	28,704	30	54
2011/12	240,158	68,000	308,158	50,433	166,254	24,938	108,065	33,251	31	60
2012/13	242,560	68,000	310,560	50,938	189,008	28,351	122,855	37,802	33	65
2013/14	244,986	68,000	312,986	51,447	196,564	29,485	127,767	39,313	33	67
2014/15	247,435	68,000	315,435	51,961	204,143	30,621	132,693	40,829	33	68
2015/16	249,910	68,000	317,910	52,481	211,744	31,762	137,634	42,349	34	70
2016/17	252,409	68,000	320,409	53,006	219,371	32,906	142,591	43,874	34	71
2017/18	254,933	68,000	322,933	53,536	227,020	34,053	147,563	45,404	34	73
2018/19	257,482	68,000	325,482	54,071	234,694	35,204	152,551	46,939	35	74
2019/20	260,057	68,000	328,057	54,612	242,392	36,359	157,555	48,478	35	76
2029/30	287,265	68,000	355,265	60,326	268,185	40,228	174,320	53,637	35	77

Contribution at 2% growth pa.

Year	Outputs from treatment plant					Contribution to WS 2000				
	Household waste (tonnes)	Non household waste (tonnes)	Municipal waste (tonnes)	Recycling @ 21% household waste (tonnes)	Process capacity required to treat waste (tonnes)	15% recycling or composting (tonnes)	65% value recovery (tonnes)	20% residuals to landfill (tonnes)	2% Growth - Predicted recycling rate (%)	2% Growth - Predicted recovery rate (%)
2004/5	224,000	68,000	292,000							
2005/6	228,480	68,000	296,480	43,411	17,557	2,634	11,412	3,511	20	19
2006/7	233,050	68,000	301,050	48,940	33,437	5,016	21,734	6,687	23	25
2007/8	237,711	68,000	305,711	49,919	60,555	9,083	39,361	12,111	25	32
2008/9	242,465	68,000	310,465	50,918	93,435	14,015	60,733	18,687	27	40
2009/10	247,314	68,000	315,314	51,936	132,082	19,812	85,853	26,416	29	50
2010/11	252,260	68,000	320,260	52,975	157,249	23,587	102,212	31,450	30	56
2011/12	257,306	68,000	325,306	54,034	182,510	27,376	118,631	36,502	32	61
2012/13	262,452	68,000	330,452	55,115	207,865	31,180	135,112	41,573	33	67
2013/14	267,701	68,000	335,701	56,217	218,098	32,715	141,764	43,620	33	69
2014/15	273,055	68,000	341,055	57,341	228,430	34,264	148,479	45,686	34	70
2015/16	278,516	68,000	346,516	58,488	238,863	35,829	155,261	47,773	34	72
2016/17	284,086	68,000	352,086	59,658	249,401	37,410	162,111	49,880	34	74
2017/18	289,768	68,000	357,768	60,851	260,043	39,006	169,028	52,009	34	75
2018/19	295,563	68,000	363,563	62,068	270,794	40,619	176,016	54,159	35	77
2019/20	301,475	68,000	369,475	63,310	281,655	42,248	183,076	56,331	35	78
2029/30	367,496	68,000	435,496	77,174	344,244	51,637	223,758	68,849	35	81

Contribution at 3% growth pa.

Year	Outputs from treatment plant					Contribution to WS 2000				
	Household waste (tonnes)	Non household waste (tonnes)	Municipal waste (tonnes)	Recycling @ 21% household waste (tonnes)	Process capacity required to treat waste (tonnes)	15% recycling or composting (tonnes)	20% value residuals (tonnes)	3% Growth - Predicted recycling rate (%)	3% Growth - Predicted recovery rate (%)	
2004/5	224,000	68,000	292,000							
2005/6	230,720	68,000	298,720	43,837	19,734	2,960	12,827	3,947	20	20
2006/7	237,642	68,000	305,642	49,905	37,790	5,669	24,564	7,558	23	26
2007/8	244,771	68,000	312,771	51,402	67,248	10,087	43,711	13,450	25	34
2008/9	252,114	68,000	320,114	52,944	102,582	15,387	66,678	20,516	27	42
2009/10	259,677	68,000	327,677	54,532	143,802	21,570	93,471	28,760	29	52
2010/11	267,468	68,000	335,468	56,168	171,665	25,750	111,583	34,333	31	58
2011/12	275,492	68,000	343,492	57,853	199,750	29,963	129,838	39,950	32	63
2012/13	283,756	68,000	351,756	59,589	228,062	34,209	148,240	45,612	33	69
2013/14	292,269	68,000	360,269	61,377	241,389	36,208	156,903	48,278	33	71
2014/15	301,037	68,000	369,037	63,218	254,957	38,244	165,722	50,991	34	72
2015/16	310,068	68,000	378,068	65,114	268,775	40,316	174,704	53,755	34	74
2016/17	319,370	68,000	387,370	67,068	282,850	42,428	183,853	56,570	34	76
2017/18	328,952	68,000	396,952	69,080	297,189	44,578	193,173	59,438	35	77
2018/19	338,820	68,000	406,820	71,152	311,802	46,770	202,671	62,360	35	79
2019/20	348,985	68,000	416,985	73,287	326,695	49,004	212,352	65,339	35	80
2029/30	469,006	68,000	537,006	98,491	440,476	66,071	286,309	88,095	35	84