

Plymouth City Council Municipal Waste Management Strategy 2007-2030

PCC MWMS Headline Strategy
Final Report April 2007



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recycle
for Plymouth



Foreword by Cllr. Pattison and Cllr. Gordon Plymouth City Council



Plymouth is undergoing a renaissance with an ambitious programme of development taking place before our eyes. Not since the post-war regeneration years has the city seen so many cranes operating across the skyline.

Now, as our city undergoes new regeneration, we need to find modern and efficient waste management systems that meet the city's needs and which allows us to achieve the Mackay vision as well as providing a clean and sustainable environment.

This Municipal Waste Management Strategy, 2007-30, provides a road-map for the efficient management of Plymouth's municipal waste. The strategy is based on the concept of optimised recycling and composting with the residual waste having energy recovered from it.



By optimising the amount we recycle and compost we can reduce our dependency on landfill. It will make efficient use of the scarce resources the planet can provide and ensure we meet our own needs and those of our children, grandchildren and future generations.

Recovering energy from waste enables Plymouth to generate some of the electricity we use from renewable sources. This will reduce the amount of fossil fuels we use and reduce the amount of greenhouse gases we produce as a city.

This strategy provides for a modern and cost effective waste management solution for Plymouth's municipal waste. Continuing as we are is not an option – it is too costly in both monetary and in environmental terms. Over the past four years the Council has forged a partnership with the people of Plymouth that has seen us reduce the amount of waste we create whilst the national average has risen. And we are recycling more now than ever before. Over £1million has been invested this year in a programme to ensure every household has wheelie bins. More than £30 million has been committed over the next seven years for the management of waste. Now, with our citizens' continued help, we can take that partnership even further. This Strategy and our Recycle for Plymouth campaign will optimise our recycling and composting and our overall waste management. In short it will provide a clean and sustainable environment, fit for one of the finest, most vibrant waterfront cities and fit for our planet.

Cllr. Chris Pattison, Deputy Leader

Cllr. Ian Gordon, Lead Member, Recycling & Waste Management

April 2007

Acknowledgment

Plymouth City Council has collaborated closely with Entec (UK) Ltd in producing the Municipal Waste Management Strategy (MWMS) 2007 - 2030 (Final Report) and the five supplementary reports which accompany it, entitled:

- Baseline Assessment Report
- Key Drivers Report
- Consultation Report
- Options Appraisal Report
- Waste Treatment Technologies Report

The suite of documents form the MWMS for Plymouth and the Council acknowledges the work undertaken by Entec (UK) Ltd in the development and production of the full suite of documentation.

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1. What is a Waste Strategy?

1.1 Introduction

In November 2005 Defra published a guidance document entitled 'A Practice Guide for the Development of Municipal Waste Management Strategies' (referred to as 'the guidance document'). The guidance document forms current guidance and best practice to assist local authorities in the production of their waste management strategies. Consequently, the guidance document has been used as a guide in the construction of Plymouth's Municipal Waste Management Strategy (MWMS).

A MWMS should answer the following questions:

- Where are we today?
- Where do we want to get to and when?
- What do we need to get there?

In addition, the strategy should provide:

- 'A route map' showing how objectives will be achieved; with
- Further detail, especially for the short term, in Action Plans.

1.2 Why Do We Need This Document?

Section 32(1) to (7) of the Waste and Emissions Trading Act 2003 requires local authorities in all two-tier areas to produce a joint municipal waste management strategy. As a unitary authority Plymouth City Council is not obliged to produce a strategy, however the Government:

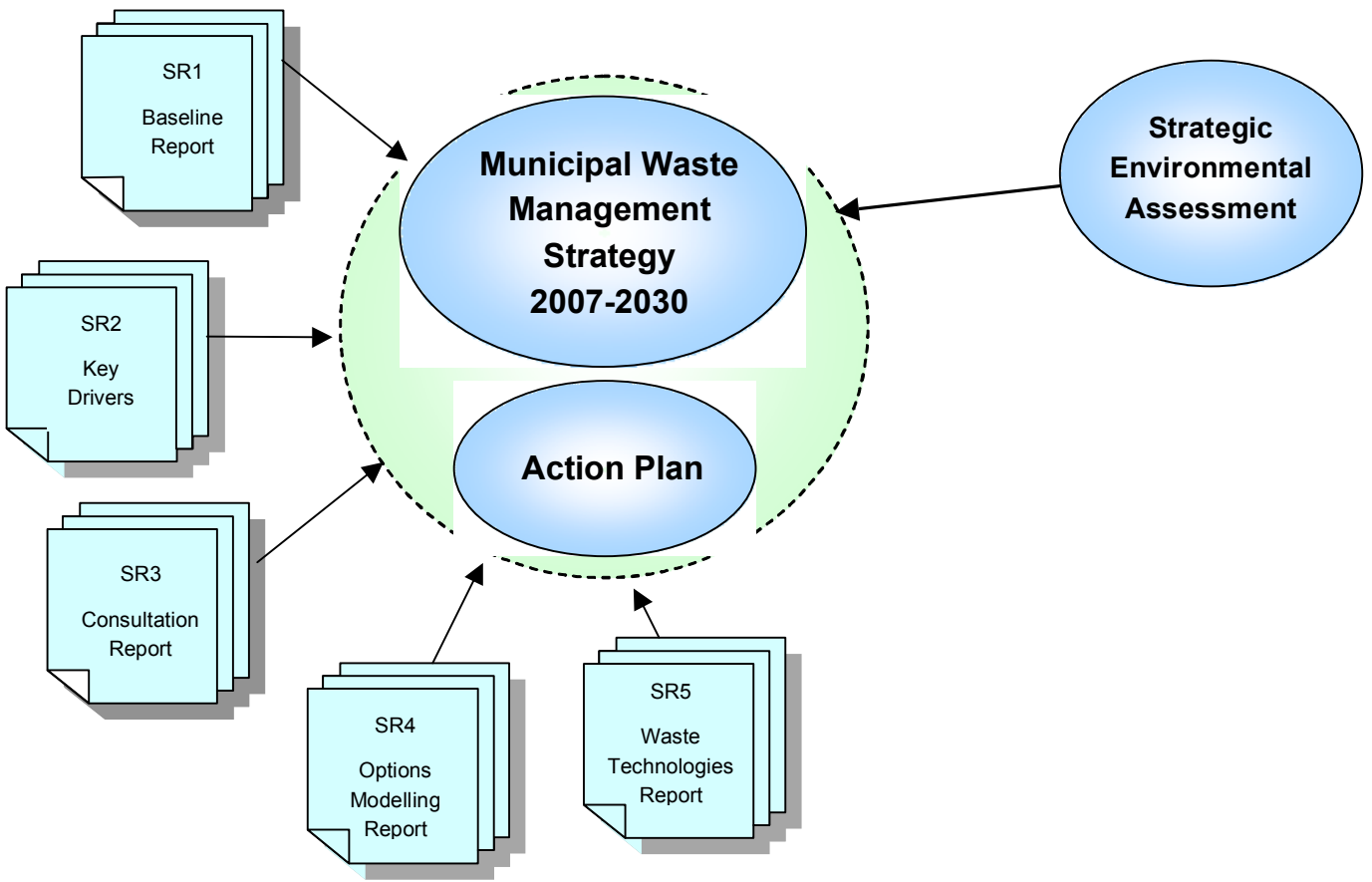
'...strongly encourages all authorities, including unitary authorities – to produce, or contribute to, a municipal waste management strategy or adopt an equivalent approach'

In addition, there is a need to have an up-to-date strategy that reflects the new guidance on waste strategies (published in 2006). Writing a strategy now means that we can ensure that it is in line with the new guidance. This new strategy will guide the council to increase recycling and composting and reduce the amount of waste going to landfill.

1.3 Format of This Strategy

This strategy document has been written with reference to the format suggested in the guidance document issued by Defra. The MWMS for Plymouth City Council comprises a number of documents. This ‘Strategy’ provides a summary of these documents and includes the policies, aims, objectives and targets for the management of waste within Plymouth for the period 2007-2030. Additional details and technical information also form part of the Strategy and have been provided as supporting documents (referred to as ‘Supplementary Reports’).

Figure 1.1 The Structure of the Plymouth Municipal Waste Management Strategy 2007-2030 and Supporting Documents



1.4 Documents in Support of the Plymouth MWMS

Five 'Supplementary Reports' have been produced in support of this Strategy. These documents are:

- Supplementary Report 1 - Baseline Report
- Supplementary Report 2 - Key Drivers Report
- Supplementary Report 3 - Stakeholder Consultation Summary Report
- Supplementary Report 4 - Strategic Options Modelling Report
- Supplementary Report 5 - Waste Treatment Technologies Report

This Strategy presents a summary appraisal of Strategic Options according to technical performance and projected cost. The Strategy should therefore be read in parallel to the Strategic Environmental Assessment (SEA) that was undertaken by the environmental consultancy 'Land Use Consultants' (LUC). The SEA appraises the environmental impact of each of the Strategic Options considered in this Strategy.

1.5 Intention of this Strategy

This Strategy is intended as a guiding document for the future management of waste within Plymouth, and sets out 'how' waste will be managed over the period 2007 - 2030. The guidance outlined in this document is at a strategic level. This document does not consider specific locations of future waste management infrastructure. A separate document, the Plymouth City Council Waste Development Plan Document aims to address the issue of potential waste management sites.

*'This document aims to identify **how** Plymouth intends to manage its waste, **not where** it will be managed'*

2. Background Information on Plymouth

2.1 Introduction

A thorough understanding of current waste arisings and management arrangements is required in order to develop future strategies. Factors, such as the socio-demographics, local and regional planning policies and statutory and legislative drivers, will determine the viability and nature of different waste management solutions. This Chapter summarises the background conditions and potential future developments that will influence the management of municipal waste in Plymouth.

2.2 Population and Housing

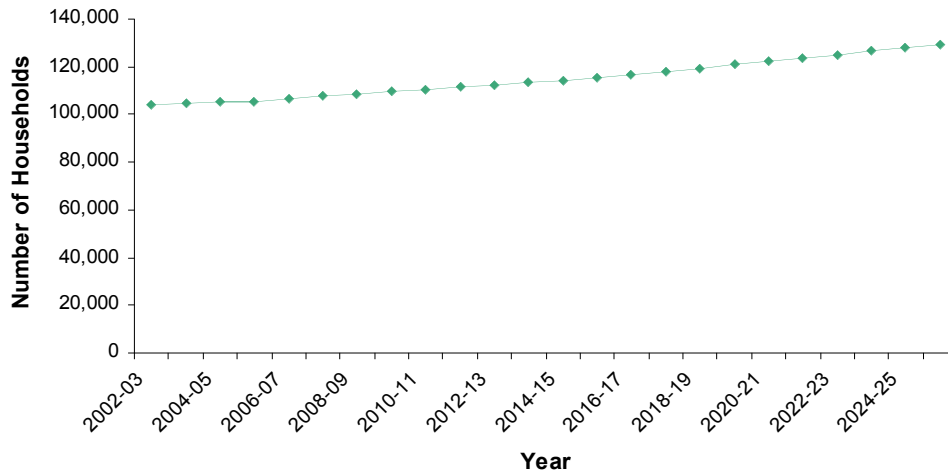
The City of Plymouth lies between Cornwall County to the west and Devon County to the north and east, and is bordered by Dartmoor National Park to the north and Plymouth Harbour to the south. With a population of approximately 244,400¹ residing in approximately 109,474² households, the City of Plymouth is the largest city on the south-west coast of England.

The 2020 'Vision for Plymouth', launched by the internationally renowned architect David Mackay, and fully backed by Plymouth City Council is set to see areas of the city centre demolished, redesigned and rebuilt by the year 2020. The 2020 vision outlines significant growth in both population and housing numbers for Plymouth over the next 20 years. This regeneration and growth will place large pressures on all public services, including waste management. Figure 2.1 illustrates the growth in housing as outlined in the 2020 'Vision for Plymouth'.

¹Source: Office of National Statistics mid year 2004 population estimate

²Source: Plymouth City Council Housing Flow Reconciliation 2004/5

Figure 2.1 Predicted Growth in Housing Numbers



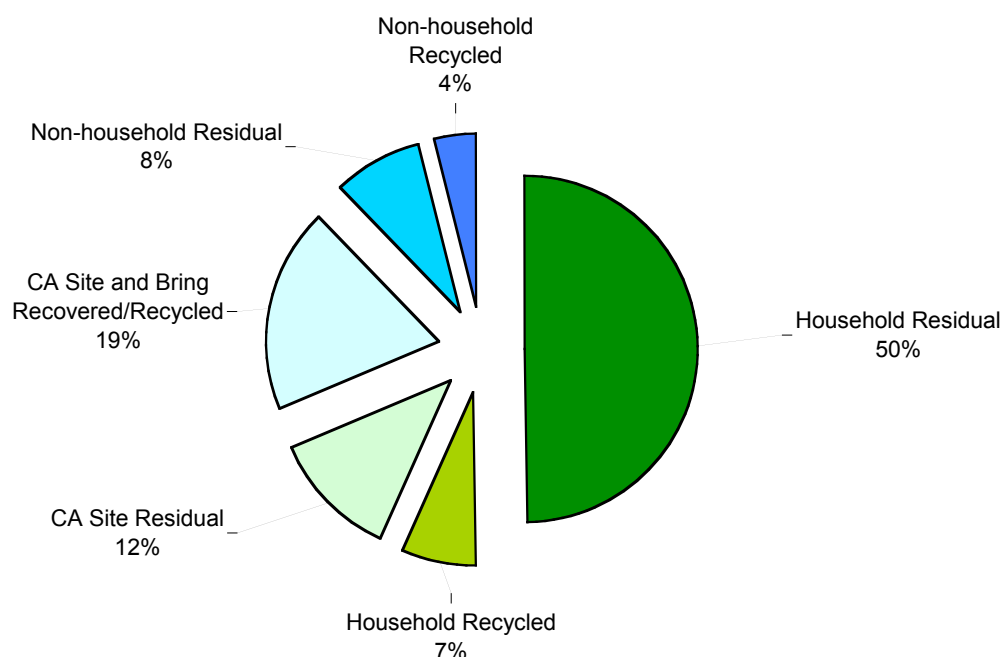
2.3 Municipal Waste Arisings

2.3.1 Current Arisings

This strategy is focused on the management of *municipal* waste; that is, waste under the control of Plymouth City Council. This comprises of household waste, civic amenity site waste, education facility waste, street sweepings and gully emptying, parks and gardens waste, fly-tipped waste, bring facility recyclables and any commercial or industrial waste collected by the council.

In 2005/6 Plymouth City Council collected and disposed of 162,447 tonnes of municipal solid waste (MSW), of which 129,103 tonnes was classified as household waste. Figure 2.2 presents a further breakdown of Plymouth’s waste arisings for 2005/6.

Figure 2.2 Breakdown of Municipal Waste Arisings in Plymouth (2005/6)



Household waste can be defined as all municipal waste excluding commercial and industrial waste, collected by a Local Authority. Household waste therefore includes all waste and recyclables collected directly from domestic properties, as well as waste received at the household waste recycling centre and at bring facilities (with the exception of CA site inert waste).

The Best Value Performance Indicator (BVPI) 84 (kilograms of household waste collected per head per year) for Plymouth in 2004/5 was recorded as 530 kg per person per year. This compares with the national average of 444 kg per person per year³. This suggests that Plymouth has a significantly larger than average quantity of waste collected per head compared to the national average.

2.3.2 Future Waste Arisings Projections

Waste growth projections have been modelled with regard to historical waste data, regional and national projections and the anticipated growth in household numbers in Plymouth. Figure 2.3 illustrates three potential waste growth curves for the City to 2030/31:

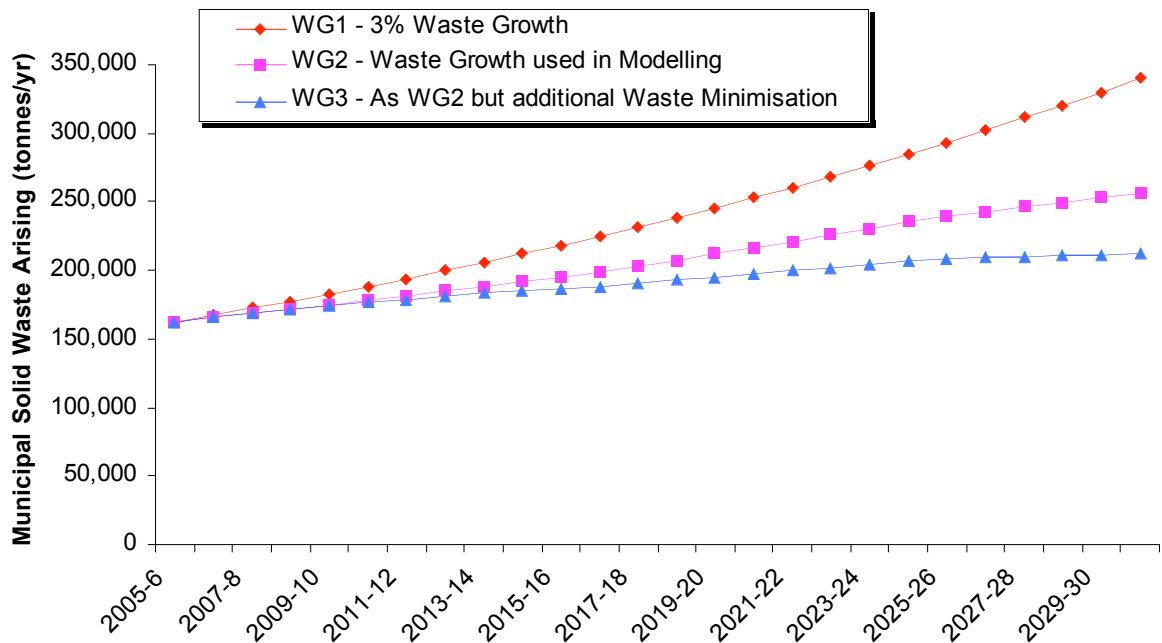
1. A compounded linear waste growth of 3% per annum for MSW in Plymouth
2. A compounded waste growth of 1% per annum at the household level, in addition to the forecast growth in household numbers (growth rate used in modelling exercise)

³ The average figure is taken from the mean of BVPI 84 from all Local Authorities in the UK - Audit Commission BVPI Analysis 2004/5

3. An initial growth of 1% at the household level, decreasing to zero growth at the household level by 2016-17 due to increased waste minimisation. Waste arisings continue to grow with increasing household numbers.

The comparison of these curves clearly shows the impact of waste minimisation activity on future waste arisings over the medium to long term.

Figure 2.3 Projected Growth Scenarios in Municipal Waste Arisings in Plymouth

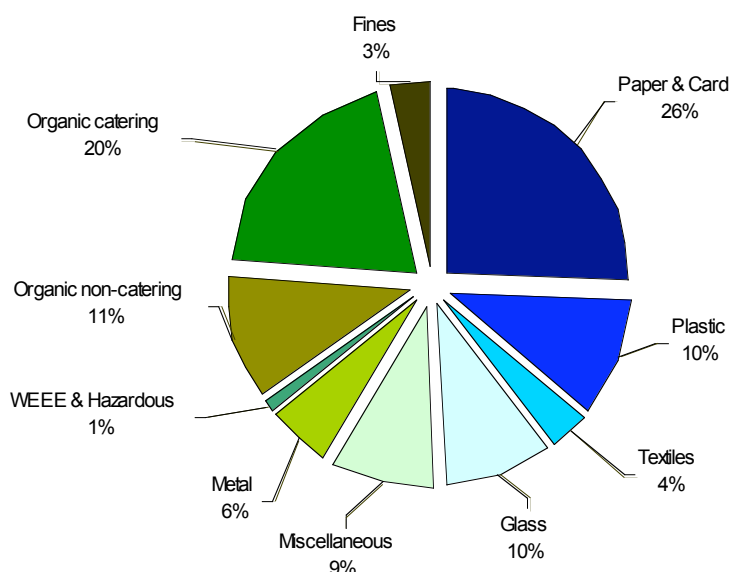


2.4 Waste Composition

2.4.1 Kerbside Collected Household Waste

A waste composition modelling exercise was undertaken to gain an understanding of what is in the average bin in Plymouth. Details of the modelling exercise are in Supplementary Report 1 - Baseline Report, and a summary of the primary material composition is presented in Figure 2.4.

Figure 2.4 Modelled Kerbside Waste Composition for Plymouth



A significant proportion (26%) of the kerbside collected waste stream in the modelled composition consists of paper and card. Putrescible waste, comprising garden and kitchen waste accounts for 31% of the waste stream.

2.5 Current Recycling, Composting and Residual Disposal

In 2005/6 Plymouth recycled and composted 22.3% of household waste (BVPI 82a and 82b). This narrowly missed the statutory recycling target of 24%⁴. All remaining residual household waste was disposed of in landfill. A total of 30.1% of Municipal waste was recycled in Plymouth in 2005/6, with the remaining 69.9% disposed of to landfill. Table 2.1 presents the Best Value Performance Indicators (BVPI) for Plymouth, a National Average and the average Unitary Authority for 2004/5⁵. The table also presents Plymouth's BVPI data for 2005/6.

⁴ The 2005/6 Statutory performance standards for recycling and composting were set by Schedule 8 (Article 10) of the Local Government (Best Value) Performance Indicators and Performance Standards (England) Order 2005

⁵ 2004/5 is the most recently reported and audited data for BVPI's. The data presented for Plymouth 2005/6 is derived from the data submitted to Defra by Plymouth, however similar data for the remaining authorities in England have are yet to be officially audited

Improvements in best value performance indicators can be seen with increases in recycling (BVPI 82a) and composting (BVPI 82b), and a decrease in the percentage of waste sent to landfill (BVPI 82d) from 2004/5 to 2005/6. The tonnage of waste collected per head in 2005/6 was less than the reported 2004/5 figure suggesting that waste minimisation initiatives have been successful.

Table 2.1 Best Value Performance Indicator Data 2004/5

BVPI	Indicator Description	BVPI 2004/5			Updated Plymouth BVPI's 2005/6
		Plymouth City	National Average	Unitary Authority Average	
BV82a	% household waste recycled	12.4%	15.2%	14.1%	16.8%
BV82b	% household waste composted	3.7%	6.5%	6.5%	5.5%
BV82c	% household waste used to recover energy sources	0.0%	11.8%	11.2%	0.0%
BV82d	% household waste landfilled	83.8%	66.8%	68.2%	77.7%
BV84	Kilograms household waste collected per head	530.0	444.5	517.0	519.0
BV86	Cost of household waste collection per household	£52.7	£43.4	£42.3	£48.9
BV87	Cost of waste disposal per tonne municipal waste	£23.5	£42.0	£41.7	£28.4
BV91	% of residents served by kerbside recycling	94.0%	91.1%	89.7%	97.6%
BV199B	Local street and environmental cleanliness	14.7%	18.2%	18.5%	15.3%

2.6 Household Waste Collection Systems

2.6.1 Introduction

Plymouth City Council currently operates 3 different kerbside collection schemes for household waste. The split of houses on each scheme reflects the topography, housing type and the capacity to store waste receptacles at each household. The three schemes are detailed in the following sections.

2.6.2 Twin Bin Scheme

Approximately 50% of households in the city receive a twin bin waste collection service. Households on this scheme are provided with a 240 litre wheeled bin for refuse which is collected on a weekly basis, and a 240 litre wheeled bin for dry recyclables which is collected fortnightly.

2.6.3 Bag and Box Scheme

Approximately 40% of households in the city remain on a weekly black sack collection for residual waste and an additional fortnightly dry recyclables collection in either a 50 litre plastic box or 90 litre reusable bags. These households are primarily those without the capacity to store wheeled bins.

2.6.4 High Rise Properties

It is estimated that approximately 10% of properties in the city are high rise properties. These have a waste collection service in which residual waste is collected weekly in communal 1100 litre bins and dry recyclables are collected fortnightly with each property receiving a 50 litre reusable bag.

Table 2.2 presents a summary of the kerbside collection schemes currently in operation in Plymouth.

Table 2.2 Waste Collection Scheme Details

Waste Stream	Collection Details	Waste Collection Scheme		
		Twin Bin Scheme	Bag and Box Scheme	Communal Properties
	Scheme Coverage	Approx. 50% of City c.52,800 H'holds	Approx. 40% of City c.42,400 H'holds	Approx 10% of City c.10, 500 H'holds
Residual Waste	Collection Frequency	Weekly	Weekly	Weekly
	Collection Containers	240 ltr wheeled bin	Plastic sacks (no limit)	Communal 1100 ltr bins
Dry Recyclables	Collection Frequency	Fortnightly	Fortnightly	Fortnightly
	Collection Containers	240 ltr wheeled bin	50 ltr box or 90 ltr reusable bag	50 ltr reusable bags
Garden Waste	Collection Frequency	Fortnightly	None at present	None at present
	Collection Containers	2 x 90 ltr reusable bags		

2.6.5 Kerbside Dry Recyclables - Targeted Materials

Table 2.3 presents the materials that are targeted in the dry recyclables scheme. All schemes (twin bin, bag and box and high rise) collected the same materials. The collection is ‘co-mingled’ with all mixed material going to the materials recovery facility (MRF) at Chelson Meadow for sorting and bulking for onward transportation to materials re-processors.

Table 2.3 Materials Collected in all Kerbside Dry Recyclables Schemes

Primary Material Category	Detailed Category
Paper	Newspaper, magazines, other recyclable paper, envelopes
Card	Cardboard packaging, corrugated card, other card
Plastics	Plastic bottles, plastic containers
Metal Cans	Ferrous and non-ferrous food and drinks cans, tin foil

2.6.6 Garden Waste Collection

A free voluntary garden waste collection service was trialled in 2005 for approximately 25,000 households who were on the twin bin scheme. The trial was deemed a success by the council who have expanded the scheme in 2006 to cover the remainder of properties who receive the wheeled bin service. Households opting into the free garden waste scheme are provided with two 90 litre reusable bags which are collected fortnightly. Those properties on the twin bin service are now prohibited from disposing of garden waste in their residual bin and have to use the garden waste service, home composting or the CARC.

2.6.7 Civic Amenity Recycling Centres

Plymouth City Council operates two Civic Amenity Recycling Centres (CARC) where residents of the City can deposit household waste. They are located at Chelson Meadow and Weston Mill. The council provides separate areas/containers at both CARC’s where residents can deposit the various materials for recycling. The Chelson Meadow site opening hours are 8.00 am to 8.00 pm during the summer months (March to October) and 8.00 am to 6.30 pm during the winter (November to February). The Weston Mill CARC daily opening hours are 9.00 am to 6.00 pm throughout the year.

In 1997/98, the year before Plymouth became a unitary authority, the combined total of waste received at the Chelson Meadow and Weston Mill Civic Amenity Recycling Centres was 33,995 tonnes. By the end of the 2001/02 period the figure had risen by 87% to 63,715 tonnes. A Van Permit System was introduced at Chelson Meadow CARC in November 2002 in an attempt to limit the suspected abuse of the centres by commercial and trade waste users. A ban on vans using the Weston Mill site was introduced at the same time. The permit allows Plymouth residents 12 visits per year, delivering domestic waste generated in the

permit holder's household only. The permit is not issued to anyone residing outside of the Plymouth area.

The Van permit system has had a large influence on reducing the quantity of waste deposited at the CARC by discouraging trade waste abuse and only accepting waste from residents of Plymouth. The reduction in waste arisings has saving the council large sums of money in avoided landfill tax.

2.7 Waste Management Infrastructure

2.7.1 Overview

As a Unitary Authority, Plymouth City Council is responsible for the collection and disposal of all Municipal Solid Waste arising in the City. As a result, Plymouth City Council currently own and operate a number of facilities to deal with the City's waste. This section summarises the current waste management infrastructure.

The City Council's Waste and Street Services has responsibility for all waste management operations including; collection and disposal of municipal solid waste, the operation of 60⁶ 'bring' bank sites, two Civic Amenity Recycling Centres (CARCs), a Materials Recovery Facility (MRF) and the Chelson Meadow landfill site. The site at Chelson Meadow is the location for one of the two CARCs, the MRF (opened in April 2000), the green waste composting and wood chipping facility, and a facility for bulking recyclables ready for onward transportation and re-processing.

⁶ The City Council has recently increased the number of Bring Bank sites in the city from 50 to 60

Table 2.4 Summary of Plymouth’s Current and Planned Waste Infrastructure

Element of Infrastructure	Detail	
Waste Collection Vehicles		
Refuse Collection	Number of Vehicles	14
Dry Recyclables	Number of Vehicles	7
Organic Collection	Number of Vehicles	2.5
Materials Recovery Facility (MRF)	Number	1 (built in 2000)
	Location	Chelson Meadow, Plymstock
Current Transfer Stations	Number	1
		Prince Rock Depot, Macadam Road, Prince Rock, Plymouth
Future Transfer Stations	Number	1 (operational 2008)
	Location	Chelson Meadow, Plymstock
Civic Amenity Sites	Number	2
	Location	Chelson Meadow, Plymstock Weston Mill, Weston Mill Road, Plymouth
Bring Bank Sites	Number	60 bring sites with a total of 111 individual bring banks
	Location Materials Collected	Presented in ‘Baseline Report’
Composting Facility	Number	1
	Location	Chelson Meadow, Plymstock
Current Landfill	Location	Chelson Meadow, Plymstock
	Life span	To close March 2008
Future Landfill	Location	Lean Quarry near Liskeard
	Life span	7 year contract. Commencing Spring 2008, with the option to extend
Residual treatment facilities	Number/type	None at present

2.7.2 Current Landfill Capacity

The current Plymouth landfill site at Chelson Meadow is due for closure on 31st March 2008. As a result, the City Council have signed a seven year contract with Viridor Waste Management to take residual waste to a landfill site located at Lean Quarry near Liskeard.

A waste transfer station (WTS) is to be built at the Chelson Meadow site to allow bulking of waste into larger capacity vehicles before transportation to the new landfill site at Lean Quarry. Viridor has been selected to operate and manage the new WTS as well as provide and manage the haulage operation to take the waste from the city to the site at Lean Quarry, near Liskeard.

2.8 Current Waste Management Drivers

2.8.1 Future Waste Volumes

Section 2.2 of this Strategy details predicted growth in population and housing numbers expected for Plymouth for the period covered in this Strategy. In addition to the significant growth in population and housing numbers, the amount of waste produced at the individual household level is increasing. Until recently, it has been estimated that the tonnage of municipal waste is increasing at a rate of approximately 3% each year at a national level. Therefore, the combination of waste growth at each household, and an increase in the number of households in the City, is set to place huge pressures on waste management infrastructure.

The reasons for increases in waste arisings are many and complex, but increasing prosperity amongst consumers, more heavily packaged and disposable goods and an increase in single-person households are all thought to contribute to the upward trend.

The combination of growth in housing numbers and the national trend of waste growth at the household level could see the municipal waste arisings in Plymouth increase considerably for the period covered in this strategy. The implications of waste growth have been a major driver in the composition of this strategy and the resulting objectives and policies have been developed with waste minimisation as a central theme.

2.8.2 Landfill Voidspace and Residual Treatment Availability

Historically waste has been disposed of in large holes in the ground created by mineral excavation and quarrying. As national waste production has increased, the availability of suitable landfill sites has decreased. As a result, landfill 'voidspace' has become a scarce resource throughout the UK and especially in the South West region. In the past, Plymouth City Council has relied almost exclusively on the Landfill Site at Chelson Meadow for the disposal of residual municipal waste. With the closure of the Chelson Meadow site due in March 2008, the Council secured a medium term contract with Viridor Waste Management for the disposal of residual waste at their landfill site at Lean Quarry near Liskeard. This landfill site is located approximately 20 miles outside of the City therefore requiring a 40 mile round trip for each bulked load of waste (bulking is to take place at a new waste transfer station located at the Chelson Meadow site), incurring additional costs (transfer loading and transport costs) and associated environmental impacts.

As landfill voidspace in the South West is depleting, authorities are being forced to transport waste further distances to utilise what landfill capacity remains. The alternative is to use one of a variety of more sustainable treatment or disposal methods, ideally located closer to the waste source. There is currently little available infrastructure in the region for residual treatment, although procurement of a number of facilities are currently on-going. Reliance on the sale of spare capacity at local treatment/disposal facilities is a high risk strategy. For the

City to secure future waste treatment capacity a dedicated Plymouth facility, or shared sub-regional facility, is required.

2.8.3 Waste Strategy 2000

In response to the demands of the European Directives on waste, in particular the EU Landfill Directive, the UK Government produced a National Waste Strategy in May 2000 which sets out its strategic views on the future for waste management in England and Wales. The resulting document, referred to as WS2000, has set the tone for the management of waste within the UK. Waste Strategy 2000 set national targets for recycling, composting, recovery and diversion of industrial and commercial waste away from landfill (recycling and recovery targets are discussed in more detail in the following sections). The Strategy requires that decisions on the type of waste management technique to use, including decisions on suitable sites for treatment and disposal, should be based on a local assessment of the Best Practicable Environmental Option (BPEO). This requires managers to take decisions which minimise damage to the environment as a whole, at an acceptable cost in the long and short term. It is based on three key considerations: the waste hierarchy, the proximity principle, and self sufficiency. Whilst the application of BPEO has been replaced with the Strategic Environmental Assessment (SEA) process in the recent 2005 review of Waste Strategy 2000, the core underlying principles of WS2000 are still applicable to future waste management.

2.8.4 Review of Waste Strategy 2000

In 2005 the Government started a review of its 20 year waste strategy (Waste Strategy 2000). The review provides an opportunity to reflect on existing policies and delivery mechanisms, including those arising from the Government's response to the recommendations made in the Prime Minister's Strategy Unit report on waste⁷, and to consult on proposals for a revised waste strategy.

The overall objective of a revised waste strategy for England is to further reduce the impacts of waste management on the environment, whilst developing the economic benefits of using waste as a resource, and meeting European obligations. To achieve this, the revised waste strategy will offer a clearer longer-term vision for waste and resource management as part of the Government's drive for Sustainable Development, consolidate current policies and set out new proposals agreed after consultation.

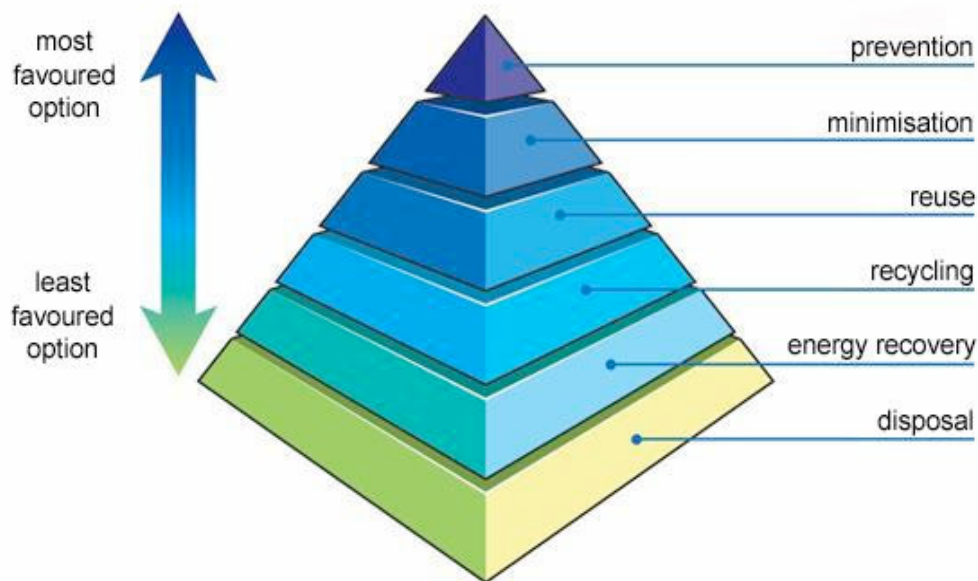
At the time of writing the Plymouth Waste Strategy, the Government had not published the revised Strategy, however the contents of this Strategy for Plymouth is expected to adhere to and meet objectives set out in the revised National Waste Strategy.

⁷ Prime Ministers 'Strategy Unit' final report: 'Waste Not, Want Not' (2003)

2.8.5 The Waste Hierarchy

The concept of a waste hierarchy, developed from the European Waste Framework Directive, has been at the heart of national waste management since the publication by government of Waste Strategy 2000. The hierarchy considers waste management as a process and each stage of the process presents opportunities to manage waste in a more sustainable manner. The stages are; Reduce (waste prevention), Re-use, Recycle, Recover and Dispose. Figure 2.5 illustrates the waste hierarchy showing the most favoured waste management option, reduce, at the top of the hierarchy and the least favoured option at the bottom of the hierarchy, disposal. By introducing the waste hierarchy into the national strategy, the government propose that waste managers and decision makers try to drive waste management up the hierarchy thereby reducing the environmental impact of waste management operations.

Figure 2.5 The Waste Hierarchy



The most environmentally sustainable method of waste management is to reduce the amount of waste generated. Minimising all waste removes the need to transport, treat or dispose of the material further down the hierarchy. Where waste is produced the most environmentally sustainable route is to reuse the item, this may mean repairing an item, giving unwanted clothes or furniture to charity or reusing durable 'disposable' items such as carrier bags. This extends the life of an item and reduces the need to purchase or use a new item. Once an item has reached the end of its usable life it should be recycled where possible.

Where it is not possible to recycle waste materials effort should be made to recover some value from them prior to disposal. This might include combustion of material to recover energy. The heat released in this process can be used to produce heat for district heating

and electricity for power generation. Generation of energy in this way has the additional environmental benefits of the 'avoided burden' of fossil fuel combustion, e.g. reducing the requirement to extract and burn fossil fuels to generate electricity.

The waste hierarchy has had a large influence on the overall approach of this strategy, its policies and action plans, with waste minimisation and recycling at the core of the strategy.

2.8.6 The Proximity Principal

The Proximity Principal determines that wastes should be treated and disposed of as close as possible to their place of origin. However, it must also be acknowledged that in some instances the proximity principle may be at odds with the practicalities of treating and recycling waste. In some circumstances it may be more efficient and sustainable to utilise stable regional, national or international facilities and markets for waste and recovered material.

2.8.7 Self Sufficiency

The principle of self-sufficiency requires that most waste should be treated or disposed of within the region in which it is produced. Each region should provide for facilities with sufficient capacity to manage the expected quantity of waste needed to be dealt with within that area for at least 10 years. However, in some cases it may be necessary to recognise units smaller than regions but larger than Waste Planning Authorities, known as Sub-Regions. As a Unitary Authority, Plymouth is well placed to enter into partnership with other authorities within the South West, and as such, future developments should consider a joint approach with other authorities.

Current operations at Chelson Meadow include dry recyclables sorting and bulking, green waste composting, wood chipping and landfilling. All these activities are undertaken within the City boundary, complying with the proximity principle. Upon commencement of the new landfill contract at Lean Quarry, transport of residual waste outside of the City will be required. Unless new treatment and/or disposal infrastructure is procured and constructed within the Authority, transportation of waste outside of the City will be required to meet future requirements, resulting in an unsustainable solution.

2.8.8 The Landfill Directive and National Targets

The overall direction of waste management in Europe and the UK is largely dictated by the EU Landfill Directive. The key aim of this directive is to reduce the negative environmental effects from the landfilling of waste, particularly the release of greenhouse gases from landfilled biodegradable municipal waste (BMW). To achieve this aim it sets ambitious targets for the reduction of BMW that is disposed of to landfill.

The Directive was transposed into UK law in 2002 as the Landfill (England and Wales) Regulations 2002, and since then it has been introduced in stages to give UK industry time to adapt. The European policies and targets for waste have been reflected in the Government's National Waste Strategy for England and Wales ⁸, which sets out the Government's policy and vision for the promotion of sustainable waste management over the next twenty years. The document expands on information previously published in the Government's White Paper 'A Way with Waste'⁹, by providing additional detail on the Government's aspirations over the short, medium, and long term and the contributions that local authorities will be required to provide in meeting the national objectives.

To comply with the provisions of the Landfill Directive, the Government has adopted national targets for the diversion of biodegradable municipal waste from landfill. Table 2.5 presents these targets.

Table 2.5 National Diversion Targets for Biodegradable Municipal Waste

Target Year	Action Required
2010	Biodegradable municipal waste (BMW) must be reduced to 75% of the total BMW (by weight) produced in 1995.
2013	BMW must be reduced to 50% of the total BMW (by weight) produced in 1995.
2020	BMW must be reduced to 35% of the total BMW (by weight) produced in 1995.

The directive also bans liquids and certain materials from landfill and tightens site monitoring and engineering standards. It is supplemented by the European Waste Catalogue, which has extended the range of materials classified as 'hazardous', and the Waste Acceptance Criteria, which includes stringent pre-treatment requirements.

Furthermore, to comply with the provisions of the Landfill Directive, the Government has established national targets for the recycling and recovery of municipal waste. These national targets are supported by statutory performance standards for household recycling / composting, and tradable permits for local authorities to restrict the amount of biodegradable municipal waste going to landfill. The key national targets set out in Waste Strategy 2000 are set out in Tables 2.6 and 2.7.

⁸ Department of the Environment, Transport and the Regions (2000). *Waste Strategy 2000*. ISBN 0 10 146932 2 May 2000.

⁹ Department of the Environment, Transport and the Regions (June 1999). *A Way with Waste: A Draft Waste Strategy for England and Wales Parts 1 and 2*.

Table 2.6 National Targets for the Recycling and Composting of Household Waste

Target Year	Recycling and Composting Target
2005	To recycle or compost at least 25% of household waste
2010	To recycle or compost at least 30% of household waste
2015	To recycle or compost at least 33% of household waste

Table 2.7 National Targets for the Recovery* of Municipal Waste

Target Year	Recovery Target
2005	To recover value from 40% of municipal waste
2010	To recover value from 45% of municipal waste
2015	To recover value from 67% of municipal waste

*Recovery means to obtain value from waste through recycling, composting, other forms of material recovery, or recovery of energy.

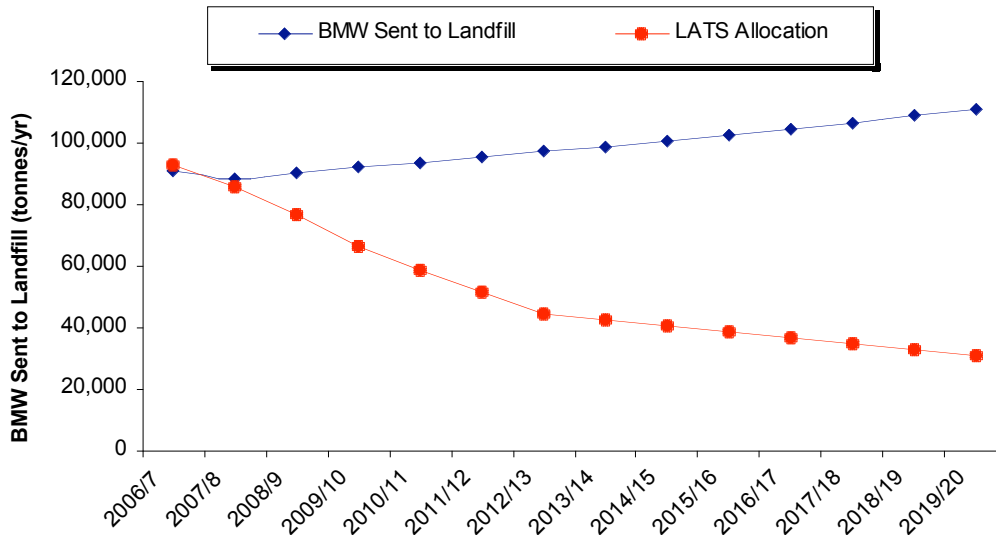
2.8.9 The Landfill Allowance Trading Scheme (LATS)

The Government is seeking to encourage the diversion of biodegradable waste from landfill through the provisions of the Waste and Emissions Trading Act 2003. In order to comply with the EU Landfill Directive’s target of diversion of biodegradable waste from landfill, the Government has issued each local authority with a quantity of Landfill Allowance Trading Scheme (LATS) permits. Local authorities are allowed to landfill biodegradable waste up to the level of permits held. If they are expecting to landfill more than their allocation of permits, they can ‘buy’ permits from other authorities or face financial penalties from the Government. The Waste and Emissions Trading (WET) Act 2003 allows the government to ‘fine’ local authorities up to £150 for every tonne of biodegradable municipal waste sent to landfill above the quantity of LATS permits held by that authority.

Figure 2.6 presents the quantity of LATS permits allocated to Plymouth and the amount of biodegradable municipal waste predicted to be sent to landfill for the period 2006/7 to 2019/20 if recycling and composting rates remain constant at current levels and the remaining residual waste is sent to landfill¹⁰.

¹⁰ Figure 4.1 represents the ‘As Is’ scenario as modelled in the ‘Plymouth Municipal Waste Management Strategy Supplementary Report 4 - Strategic Options Modelling Report’. This report, in conjunction with ‘Supplementary Report 1 - Baseline Report’, contains a full list of assumptions used for the modelling exercise.

Figure 2.6 This Plymouth’s Permitted Landfill Allowance and Predicted BMW to Landfill - 2006/07-2019/20



If waste continues to grow at the rate used in the waste flow modelling exercise (Supplementary Report 4 - Strategic Options Modelling Report) and landfill continues to be the dominant disposal point for residual waste, Plymouth will face a significant shortfall of LATS permits and will be required to purchase large quantities from other authorities or face severe financial penalties from Central Government. Table 2.9 presents tabulated data for Plymouth’s LATS Allocation, predicted tonnages of biodegradable waste sent to landfill, the potential LATS deficit (the quantity of biodegradable waste sent to landfill above allocation) and the associated financial penalty if the Government’s fine of £150 per tonne are implemented. The target years of 2009/10, 2012/13 and 2019/20 are highlighted. The financial penalties Plymouth may incur if current waste management practices continue could total £97.5 million for the period 2007/8 to 2019/20.

Table 2.8 Landfill Allowance Trading Scheme Permit Allocation and Financial Penalties

Year	LATS Allocation	Predicted BMW to Landfill	Predicted LATS Deficit	Potential Financial Penalty (£150/tonne)
2006/7	92,862	90,886	-	-
2007/8	85,805	88,663	2,858	£428,655
2008/9	76,983	90,327	13,344	£2,001,596
2009/10	66,397	92,016	25,619	£3,842,789
2010/11	59,007	93,729	34,722	£5,208,248
2011/12	51,616	95,466	43,850	£6,577,572
2012/13	44,225	97,229	53,004	£7,950,659
2013/14	42,328	99,018	56,690	£8,503,512
2014/15	40,431	100,833	60,402	£9,060,226
2015/16	38,534	102,673	64,139	£9,620,850
2016/17	36,637	104,540	67,903	£10,185,438
2017/18	34,740	106,434	71,694	£10,754,040
2018/19	32,843	108,757	75,914	£11,387,063
2019/20	30,946	111,115	80,169	£12,025,375
Total potential cost				£97,546,024

Table 2.8 highlights the urgent need for Plymouth to find alternative residual waste disposal or treatment solutions as soon as possible. If waste arisings in the city continue to grow as predicted, the quantity of waste requiring treatment or disposal increases, as will the financial implications of Government enforced fines through LATS.

2.8.10 Statutory Recycling Targets for Plymouth

To ensure that all local authorities contribute to achieving these targets, the Government set statutory performance standards for local authority recycling and composting for 2005/06 and the targets are reviewed annually. Plymouth’s statutory performance target for recycling and composting in 2005/6 was 24%, which was narrowly missed. This target has been repeated for 2006/7.

2.8.11 Plymouth Recycling Targets

In an effort to continually improve the service offered by the Council to its residents, Plymouth City Council has set itself recycling and composting targets for household waste over and above those set by central government. The targets are detailed in Table 2.9.

Table 2.9 Plymouth City Council Recycling and Composting Target

Year	Target
2006/7	25.5%
2009/10	30.0%
2014/15	33.0%

2.8.12 Regional Targets

The South West Regional Waste Strategy 2004-2020 ‘From Rubbish to Resource’ outlines ambitious targets for the region. The regional Waste Strategy sets out how the region can deliver the ‘South West Vision for Waste: Minimum Waste, Maximum Benefit’. The South West Regional Strategy aims to ensure that by the year 2020, over 45% of waste is recycled and reused, and less than 20% of waste produced in the region will be landfilled.

2.9 Opportunity for Joint Working

Joint working is supported strongly by central Government in a number of functional areas, including the provision of waste management services. Joint working between waste collection authorities, waste disposal authorities, and neighbouring unitary authorities can present a number of advantages, not the least in potentially delivering Gershon efficiency savings through joint procurement, joint contracting and/or joint management structures. In the ODPM publication ‘Delivering Efficiency in Local Government – Information for Leaders and Chief Executives’ (November 2004), the need for joint working between local authorities in delivering waste services, is highlighted as follows:

‘Increased joint working between local authorities at the strategic and operational level would help to increase efficiency and realise economies of scale. Our goal is to promote these kinds of approaches, including joint procurement where this has local backing.’

This Waste Strategy concentrates on how Plymouth City Council should deal with its waste in isolation, however, the Council recognises that significant advantages could be gained through collaborative working between Plymouth and its neighbouring authorities in a sub-regional solution. Further work in the area of joint working is required to quantify these potential benefits.



3. Options for Future Waste Management

3.1 Background

The complex nature of material collections, handling, treatment and disposal means that Plymouth could meet statutory and local targets via a number of different routes. A range of strategic options were considered and, through a process of stakeholder consultation, technical, cost and environmental appraisal, a preferred option has been identified. The preferred option meets our waste management needs within Plymouth City Council policies when considering value for money and environmental impact.

Full details of the Options Evaluation are presented in the 'Plymouth Municipal Waste Management Strategy Supplementary Report 4 - Strategic Options Evaluation Report'. This section provides a brief summary of the appraisal process and selection of the preferred option.

Each scenario is comprised of a set of variables which describe the method of waste collection, the level of commercial waste collection, the waste growth profile target, the way in which recyclables are marketed and how residual waste is handled. The details of each variable are given below.

3.2 Selection of Options - Methodology

The options for waste management scenarios addressed a number of areas and are detailed below.

3.2.1 Domestic Collections

Three options were developed for the kerbside collection of material. Each of the three options (A, B and C) achieves different levels of recycling and, as such requires varying levels of participation from the public.

- a) Continue with current arrangements to meet Waste Strategy 2000 targets;
- b) Build on current kerbside recycling to include a kitchen and garden waste collection by 2008/9 to achieve Waste Strategy 2000 targets in the medium to long term.
- c) Optimise kerbside recycling to achieve high recycling and composting targets in excess of the Waste Strategy 2000 targets.

3.2.2 Bring Sites and Civic Amenity Recycling Centres (CARC)

Two options for CARC and bring site provision were developed. They were:

- a) Maintain current level of Bring Site provision and maintain current number of CARC
- b) Increase density of Bring Sites, maintain number of CARC

3.2.3 Commercial Waste Options

- a) Maintain current commercial waste collection provisions (in line with legal requirements set out in EPA 1990).
- b) Minimise all commercial waste collected by Plymouth City Council through economic instruments or private sector partnering.
- c) Collect waste from commercial premises, targeting recyclable material similar in nature to domestic recyclables.

The management of commercial waste is an important issue and one which can have significant strategic and economic implications. However, all scenarios modelled at this stage assume that the current level of commercial waste collection offered by Plymouth City Council is maintained (option a).

3.2.4 Residual Waste Treatment and Disposal

A number of waste treatment and disposal options are listed below. Any of these technologies may be suitable for the treatment or disposal of residual waste in Plymouth, either as individual stand alone technologies or as part of a process using a combination of technologies. Option a), disposal to landfill, represents the 'As Is' scenario.

- a) Disposal to landfill.
- b) Mechanical Biological Treatment (MBT) with aerobic digestion and production of a Refuse Derived Fuel (RDF). For the purpose of cost modelling two variants of this option were modelled:
 - i) RDF sent to market where a gate fee is paid (3rd party burner)
 - ii) RDF is sent to a purpose built burner located within Plymouth or its environs
- c) MBT with Anaerobic Digestion producing a compost like product (CLP). CLP sent to landfill.
- d) Energy from Waste (traditional mass burn incineration with energy recovery). Ash produced goes to landfill.

3.2.5 Landfill Disposal and Facility Sizing

In the event that a waste treatment technology is selected, the facility (or facilities) will need to be sized to process either all of or part of the residual waste fraction. The options for sizing the facility are provided below.

- a) All residual municipal waste disposal by landfill ('As Is' scenario);
- b) Facility sized to process enough residual waste to ensure a LATS headroom of 10% in the final year of modelling, all remaining residual waste is disposed to landfill.
- c) The facility is sized to accept all residual waste from Plymouth with spare capacity to treat waste from neighbouring authorities and additional commercial and industrial waste. This will reduce the unit cost of waste treatment through the economies of scale achieved with a larger facility.

3.3 Development of Draft Strategic Options

The variables outlined above have been used in combination to draft a number of strategic options for the collection, management, treatment and disposal of waste within Plymouth. The options are intended to provide the high level direction to the strategy and provide an indication of waste flows, technical performance of facilities and comparative cost. For the purpose of developing strategic options, the variables have been divided into 'front end' options (including kerbside collection systems, CARC and bring banks) and treatment and disposal options (type and capacity of treatment and disposal). All options assume that waste minimisation is actively promoted throughout the duration of the strategy.

A summary of the options taken forward for further analysis is provided in Table 3.1.

Table 3.1 Summary Description of Strategic Options Modelled

Scenario Name		'Front End' Options Variable	Waste Treatment and Disposal Options Variable
1A	'As Is'	Continuation of the current service	All residual waste sent to landfill untreated
2Bi	Build on, MBT RDF(3 rd party burner)	Improve and build on existing collection service, maintain level of CARC and Bring Sites	Residual waste sent to an MBT facility comprising aerobic digestion with the production of an RDF. The RDF is assumed to be sent to market and combusted in a 3 rd party burner. Facility sized to process enough residual waste to ensure a LATS headroom of 10% in the final year of modelling
2Bii	Build on, MBT RDF (dedicated burner)	Improve and build on existing collection service, maintain level of CARC and Bring Sites	Residual waste sent to an MBT facility comprising aerobic digestion with the production of an RDF. It is assumed that a dedicated RDF burner is procured within the City. Facility sized to process enough residual waste to ensure a LATS headroom of 10% in the final year of modelling
2C	Build on, MBT with AD	Improve and build on existing collection service, maintain level of CARC and Bring Sites	Residual waste sent to an MBT comprising anaerobic digestion and the production of a compost like product. The facility is sized to treat enough residual waste to ensure a LATS headroom of 10%.
2D	Build on, EfW	Improve and build on existing collection service, maintain level of CARC and Bring Sites	Residual waste sent to an EfW facility. The facility is sized to treat enough residual waste to ensure a LATS headroom of 10%.
3Bi	Optimise, MBT RDF(3 rd party burner)	Optimise kerbside collection of recyclables, increase density of bring sites and maintain the density of CARC	Residual waste sent to an MBT facility comprising aerobic digestion with the production of an RDF. The RDF is assumed to be sent to market and combusted in a 3 rd party burner. Facility sized to process enough residual waste to ensure a LATS headroom of 10% in the final year of modelling
3Bii	Optimise, MBT RDF (dedicated burner)	Optimise kerbside collection of recyclables, increase density of bring sites and maintain the density of CARC	Residual waste sent to an MBT facility comprising aerobic digestion with the production of an RDF. It is assumed that a dedicated RDF burner is procured within the City. Facility sized to process enough residual waste to ensure a LATS headroom of 10% in the final year of modelling
3C	Optimise, MBT with AD	Optimise kerbside collection of recyclables, increase density of bring sites and maintain the density of CARC	Residual waste sent to an MBT comprising anaerobic digestion and the production of a compost like product. The facility is sized to treat enough residual waste to ensure a LATS headroom of 10%.
3D	Optimise, EfW	Optimise kerbside collection of recyclables, increase density of bring sites and maintain the density of CARC	Residual waste going to EfW facility. The facility is sized to treat enough residual waste to ensure a LATS headroom of 10% in the final year of modelled data.

3.4

Option Evaluation

This section provides a brief summary of results from the Strategic Options assessment. Options were assessed in terms of their ability to meet short, medium and long term recycling and composting targets, diversion of biodegradable waste from landfill, quantity of waste requiring landfilling, comparative cost of options and reliability and deliverability of technology. For a more detailed description of waste technologies refer to the 'Plymouth Municipal Waste Management Strategy Supplementary Report 5 - Waste Management Technologies'.

3.5

Summary of Options

Table 3.4 presents a summary of the modelled scenarios detailed in this report. A three point scale of low (yellow box), medium (orange box) and high (red box) has been used for performance of each option against the appraisal criteria. Yellow boxes represent an option that meets a target or has a good performance against the appraisal criteria. Red boxes represent missed targets of poor performance against the criteria, and orange boxes represent medium performance.

With the exception of option 1A, all options meet short, medium and long term recycling targets. It is anticipated that all options will require the purchase of additional LATS permits in the short term however the procurement of waste treatment technologies will ensure adequate BMW is diverted in the medium to long term for all options except 1A.

Options utilising MBT technologies are deemed to carry higher risk than EfW in terms of technology performance and funding and all options carry planning risks. Landfilling is seen as the least sustainable method of disposal. Options 2D and 3D require the least amount of waste to be sent to landfill.

A more detailed analysis of the Strategic Options modelled is provided in the 'Plymouth Municipal Waste Management Strategy Supplementary Report 4 - Strategic Options Evaluation Report'.

Table 3.2 Summary of Modelled Waste Management Scenarios

Appraisal Criteria	Strategic Option								
	1A	2Bi	2Bii	2C	2D	3Bi	3Bii	3C	3D
Does this scenario meet 2006/7 Recycling /Composting Targets	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Does this scenario meet long term Recycling /Composting Targets	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Maximum Recycling / Composting Rate Achieved	25.5%	36.7%	36.7%	36.7%	33.2%	42.7%	42.7%	42.7%	39.3%
Does this scenario meet short to medium term BMW diversion Targets (2006-2012)	No	No	No	No	No	No	No	No	No
Does this scenario meet BMW diversion Targets post 2012	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Potential to Recover Energy	Low	Medium	Medium	Low	High	Medium	Medium	Low	High
Total waste sent to landfill (tonnes per annum 2030/31))	174,318	75,780	75,780	104,535	39,063	67,811	67,811	94,515	34,080
Planning Risk	Medium	Medium	High	High	High	Medium	High	High	High
Technology Performance Risk	Low	High	High	High	Low	High	High	High	Low
Funding Risk	Low	High	Medium	Medium	Low	High	Medium	Medium	Low
Comparative Cost of Scenario £million (NPV)	£356.7	£333.3	£341.8	£353.6	£274.5	£338.9	£348.8	£353.4	£289.1

3.6 The Preferred Scenario

As a result of the ‘Strategic Options Evaluation’ and ‘Strategic Environmental Assessment (SEA)’ a strategic scenario for the future of waste management was selected to be taken forward for wider consultation with key stakeholders and the public. The scenario that was taken for consultation included:

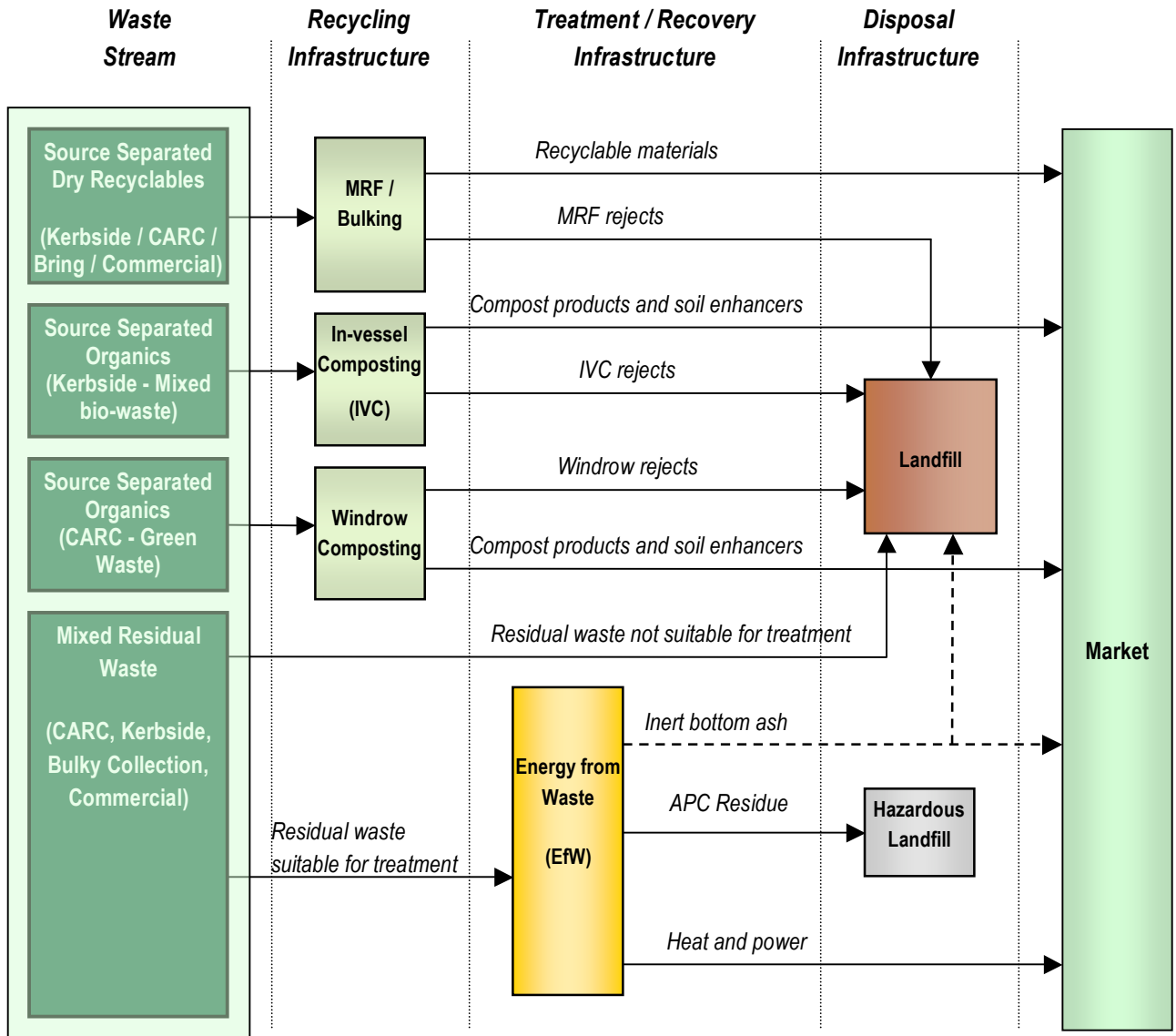
- Waste minimisation and educational initiatives to reduce the quantity of waste produced in the City and raise awareness to the growing issue of waste management

- An improvement / optimisation of kerbside collections. Scheme participation needs to improve throughout the City and the introduction of new materials (notably biodegradable waste) is required to meet future recycling and composting targets
- The network of bring banks should be reviewed in an attempt to capture greater quantities of material
- To avoid financial penalties relating to the Landfill Allowance Trading Scheme, Plymouth should look to procure residual waste treatment capacity. The options analysis suggest that technologies that recover energy from the waste are the most economically advantageous and contain the least risk in terms of reliability of technology, bankability and deliverability. Options 2D and 3D meet long term recycling and composting targets and contribute significantly to BVPI 82c, energy recovery.
- By promoting waste minimisation, increasing recycling at the kerbside and bring banks and recovering energy from the remaining residual waste in an Energy from Waste facility, the core principles of the waste hierarchy are followed. Location of key facilities within the City will also adhere to the proximity principle and self sufficiency.

Following a full and comprehensive consultation exercise involving key stakeholders and the wider community, the 'Consultation Option' of optimised recycling with energy recovery (Option 3D) was accepted by all parties and confirmed as the preferred strategic scenario for future waste management in Plymouth.

Figure 3.1 presents the flows of municipal waste in the Preferred Scenario.

Figure 3.1 Waste Flows for the Preferred Scenario



4. Waste Management Policies and Targets

4.1 Introduction

This section covers the Guiding Vision, Policies and Targets for the Plymouth Municipal Waste Management Strategy. The Waste Management Policies have been developed to align with and deliver Plymouth City Council's Corporate Strategy, as outlined in the City Council's Corporate Plan 2006-2009.

Box 1 Guiding Vision for Plymouth - Plymouth City Corporate Strategy

By 2020 Plymouth will be one of Europe's finest, most vibrant waterfront cities, where an outstanding quality of life is enjoyed by everyone.

A healthy place to live and work – improving health and well-being

A city which creates and shares prosperity – enhancing our economy and sharing the benefits with all our community.

A safe and strong city – reducing crime, making people feel safe, making the most of our environment.

A location for learning, achievement and leisure – raising aspirations and attainment, promoting creativity and leisure.

The following Section presents 12 Waste Management Policies that will help deliver the Corporate Guiding Vision for Plymouth City.

4.2 Waste Minimisation

Waste minimisation is a primary objective of sustainable waste management. Waste minimisation is, however, reliant on understanding and lifestyle 'behavioural change' on behalf of residents, and can therefore be hard to achieve in a consumer driven society. Local authorities, while having a part to play, are limited in their ability to minimise waste, and can generally only seek to influence attitudes and behaviours of waste producers through educational campaigns.

4.3 Education and Awareness

An important aspect of any Municipal Waste Management Strategy is how information about the services provided by a local authority is delivered to the population. The City Council and its partners need to develop an effective education and communications strategy to support and encourage the developments in waste minimisation, recycling and composting activities envisaged within this Strategy.

Policy 1 - Promotion of Waste Minimisation through Education and Awareness

Plymouth City Council will provide consistent, continuous educational and promotional material to assist the drive to reduce waste arisings and increase public awareness of the need to minimise waste

4.4 Home Composting

Plymouth City Council actively encourages residents to use home composting bins. The Council offer discounted home composting bins and provides advice on how to make the most of your composting bin. Promotion of and use of home composting remains one of the most effective direct actions that local authorities and the general public can undertake with respect to waste minimisation. We consider that we should build on the previous success of the home composting scheme and encourage its further take up by residents in Plymouth.

Policy 2 - Promotion of Home Composting

Plymouth City Council will continue to promote home composting bins and providing educational support for their use.

4.5 Community Sector Initiatives and Materials 'Re-use'

The Council is not the only organisation that can promote and encourage waste minimisation throughout the City. There are many groups within the community that are well placed to take forward initiatives that lead to waste minimisation, either through the promotion of 're-use' of unwanted items, or the elimination of waste at source. There are a number of local groups already active in Plymouth. The Council recognise the important part these local initiatives play in the management of waste within the City and we intend to support these schemes where possible.

Policy 3 - Support for Community Sector Initiatives

The City Council will endeavour to give support to local groups promoting waste minimisation initiatives in Plymouth.

4.6 Recycling and Composting

Subsequent to waste reduction and re-use, recycling is the next preferred method of waste management on the waste hierarchy. The capture of recyclable and compostable material can be achieved through a variety of methods ranging from kerbside collections to bring banks, civic amenity recycling centres and commercial waste recycling. Recycling waste prevents it from being sent to a landfill site or residual treatment facility, and avoids the need

to deplete ever dwindling virgin resources in the production of new materials. In 2005/6 residents of Plymouth recycled and composted 22.3% of their household waste through the various recycling initiatives. This narrowly missed the recycling target of 24%.

Policy 4 - Increase Recycling and Composting

Plymouth City Council will increase the percentage of household waste recycled or composted year on year. The Council have set the following recycling and composting targets for household waste;

- 30% by 2010
- 33% by 2015

4.7 Kerbside Collections

Currently 94% of households in Plymouth have access to a kerbside collection of recyclables. In 2005/6, 9,660 tonnes of dry recyclable material and 1,490 tonnes of compostable material was collected and recycled through the provision of the kerbside collection schemes. It is the aim of this strategy to improve the performance of the kerbside collection schemes by increasing participation through promotion and education, and to continually investigate the possibility of introducing new materials to the collection.

Approximately 50% of households within the City receive the twin bin service. A participation study undertaken by the University of Plymouth reports that households on the 'twin bin' scheme have higher participation rates than those receiving either the 'box and bag' scheme or the 'high rise flat' scheme. There are currently some limitations regarding the accessibility of certain properties for the twin bin scheme collection. In particular large blocks of flats and terraced properties are unable to accommodate two wheeled bins. It is the intention that the twin bin scheme should be extended to include all properties that can accommodate two bins and that all remaining properties have access to effective collection services for recyclable and compostable services.

Waste flow modelling exercises undertaken in support of this Strategy¹¹ suggest that in order for Plymouth to meet its medium to long term recycling targets of 30% and 33%, the range and quantity of materials collected at the kerbside requires expansion. In addition to collecting more materials, the level of public participation and scheme capture rates need to be increased significantly.

¹¹ See 'Plymouth Municipal Waste Management Strategy Supplementary Report 4 - Strategic Options Evaluation Report'

Policy 5 - Kerbside Collections

Plymouth City Council will work within the Best Value principles to ensure that all residents receive a high quality waste service at affordable cost. We will continually review the range of materials collected in kerbside schemes and, where it is economically feasible to do so, will maximise the collection of recyclable material at the kerbside.

4.8 Bring Facilities

Plymouth City Council have recently increased the number of bring bank sites located within the City from 50 to 60. In 2005/6, 3,075 tonnes of material was recycled through the network of bring facilities. Glass is currently not collected at the kerbside for most properties in Plymouth and therefore the bring sites play a vital role in the recycling of glass within the City. The Council recognise the importance of bring facilities in the capture of recyclable material and intend to continually monitor the number, location and density of bring sites throughout the City. Particular attention will be paid to areas of the City that receive the box and bag kerbside collection scheme and properties receiving communal collections.

Policy 6 - Bring Sites

Plymouth City Council intend to enhance and promote the network of bring facilities throughout the City, ensuring the most efficient and effective distribution.

4.9 Civic Amenity Recycling Centres (CARC)

Plymouth City Council acknowledge the important part CARC play in the management of waste throughout the City by providing facilities for the collection, disposal and recycling of numerous materials including bulky waste not suitable for kerbside collections and recycling of materials not currently targeted at the kerbside.

Policy 7 - Civic Amenity Recycling Centres

Plymouth City Council will continually review their CARC provision to ensure that there is sufficient capacity to satisfy the service needs. A review of site layout and the provision of adequate recycling facilities will be undertaken in an attempt to maximise the capture of recyclable material at the two existing sites.

4.10 Waste Disposal to Landfill

Waste that is not recycled, composted or has energy recovered from it is sent to landfill. In 2005/6 over 70% (over 110,000 tonnes) of municipal solid waste was sent to landfill in

Plymouth. Landfill is seen as the least sustainable method of waste management and, with increasing landfill tax, the introduction of the Landfill Allowance Trading Scheme (LATS) and increasing scarcity of available landfill capacity in or near Plymouth, the cost of landfilling waste is set to increase dramatically in the future. For environmental and financial reasons, Plymouth must find alternative methods of waste disposal.

Policy 8 - Waste Disposal to Landfill

Plymouth City Council will endeavour to reduce the proportion of municipal waste disposed of to landfill year on year

4.11 Residual Waste Treatment

Landfill is considered to be the least sustainable method of waste management and, due to growing environmental, financial and legislative pressures, alternative treatment and disposal methods must be developed. Technical modelling undertaken in support of this Waste Strategy suggests that the recovery of energy from waste via thermal processes is a cost efficient, low risk and sustainable solution.

Policy 9 - Residual Waste Treatment Facility

Plymouth City Council will procure a waste treatment facility for the processing of municipal waste not recovered through recycling and composting systems. Recovery of energy from the waste should be maximised where possible.

4.12 Trade and Commercial Waste Collections

Collection and processing of local industrial and commercial waste is a significant element of the Plymouth Waste Strategy. Trade and commercial waste collected by the Council is included as municipal waste and requires management by the Council. The level of service provision offered to commercial organisations will require regular reviews to assess the cost effectiveness of the service.

For trade and commercial waste falling outside of the remit of the council, it will be desirable for the Municipal Waste Management Facility to have additional capacity above the requirements for municipal waste. The inclusion of additional waste streams in any facility will have the advantage of economies of scale and reduce the unit cost of waste treatment.

Policy 10 - Commercial Waste Service

The Council will continue to deliver an effective commercial waste collection service, and will look into the introduction of a recycling service. The Council will hold periodic reviews to ensure that the service is efficient and cost effective.

This document is a Municipal Waste Management Strategy, and as such the management of Commercial and Industrial waste and Construction and Demolition waste that is not collected by the Council has not been addressed in this document. While these waste categories are not formally a part of this Strategy, the Council recognise and appreciate the needs of the wider business community and their requirement for adequate waste management infrastructure.

4.13 **Opportunities for Partnership**

Partnership working between local authorities in waste management can deliver potential efficiency savings and economies of scale. The Government are in support of joint working between local authorities and believe significant financial savings can be achieved through joint procurement of waste management facilities and the collaboration of waste management services.

Policy 11 - Partnership

The Council will continue to investigate the possibility of joint working with other authorities within the sub-region.

4.14 **Waste Strategy Review**

4.14.1 **Need for Review**

This Municipal Waste Management Strategy defines the management approach of Plymouth City Council for the period 2007 – 2030. The Strategy is intended to be a practical document that guides the actions of all parties responsible for managing municipal waste in Plymouth. It is important that the strategy documentation is regularly reviewed and updated to ensure that it remains relevant as local, regional, national and European circumstances change over time.

Plymouth City Council will monitor and report its performance against the policies and actions which will be used to deliver the strategy. It is suggested that the following areas are considered during strategy reviews:

- Adherence to existing strategic policy framework;
- Requirement for additional policies
- General compatibility with other policies, strategies and directives introduced either locally, nationally or at a European level.
- Progress against Action Plan
- Review of timescales associated with each actions

- Maintenance of up-to-date datasets (within the supporting documents and Strategy)

It is the intention of this Strategy that a full review of the 'Plymouth City Council Municipal Waste Management Strategy' will be undertaken every 5 years. In addition to the Strategy periodic review, annual reviews will be undertaken to assess performance against the Strategic Targets and Objectives as outlined in the Strategy Action Plan.

4.14.2 Strategy Review Trigger Points

In addition to periodic reviews, it is the intention of this Strategy that following any significant change to the current situation in waste management procedures in Plymouth, a Strategy review should be undertaken. These 'changes to current situation' are called 'trigger points' and suggested 'trigger points' are detailed below:

- The formalisation of any Partnership Agreements, such as a Memorandum of Understanding in involving Plymouth City Council
- Changes to major European or UK waste related legislation
- If during procurement, a value for money solution is not reached (e.g. due to a lack of market competition)

Policy 12 - Strategy Review

The Council will undertake periodic reviews of the waste strategy every 5 years, in addition to reviews following any Strategy Trigger Points. Progress against the Strategy Action Plan will be monitored annually.

4.15 Delivering the Plymouth Municipal Waste Management Strategy

This Municipal Waste Management Strategy sets out long term visions for municipal waste management in Plymouth for the period 2007-2030. Twelve Policies have been developed which, over the course of the Strategy, will be implemented to achieve the Guiding Vision for Plymouth. This Strategy will be delivered by a series of Action Plans which have been developed as a direct means of measuring progress against the objectives set out in this strategy. The Action Plans will contain details of specific actions required to deliver this Strategy along with timescales for implementation. The Action Plans will be updated regularly to monitor progress and ensure that the Strategy is fully implemented.

Global warming and the release of greenhouse gasses is of increasing concern. The management of waste will be a contributor to the release of greenhouses gasses and, in particular, methane from landfill sites and carbon dioxide from the transportation of recyclables for reprocessing. In the future, Plymouth will have to consider its Carbon Footprint and may be given limits on the amount of carbon it can release to the atmosphere.



Carbon Footprinting is a process which evaluates how much carbon dioxide the city emits as a result of our activities. Provision will be made within the Action Plans, where appropriate, to evaluate the carbon impacts of implementing the policy proposals and actions.