

Plymouth City Council Municipal Waste Management Strategy 2007-2030

Supplementary Report 2 of 5
Key Drivers - Why we need to change
April 2007



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PLYMOUTH CITY COUNCIL
MUNICIPAL WASTE
MANAGEMENT STRATEGY
SUPPLEMENTARY REPORT 2 –
KEY DRIVERS REPORT

Foreword

Supplementary report 2 – Key Drivers report forms one of a suite of supporting documentation for the Council's Municipal Waste Management Strategy (MWMS) Headline Strategy document. The full suite of documents comprises:

- Headline Strategy – *sets out the adopted option*
- Supplementary Report 1: Baseline Report – *where we are today*
- Supplementary Report 2: Key Drivers – *why we need to change*
- Supplementary Report 3: Stakeholder Workshop Summary Outcomes – *what stakeholders thought were the options we needed to consider*

- Supplementary Report 4: Strategic Options – *Detailed analysis of all the options agreed by stakeholders*
- Supplementary Report 5: Waste Treatment Technologies – *Explanation of the different technologies available*
- Strategic Environmental Assessment (SEA) Environmental Report on the Strategic Options and Municipal Waste Management Strategy – *Considers the social, economic and environmental implications*

The Headline Strategy has been developed from the key drivers play an important role in the policy making process and must be fully considered in developing the strategy. This document should be read in order to gain a greater degree of understanding about the factors driving and influencing the Headline Strategy.

The Council acknowledges the work undertaken by Entec UK Ltd in the development and production of these key reports.



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1. The Challenges Ahead

1.1 Introduction

The increasing amounts of municipal waste, statutory obligations and the escalating cost of waste in both environmental and economic terms mean that waste management in Plymouth must change. This chapter examines the numerous drivers for change which have been considered in the development of this Municipal Waste Management Strategy (MWMS). Tackling the challenges that these drivers present is what helps to determine the preferred option and the policies and actions required to deliver the Strategy.

1.2 Population and Housing Growth

Plymouth is currently undertaking an ambitious project of urban redevelopment, the largest since the city was rebuilt after the Second World War. The 'Vision for Plymouth' outlines significant growth in both population and housing numbers for Plymouth over the next 20 years. The most recent estimate of household numbers in Plymouth is 109,474 (2004/5)¹ and the Regional Spatial Strategy (South West Regional Assembly) estimate future annual housing growth in the City to be:

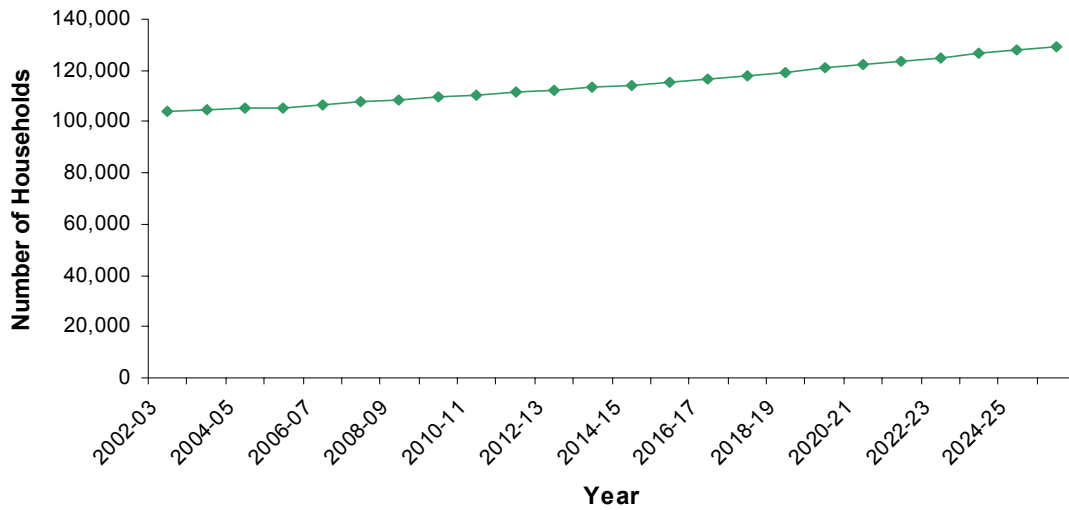
- For the period 2006-2016 965 additional households per annum; and
- For the period 2016-2026 1399 additional households per annum.

Two possible growth scenarios for the population of Plymouth have been proposed to meet the 'Plymouth Vision', with aims of achieving a population of between 300,000 and 350,000 by 2020.

Figure 1.1 illustrates the predicted growth in housing numbers for Plymouth City up to 2026.

¹Source: Plymouth City Council Housing Flow Reconciliation

Figure 1.1 Predicted Growth in Housing Numbers



The predicted growth in population and housing numbers will place large pressures on all public services, including waste management. Population and housing growth are discussed further in ‘Plymouth Municipal Waste Management Strategy Supplementary Report 1 - Baseline Report’.

1.3 Future Waste Volumes

In addition to the expected significant growth in population and housing numbers over the next 25, the amount of waste produced at the individual household level is increasing. Nationally it is estimated that the tonnage of municipal waste is increasing at a rate of approximately 3% each year (Waste Strategy 2000). 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. This strategy uses modelled data for waste arisings over the period 2006/7 to 2030/31. Over such timescales, national and global economic forces will influence consumer behaviour, influencing changes in waste generation.

1.4 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 land to be filled 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 Chelson Meadow imminent closure due in March 2008, the Council has 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 alternative, more sustainable treatment or disposal methods 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 and for the City to secure future treatment capacity a dedicated Plymouth facility, or shared sub-regional facility, is required.

1.5 Drivers for Change – Guiding Principals

1.5.1 Waste Strategy 2000

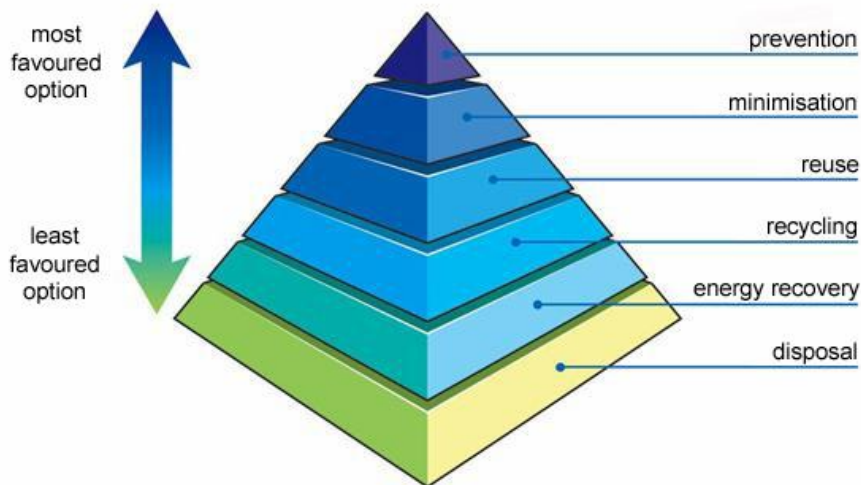
In response to the demands of the European Directives on waste, in particular the EU Landfill Directive, the UK Government produced a National Waste Strategy in May 2000 which sets out its strategic views on the future for waste management in England and Wales. The resulting document, referred to as 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. While 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 prominent.

1.5.2 The Waste Hierarchy

The concept of a waste hierarchy 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 2.1 presents 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.

Figure 1.2 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. Recycling an item reduces the need to extract new materials (metals, oil for plastics, wood etc) to make new materials and can reduce the energy needed to transport and manufacture new items.

If it is not possible to recycle waste materials effort should be made to recover some value from them prior to disposal. This might include burning the material in specially converted incinerators. 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 at the core of the strategy.

1.5.3 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. It may be more efficient and sustainable to utilise stable regional, national or international markets for material.

1.5.4 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. Plymouth should make adequate provision in their future development plans for waste management facilities that may be needed, taking into account the advice of the Regional Technical Advisory Body.

Current operation 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 waste management requirements.

2. Performance Targets

2.1 The Landfill Directive and National Targets

The current direction of waste management in Europe and the UK is being dictated by the implementation of the EU Landfill Directive, which was agreed in Europe in 1999. 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 targets apply to all EU member states.

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 Wales² (Waste 2000), 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'³, 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 2.1 indicates these targets.

Table 2.1 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 will be supplemented by the new European Waste Catalogue,

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

³ Department of the Environment, Transport and the Regions (June 1999). *Away with Waste: A Draft Waste Strategy for England and Wales Parts 1 and 2*.

which has extended the range of materials classified as 'hazardous', and the Waste Acceptance Criteria, which will introduce stringent pre-treatment requirements.

Furthermore, to comply with the provisions of the Landfill Directive, 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 2.2 and 2.3.

Table 2.2 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 2.3 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.

2.2 Statutory 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 has suggested further standards for 2010 and 2015.

Plymouth's statutory performance target for recycling and composting in 2005/6 was 24%. This target has been repeated for 2006/7. Plymouth has adopted the national recycling and composting targets of 30% and 33% for 2010 and 2015 respectively.

Further analysis of current performance against statutory and national targets is included in 'Supplementary Report 1 - PCC MWMS Baseline Report'.

2.3 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 Vision was supported by the Region. It says:

'The South West will become a minimum waste region by 2030, with households and businesses maximising opportunities for reuse and recycling'

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.

3. Other Legislation

3.1 Background

Legislation is increasingly based on the precautionary principle and prevention, which are manifested in the waste hierarchy, duty of care and producer responsibility.

In terms of legislation, consideration must be given to the following:

- Legislation already affecting waste management;
- Legislation passed at the European level but not on UK statute books; and
- Legislation under development at the EU level.

The remainder of this section seeks to summarise other legislative drivers of relevance to the management of waste within Plymouth.

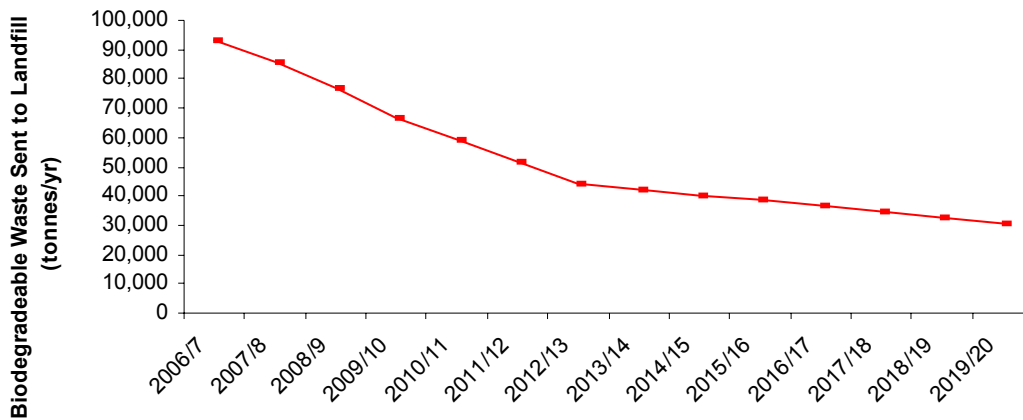
3.2 Waste and Emissions Trading Act and LATS

The Waste and Emissions Trading (WET) Act 2003 allows the government to place restrictions on the amount of biodegradable municipal waste (BMW) sent to landfill by each local authority responsible for waste disposal. This Act is implemented in England through the Landfill Allowance Trading Scheme (LATS). This scheme commenced on April 1 2005. Under LATS all local authorities in England responsible for waste disposal will be issued with a number of landfill allowances, each of which permits them to dispose of 1 tonne of biodegradable waste.

If an authority expects to landfill more than their prescribed limit they are required to purchase additional permits. If an authority landfills less than their allocation they can sell the surplus allowances. Authorities will also be able to “bank” unused allowances for use in future years or borrow against a future year’s allocation. However, the banking of permits is not allowed in the Target years of 2009/10, 2012/13 or 2019/20 (“Compliance years” as laid down in the Landfill Directive).

Initial allocations were based on each authorities 2001/02 landfill data and allocations will reduce each year. Reduction in allocations is not linear with large reductions annually until 2013, and smaller diversions between 2013 and 2020. Figure 3.1 shows the current allocations for Plymouth.

Figure 3.1 Plymouth’s Permitted Landfill Allowance 2006/07 - 2019/20



Local authorities may trade permits with other authorities. Those authorities who send less BMW to landfill than their allocation will be in a position to sell their surplus permits, while those who intend to send more BMW to landfill than their allocation will be required to purchase permits. The price for LATS permits is not fixed, and will be determined by market forces, meaning that prices will rise and fall according to demand and availability.

If an authority landfills more than their allocation of biodegradable municipal waste and are not able to purchase the required number of allowances, DEFRA will impose financial penalties for each tonne of BMW landfilled without an allowance. The current proposed penalty level is £150 per tonne. If England as a whole fails to meet its target in any of the target years, then the fine imposed on the country by the EU will be divided proportionately between the authorities that failed to meet their targets in the same target year. The EU fine will be in addition to the £150 per tonne fine.

The legal responsibility for complying with the LATS and BMW targets set out under the Landfill Directive lies with each WDA, although each WDA has powers of direction over the Waste Collection Authorities (WCAs). As a Unitary Authority, Plymouth is responsible for both the collection and disposal of waste within the city

3.3 Household Waste Recycling Act

The Household Recycling Act 2003 amends the Environmental Protection Act 1990 and requires that where English Waste Collection Authorities have a general duty to collect household waste they shall ensure that by the end of 2010 they collect at least two types of recyclable materials separately. Certain exemptions exist, for example where the cost of doing so is unreasonably high or where comparable alternatives are in place. Such alternatives may include the provision of bring banks or a household waste recycling centre within 100 metres of a property.

3.4 Strategic Environmental Assessment Directive

The Strategic Environmental Assessment (SEA) Directive came into force in 1st July 2004. It requires the environmental assessment of a range of plans which are likely to have significant effects on the environment. In October 2003, the ODPM issued guidance on the implementation of the Directive in relation to land use and spatial plans. The guidance makes explicit the links to sustainability appraisal methodology. This has been supplemented by draft practical guidance on SEA and sustainability appraisal. It is understood that there is a move away from an appraisal process characterised as qualitative towards a more quantitative assessment of plans and strategies.

3.5 Other Particular Waste Legislation

In addition to being responsible for managing all household and trade waste collected the Councils deal with a number of specialist waste streams, some of which are produced by the householder. These wastes may be subject to different legislation, or require special treatment and disposal. Legislation relating to hazardous waste is listed below⁴.

3.5.1 The Landfill Regulations 2002

Historically hazardous waste has been disposed of in the same landfill sites as non-hazardous wastes, a practice known as 'co-disposal'. The Landfill Regulations 2002 are designed to prevent co-disposal. The Regulations state that hazardous wastes identified in the European Waste Catalogue must be pre-treated, according to a three-point test, to reduce the quantity and hazard before they are landfilled (unless this is of no practical environmental benefit). The number of UK landfill sites permitted to accept hazardous waste was reduced to five sites when the legislation came into full effect in July 2004. The scarcity of hazardous landfills and the re-defining of certain elements of household waste (see Hazardous Waste Regulations 2005, below) as hazardous has led to increases in disposal costs.

3.5.2 Waste Acceptance Criteria (WAC) Part of Landfill Regulations

These criteria have been designed to ensure that the requirements of the Landfill Regulations are fully met. The criteria are used by landfill operators to decide whether they can accept hazardous waste into their landfill. The WAC set empirical limits on substances that are

⁴ DEFRA (2005) *Hazardous Waste Legislation*. Online. Available from: <http://www.environment-agency.gov.uk/subjects/waste/1032477/800036/?version=1&lang=e> [Accessed 31 May 2005]

subject to leaching in landfill, and set standards for physical stability. The necessary testing standards and procedures are specified within the Landfill Regulations.

3.5.3 The Hazardous Waste Regulations 2005

The Hazardous Waste Regulations replaced the Special Waste regulations from July 2005. The new regulations are designed to discourage the production of hazardous waste, ensure the safe management of hazardous waste produced and to set tighter limits on hazardous waste sent to landfill. They classify a range of wastes as hazardous which had not previously been classified; these include computer monitors and televisions with cathode ray tubes and end of life vehicles. This brings the classification of such items in line with the European Waste Catalogue. The regulations also require that most producers of hazardous waste register with the Environment Agency to ensure that the waste is sent to an appropriate recovery or disposal facility.

3.5.4 The End of Life Vehicle (ELV) Directive

The reduction in the value of scrap metal and the used car market has contributed to an increase in the number of vehicles abandoned on road sides, lay-bys and waste ground. The UK has now implemented the Directive on End of Life Vehicles (2000/53/EC). This has been transposed into UK law as the End of Life Vehicles Regulations 2003 (SI 2635). These regulations introduced environmental standards for the dismantling, recycling and disposal of materials from ELVs. The regulations have also led to a permitting system for authorised treatment facilities (ATFs) which meet prescribed environmental standards.

The regulations also place a significant responsibility on vehicle manufacturers and importers, firstly to comply with design standards introduced to make the recycling of ELVs easier and also to collect and recycle vehicles that they place on the UK market.

Under the terms of the End-of-Life Vehicles (ELVs) Directive, producers will have to ensure 85% recovery and 80% recycling of their vehicles by weight by January 1, 2006, although vehicles made before 1980 have lower targets of 75% recovery and 70% recycling. By 2015, recovery rates will have to be 95% and recycling rates at 85% for all vehicles.

3.5.5 Waste Electrical and Electronic Equipment (WEEE) Directive

The Waste Electrical and Electronic Equipment Directive (WEEE Directive) aims to minimise the impact of electrical and electronic goods on the environment, by increasing re-use and recycling and reducing the amount of WEEE going to landfill. It seeks to achieve this by making producers responsible for financing the collection, treatment, and recovery of waste

electrical equipment, and by obliging distributors to allow consumers to return their waste equipment free of charge.

The Waste Electrical and Electronic Equipment (WEEE) Directive was agreed on 13 February 2003, along with the related Directive on Restrictions of the use of certain Hazardous Substances in electrical and electronic equipment (RoHS).

The implementation of the WEEE Directive in the UK has been delayed. It was due to be transposed into Member State legislation by 13 August 2004 and come into force by 13 August 2005.

The UK Regulations implementing the WEEE Directive were laid before Parliament on 12 December 2006 and enter into force on 2 January 2007. Non-Statutory Guidance will be available in early 2007.

- DTI is responsible for transposing the WEEE Directive into UK law, working in partnership with the Devolved Administrations.
- DEFRA is responsible for ensuring the permitting of Authorised Treatment Facilities for the WEEE Directive.
- The Environment Agency (SEPA in Scotland and EHS in NI) will be the enforcement agency for the WEEE Directive.

The WEEE Regulations apply to electrical and electronic equipment (EEE) which falls within the 10 product categories listed in the WEEE Directive:-

- Large household appliances
- Small household appliances
- IT & Telecommunications equipment
- Consumer equipment
- Lighting equipment
- Electrical and electronic tools
- Toys leisure and sports equipment
- Medical devices
- Monitoring and control instruments
- Automatic dispensers

The WEEE Regulations will apply to the following groups:

- Producers (any business that manufactures, imports or re-brands electrical and electronic products)
- Retailers and Distributors (any business that sells electrical and electronic equipment to end users)
- Local authorities
- Waste management industry
- Exporters and re-processors

- Businesses and other non-household users of EEE

There are certain requirements for WEEE relating to:

- Separate collection, disposal and recycling
- Standards for its treatment at authorised facilities
- Collection, recycling and recovery targets.

Key dates;

- The regulations came into force on 2 January 2007
- Producers have to join a compliance scheme by 15 March 2007
- Producers have to mark electrical and electronic equipment (EEE) by 1 April 2007
- Full responsibility for treating and recycling household WEEE begins on 1 July 2007

The regulations required to enforce the directive in England UK are, at the time of writing, significantly delayed and there is considerable uncertainty surrounding the practical requirements of the Directive for UK producers. However, key points of the new legislation are likely to include:

- A compulsory household collection target, this is likely to be a requirement by 2008;
- Compulsory producer responsibility for the management of consumer WEEE waste;
- Producers able to use collective or individual financing schemes;
- Banning of heavy metals and toxic flame-retardants from July 2006;
- Measures to minimise the disposal of WEEE by consumers as mixed municipal waste;
- Producers banned from preventing re-use or recycling of products with "clever chips";
- Costs of treating historical waste shared proportionately between current producers; and
- Up-front financial guarantees by producers to guard against costs from orphan WEEE.

As a result of the provisions of this legislation, local authorities are likely to have to provide purpose built containers at HWRCs to avoid damaging WEEE products. It may be necessary to provide a kerbside collection service, however this will not be clear until the UK Regulations are implemented.

3.5.6 The European Waste Oil Directive (WOD)

The current regulations have been in force since 1987 and contain a series of requirements to ensure safe management of waste lubricating oils. European Union member states are required to give priority to the regeneration of these oils, where technically, economically and organisationally feasible. Where regeneration into base lubrication oil is not feasible, member states are required to ensure that combustion is carried out under environmentally acceptable conditions.

The UK collects over 80% of recoverable waste oil - amongst the best collection rates in Europe. Almost all the 370 000 tonnes of waste oil recovered annually is recycled to meet a specification as a recovered fuel oil, which replaces the virgin heavy fuel oil that would otherwise be used. No waste oil is currently regenerated for use as lubrication oil in the UK. Government is continuing to look at ways of encouraging waste oil regeneration in the UK, while preserving its excellent collection rate. There is a need for a range of recovery routes for waste oil in the UK and regeneration has an important role to play.

3.5.7 The Waste Incineration Directive (WID)

This sets stringent requirements on all emissions from incineration. It applies to all new installations from December 2002, and to installations that already existed at that date from December 2005. Many installations will be affected, for example cement kilns burning waste solvents and other waste derived fuels, and facilities recovering waste oil through combustion. Any facility constructed in Plymouth would have to be designed and operated to meet the requirements of the Waste Incineration Directive.

3.5.8 The European Battery Directive

The European Commission is proposing to amend legislation on battery recycling to require the separate collection and recycling of all types of batteries in the EU, and the reduction of cadmium in nickel-cadmium batteries.

The proposed amendment to the existing Batteries Directive sets high recovery targets. Through this, the Directive aims to reduce the quantities of post consumer batteries entering the waste stream. Under the new proposals, targets have been set to collect 75% by weight of all spent consumer batteries and 95% of spent industrial and automotive batteries. Batteries containing mercury will be banned immediately and those containing more than 5ppm of cadmium by weight will be banned from 2008. The Batteries Directive poses a significant challenge to the UK as there are no operational collections for mixed domestic batteries at present. The Government is currently funding research into the cost implications of recycling household batteries in the UK

3.5.9 The Environmental Protection (Controls on Ozone Depleting Substances) Regulations 2002

The European Union's Ozone Depleting Substances Regulations came in force from 1st January 2002, and require all CFCs and HCFCs to be removed from refrigeration equipment before such appliances are recycled or disposed of. Whilst the CFCs in the liquid refrigerant are already collected, these Regulations also require the HCFCs in the insulation foam to be extracted which requires substantial processing of redundant fridges and freezers. In addition, due to their CFC content, fridges and freezers are also classified as hazardous waste.

3.5.10 The Environmental Protection (Disposal of Polychlorinated Biphenyls and other Dangerous Substances) Regulations

Electrical equipment such as radios and washing machines sold before 1986 may contain small quantities of polychlorinated biphenyls (PCBs). PCBs are usually contained in electrical capacitors and can cause environmental damage if buried in landfill sites.

The European Directive 96/59/EC on the Disposal of Polychlorinated Biphenyls (PCBs) and Polychlorinated Terphenyls (PCTs) requires that where practicable, PCB containing equipment which is contained within another piece of equipment shall be removed and collected separately when the latter equipment is taken out of use, recycled or disposed of. Equipment containing PCBs must also be treated as hazardous waste.

3.5.11 The Animal By-Products Regulations 2003

Regulations surrounding the handling and disposal of animal by-products came into force 1st May 2003 and enforcing legislation in England was effective from 1st July 2003. The legislation is designed to reduce the risks of the transmission of diseases either from animal to animal or animal to human. The introduction of the law was prompted by outbreaks of BSE and Foot and Mouth Disease.

In waste management terms this legislation has a particularly significant effect on the collection and treatment of municipal waste for composting, particularly waste which contains food materials.

The EU Regulations categorise animal by-products into 3 risk areas:

Category 1 – Very high risk animal by-products including carcasses infected (or suspected to be infected) with BSE, catering waste from means of transport operating internationally,

animals used in experiments, wild animals when suspected of being infected with a communicable disease. All Category 1 animal by-products (or mixtures containing Category 1 animal by-products) must be directly disposed of by incineration or to landfill after heat treatment.

Category 2 – High-Risk animal by-products including manure and digestive tract contents and condemned meat (on-farm deaths). All Category 2 animal by-products must be directly disposed of by incineration or processed through a composting/biogas plant provided they have been rendered under pressure (133°C, 3 bar) prior to entering the composting/biogas process.

Category 3 – Low risk animal by-products including parts of slaughtered animals that are fit for human consumption, parts of slaughtered animals that are not fit for human consumption but do not have signs of communicable diseases and derive from carcasses that are fit for human consumption, hides, skins, hooves, horns, feathers, former foodstuffs and catering waste. Category 3 animal by-products can be processed via a composting/biogas plant without pre-treatment.

The treatment standard required for composting or biogas digestion of animal by-products is 70°C for 1 hour with a maximum particle size of 12mm. The standard is mandatory for treatment of all Category 3 animal by-products (excluding catering waste) and Category 2 animal by-products that have been rendered. The composting must take place in a closed reactor, as the Regulation requires that there is no access by vermin. In addition, all material in the system must meet the required temperature for the necessary time. The Regulation allows for national standards to be applied for the composting of catering wastes.

3.6 Regulatory Uncertainty

Since the passing of the Environmental Protection Act in 1990 the EU and Government have introduced numerous directives, regulations, strategies and other legislation which affect the way in which waste is defined, collected, treated and disposed of. There are pieces of regulation and legislation that have yet to be fully defined including the National Waste Strategy, the WEEE Directive and amendments to the recycling credits scheme. Consequently it is not possible to determine how these emerging documents are likely to affect Plymouth's waste collection and disposal practices. This waste management strategy includes several review dates and further detail of relevant statutory requirements will be updated or revised as necessary.

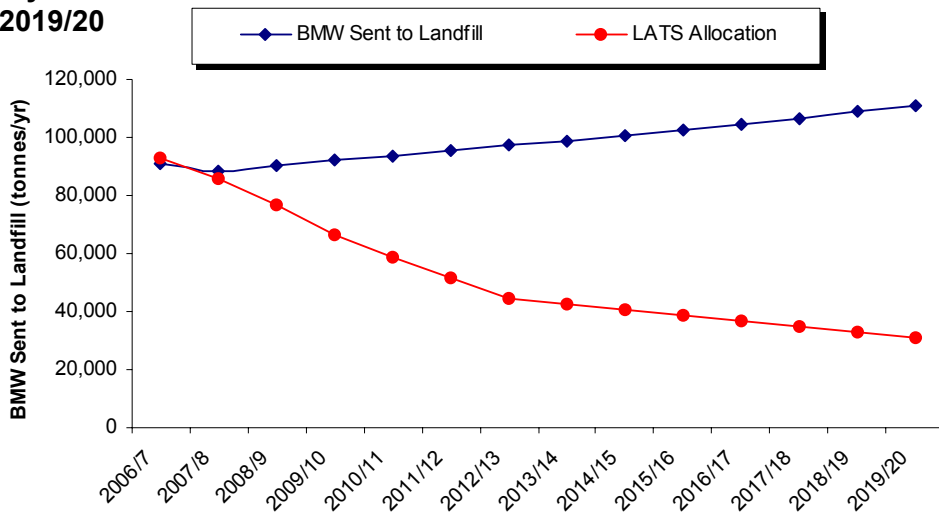
4. Financial Drivers

4.1 Tradable Landfill Permits

As previously discussed in Section 3, 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. Authorities who have more biodegradable municipal waste than the level of permits held have a choice of purchasing permits from other authorities, find alternative treatment or disposal solutions to divert biodegradable municipal waste away from landfill sites, or pay the Government ‘fines’ which are currently set at £150 per tonne.

Figure 4.1 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 and the remaining residual waste is sent to landfill⁵.

Figure 4.1 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 4.1 presents tabulated data for Plymouth’s LATS Allocation, predicted tonnages of biodegradable waste sent to landfill, the

⁵ 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.

potential LATS deficit (the quantity of biodegradable waste sent to landfill above allocation) and the associated financial penalty if the Governments 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 4.1 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 4.1 highlights the 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.

4.2 Landfill Tax

The Landfill Tax was introduced in October 1996 at a rate of £7 per tonne of material sent to landfill. The tax is a specifically targeted levy on the disposal of wastes in landfill sites throughout the UK. It has two main objectives:

- To ensure, as far as practicable, that the cost of landfill properly reflects the impact which it has upon the environment; and
- To help ensure that targets for more sustainable waste management in the UK are achieved.

A mechanism known as the landfill tax multiplier has seen the tax increased by £1 per tonne per year up to and including April 2004. From April 2005 the multiplier increased to £3 per tonne per year and the current rate of landfill tax is £21 per tonne. The multiplier will continue to a medium to long term rate of £35 per tonne. These increases represent a growing financial burden to the Plymouth City Council and demonstrate the economic risks of relying on landfill as the key medium and long term waste disposal solution. At present the Council has no alternative disposal route and is obliged to pay landfill tax.

4.3 **Energy from Waste (ROCs)**

Renewable Obligation Certificates (ROCs) is the name given to the digital certificates which holds details of exactly how a unit of electricity was made, by whom and finally who bought and used it. These ROCs are traded separately to the actual electricity itself and work as a bonus premium on top of the price paid for the unit.

Energy Companies are now being required to generate a minimum of 10% of their electricity output from sustainable sources. If they have not managed to produce the required amount of green energy themselves they must buy ROCs on the open market to make up the shortfall. If they fail to buy the required amount fines can be imposed.

ROCs are good news for renewable energy as they ensure a certain minimum percentage of Green Energy is produced nationally and provide the financial incentive to encourage generators to invest in Renewable Energy Schemes of their own. Certain waste technologies that produce electricity qualify for ROC's and, as a result, can generate significant income for a Local Authority while also adhering to the waste hierarchy by 'recovering' value from the waste.

4.4 **Transport Costs**

Historically Plymouth has relied on landfill as the sole disposal route for all residual waste. The City has disposed residual waste at the council owned landfill site at Chelson Meadow for a number of years and, as a result transport costs for residual waste to the landfill have been low. The new landfill contract due to begin in March 2008 is approximately 20 miles outside of the city. The increased mileage and requirement to bulk waste at a transfer station prior to transporting to the new landfill site will increase the cost of residual waste disposal significantly. This additional cost, coupled with the associated environmental impacts of bulk haulage, makes disposal to landfill an unsustainable option. Therefore, the City of Plymouth requires alternative disposal and/or treatment solutions to enable the effective management of waste within the City.