Biowaste (Food and Biodegradable Residual)

1.1 This paper summarises the biowaste (food and biodegradable residual) opportunities in Hampshire required to meet the Vision of the MRS. The waste stream overlaps with waste streams covered by other papers on **agricultural waste**, **biowaste (green), biowaste (wastewater), wood, paper and card** and **textiles.**

1.2 **The main opportunities to meet the MRS Vision**

1.3 **Locally:**

- The MRS partners should carry out research to establish the types and quantities of biodegradable waste produced, particularly in the commercial sector, in order to highlight opportunities for increases in recycling and for the sharing of disposal and/or recycling costs.
- The MRS partners should attempt to stimulate increased business participation in food donation schemes through joint working with trade organisations to increase awareness.
- The MRS partners should investigate new technologies such as Mechanical Biological Treatment (MBT) and composting techniques to assess how they can be most appropriately used the future for waste management in Hampshire.

1.4 **Nationally**:

- The MRS partners should future government research into collection, processing and markets to increase the number of uses for the recycled product and to provide more stable markets.

1.5 **European:**

- The MRS should support the introduction of legislation to promote the biological treatment of biowaste by harmonising the national measures concerning its management in order to prevent or reduce any negative impact thereof on the environment, thus providing a high level of environmental protection.

Current food and biodegradable residual waste in Hampshire

2.0 Food and biodegradable residual waste break down into three different broad classifications, which require different methods of treatment and produce varying quality products. Green waste is one, which is covered separately, and the other two are source separated green food waste and un-separated mixed food waste with wood, paper and card and textiles. Source

separated green food waste consists of raw or processed vegetable wastes from households, restaurants and food manufacturers. Un-separated household and commercial food waste can potentially contain meat and packaging or other contaminants.

2.1 Table 1 shows the approximate quantities of biodegradable food and residual waste (excluding separated green garden wastes) arising in 2000/2001. The total quantities of waste are estimated to be about 530,000 (Entec, 2004), although the data upon which these figures are based requires a number of assumptions to be made, and it is likely that the actual figure will be lower, rather the higher than the estimate. However, despite these shortcomings this data is the best available at the current time (stakeholder working group,2004).

Table 1 - Biodegradable Waste Arisings in Hampshire, Portsmouth and Southampton (excluding green wastes collected for composting) 1998/99

	2000/01 (tonnes)
Biodegradable Household Waste (excluding garden waste)[1]	331 235
Commercial/Industrial Biodegradable Waste[2]	199 000
TOTAL	**530 235**

(Source: Hampshire County Council Waste Management, 2003; and SWMA for the South East, Environment Agency, 2000).

Note 1 – calculated using the results of the 1999 Hampshire Household Waste Compositional Study, which estimated that 14.39% of the household waste collected from the kerb-side was green (by weight). Note 2 - For calculation purposes, commercial and industrial biodegradable arisings have been calculated to grow from 2000/01 in accordance with the green waste arising from the kerbside collections (1% and 1.6% respectively). The 2000/01 figure is based upon 1998/99 data - the only year for which data has been available. Moreover, it should be noted that this figure has been derived (in part) from the *other general and biodegradable* category of industrial and commercial waste arisings, which could potentially include an element of non-biodegradable waste.

2.2 Current Legislation

- EU Landfill Directive
- Animal By products Order and associated legislation
- Landfill (England & Wales) Regulations 2002

Existing recovery routes and infrastructure in Hampshire

3.0 Current Resource Management

3.1 The majority of these biodegradable food and residual wastes arising in Hampshire are landfilled, although a proportion of the household waste is incinerated to recover energy (probably about 50,000tpa) mixed with other household waste. This approximation can be reached because it is known that Chineham EfW plant processes 95,000tpa of household waste per year, and just over half of household waste is biodegradable food and residual waste. Biodegradable waste is not ideal for energy recovery due to its moisture content, however, it is possible to incinerate as part of a mixed waste stream, with higher calorie wastes. It can also be pre-treated to drive off moisture and provide a drier feedstock. Table 2 shows the existing non-landfill waste management capacity suitable for biodegradable wastes in Hampshire.

Table 2 Current non-landfill waste management capacity in Hampshire suitable for treating food or residual biodegradable wastes

Site	Operator	Waste sources	Annual throughput (tpa)	Maximum Capacity (tpa)
Chineham Incinerator	Hampshire Waste Services	Household waste only	95,000	95,000
Fawley (EfW)	Shanks	Trade or household	60,000*	60,000
Total			**155,000**	**155,000**

* Shanks facility currently takes MBM which is not included in the waste arisings. Contract will finish next year and other wastes could be sourced.

3.2 In addition to the facilities at Chineham and Fawley, two additional energy from waste facilities are currently under construction at Marchwood and Portsmouth, and will be able to accept household wastes. The Marchwood facility should commence operating in 2005 and the Portsmouth facility should commence operating in 2006. These facilities will have capacities of 165,000 tpa each. The EfW plant operated by Shanks currently processes meat and bone meal (which is not included in the Hampshire waste arisings). This plant could potentially be available in the future to generate energy from waste generated in the commercial sector and has a capacity of 60,000tpa.

3.3 **Social Issues**

3.4 There is real confusion about the appropriateness of some kitchen wastes in the composting stream. There is a perception that anything organic can be composted. Householders need more guidance on the process of home composting and what can and cannot be composted.

3.5 **Environmental Issues**

3.6 The treatment of animal by-products (including catering waste) in a composting or biogas plant is included in the scope of the Animal By-Products Regulations. Catering waste is defined as “all food including used cooking oil originating in restaurants, catering facilities and kitchens, including central kitchens and household kitchens” (EC,2003). The Regulations stipulate that this catering waste shall be transformed in a biogas plant or composted in accordance with special rules. The Regulations should not affect the application of existing environmental legislation or hinder the development of new rules on environmental protection, particularly as regards biodegradable waste (EC,2003).

3.7 The Animal By-Products Regulations prohibit the application to pastureland of organic fertilisers and soil improvers, other than manure. However, the Commission has declared that it can accept that Member States may continue to allow the spreading on pastureland of digestion residues, providing that farmed animals are not allowed to graze for at least three weeks, until implementation measures are harmonised, and subject to the condition that the competent authority supervises effectively the spreading of the materials concerned against the risks to human and animal health, in accordance with all applicable control provisions (EC,2003).

3.8 Compost and stabilised biowaste that could be contaminated with animal by-products, is subject to strict controls regarding the way in which it can be deposited upon agricultural land. The uses for compost that may contain food or animal waste are therefore more restricted, than for source separated food and green wastes.

3.9 The application of stabilised biowaste and compost onto soils can pose certain environmental problems, mainly related to an excessive and/or unbalanced supply of nutrients, the introduction of pollutants (such as heavy metals and hazardous organic compounds), and the spreading of human, animal or plant pathogens (EC,2003). However, much has been done at a European level to minimise the potential transmission of pathogens by waste through effective treatment processes and by matching efficiency of pathogen removal to operational restriction on application practices and land use (EC,2003). There is little evidence of disease in man or animals arising from land application of biowastes. The few documented cases have occurred when local regulations or codes of practice have not been observed. However, generally the source of isolated cases of infection are not investigated or identified (EC,2003).

3.10 **Economic Issues**

3.11 Landfill tax is tax is currently set at £15 per tonne, and the long-term aim is stated to be to increase this to £35 per tonne. Food waste that is diverted from landfill will therefore avoid this cost. However, the treatment methods currently available are more costly than the current landfill tax level, and so economically landfill of this waste is the cheapest disposal option at present. This explains the current lack of commercial interest in providing, enclosed or in-vessel composting and/or mechanical/biological treatment facilities.

3.12 A further problem with investment in treatment and composting infrastructure is the current limited and uncertain markets for products derived from these treatment options. It is also speculated that the planning and waste management licensing systems often result in significant additional costs and sometimes lengthy delays. All in all, this makes it difficult to find businesses willing to make the initial investment necessary to provide this infrastructure.

3.13 The cost of land on industrial estates, coupled with the low current margins on compost and stabilised biowaste production, means that operators can be out-competed when it comes to obtaining land. Farms are a much cheaper alternative, in terms of land value, but in Hampshire the only on-farm composting sites are small scale exempt sites, with restricted inputs. However, this does not mean to say that larger, more complex, licensed facilities dealing with food wastes would not be permitted on farms. In the event that these dealt with wastes, where animal by-products issues exist (such as wastes containing meat and so on), strict controls to segregate the facility from the farming activities may be required.

3.14 There are currently further additional costs associated with compliance with the Animal By-Products Order. These are currently being met by the Department for the Environment, Food and Rural Affairs (DEFRA), but there is uncertainty over whether this will remain the case in the long-term.

3.15 **Codes of Practice**:

3.16 Composting Association have produced the following guidance.

- The Practical Guide to Compost Marketing and Sales
- The State of Composting in the UK 2001/2002
- Large-scale composting – A practical manual for the UK
- The Composter's Answers Book
- Composting Source Separated Organics
- A guide to In-vessel composting – Plus a Directory of Systems

3.17 **Current Key players**

3.18 ***Onyx Hampshire Ltd (Hampshire Waste Services)*** is the main waste management operator in Hampshire, after winning a 25-year integrated waste

management contract with Hampshire County Council in 1995. They operate as part of Project Integra, which is a partnership between all 14 Local Authorities in Hampshire and Hampshire Waste Services .

3.19 ***Viridor*** is a large commercial waste operator with facilities in Hampshire. It provides a variety of waste management services through the UK.

3.20 ***SITA*** delivers a wide variety of resource and waste management services to businesses and residents throughout the UK.

3.21 ***Project Integra*** was set up in 1993, helping to introduce an integrated waste management strategy for Hampshire. The green waste recycling infrastructure in Hampshire has been set up through Project Integra and currently provides high recycling rates of household generated green waste.

3.22 ***Food Retailers*** consist of the large supermarket chains, fast food-chains and a range of smaller businesses ranging from local shops, bakeries, fruit and vegetable sellers, farmers markets and restaurants.

3.23 ***Food Manufacturers and Caterers*** have a significant impact on the amount of wastes produced in Hampshire. In particular the watercress industry is prevalent in Hampshire.

3.24 Supporting Organisations

3.25 The ***Environment Agency*** regulates waste management activities through a system of licences, permits and exemptions. The Agency register the hauliers of waste and can provide limited advice on waste management methods.

3.26 The ***Department for the Environment, Food and Rural Affairs*** (***DEFRA)*** is the Government department with prime responsibility for food, rural affairs, agriculture, waste and resource management, as well as other forms of environmental protection and the promotion of sustainable development.

3.27 The ***Composting Association*** is a not-for-profit organisation. The Association acts as a central resource for composting. They carry out research, collect and disseminate information and work to provide a united voice for their members in the UK (including lobbying Central and Local Government regarding the benefits of composting and compost use).

3.28 ***National Farmers Union (NFU)*** is the democratic organisation for farmers and growers in England and Wales. It represents the farmers and growers with a central objective to promote successful and socially responsible agriculture and horticulture, while ensuring the long term viability of rural communities. The ***NFU*** is the largest farming organisation in the UK, representing around three quarters of the full time commercial farmers of England and Wales.

3.29 The ***Food Standards Agency*** is the independent food safety watchdog whose aim is to protect public health and consumer interests in relation to food.

3.30 The ***Henry Doubleday Research Association*** (HDRA) is Europe's largest organic membership organisation. It is dedicated to researching and promoting organic gardening, farming and food.

3.31 The ***Hampshire Economic Partnership*** brings together business and local government, and support the economic prosperity of Hampshire.

3.32 **Examples of Current Best Practice**

3.33 The ***Crisis FareShare Food Donation Scheme*** gives edible food from retailers (that is past its 'best before' date) to homeless people. The scheme collects and re-distributes surplus fresh food to the people who need it, in hostels and day centres, and actively works in the city of Southampton. Food donated has to be within its 'use by' date and of good quality. It is collected in refrigerated vans and delivered to a depot where it is checked and redistributed. FareShare has established a network of shops and restaurants who regularly donate surplus food. The project is the first food redistribution service in Southampton and is thought to contribute over 2000 meals a week. The project utilises local volunteers.

3.34 The ***Composting Association*** has an accreditation scheme ***(PS100)*** to certify that compost meets certain standards. This improves the marketability of the product because purchasers know that they are buying something of genuine value.

3.35 ***Homsworthy Biogas*** uses anaerobic digestion of animal and food processing residues to generate energy. The system provides a renewable source of combined heat and power, and provides numerous direct and indirect benefits to the community. The plant processes farm slurries (liquid manure) and food waste to produce a gas that is approximately 65% methane. The gas fuels two Combined Heat and Power units, which can generate over 2 MWe of electricity, and a similar quantity of heat. Although the major fuel source for the plant is farm slurry collected by road-tanker, it also processes food wastes including that arising from the Ginsters factory.

3.36 ***Vital Earth*** has introduced a new method to convert biodegradeable household waste into plant fertiliser at high speed. Vital Earth's system claims to turn waste into compost and a valuable 100% natural plant food in less than a month. The company has reached an agreement to run its operations from landfill sites and propose to have three sites up and running by the end of 2004. The process should produce a consistent product with

low levels of pathogens and weed seeds. Income can be generated from charging for acceptance of the way, and from sales of compost and worm casts. The compost can also be further processed by the worms creating a plant food, which is marketed as Vitalizer.

How is this likely to change by 2020

4.0 Future Data Required

4.1 Need more robust data on commercial food waste. Local data could be collected as part of awareness raising exercises.

4.2 Producers and composters need more information about each other to spot new markets and opportunities.

4.3 Need more information on food waste and the complexities of treating, collecting, segregating and processing food waste. New Technologies funds could be used for this purpose.

4.4 Very little strong independent scientific research on composting. We need to get a joint view on available data and we need an independent best practice view on food composting and processing options.

4.5 Future legislation

4.6 Future legislation is expected under the EU Animal By-products Directive, and the Biowaste Compost Directive. It is likely that future animal by-products legislation will make food waste composting problematic due to the potential risks of spreading foot and mouth or other diseases (stakeholder working group,2004).

4.7 The European Commission has given a commitment that by the end of the year 2004 a Directive on biowaste, including catering waste, will be prepared with the aim of establishing rules on safe use, recovery, recycling and disposal of this waste and of controlling potential contamination (EC,2003).

4.8 The Compost Directive has moved to the Soil Strategy which means there is less Waste Management influence. Different composting systems will need to be mixed and matched to the appropriate area. This will need to take into account the types and quantities of the feedstock.

4.9 Future waste arisings

4.10 Food wastes volumes are expected to continue to rise, particularly the quantities of processed foods consumed (stakeholder working group,2004). The extent of these rises will be driven in part by the success of MRS in

changing the methods of food retailing, and peoples consumption and lifestyle choices. A variety of methods (discussed further in section 4.23) could start to reduce to quantities of food and residual waste requiring disposal, however, the likely impact of these measures is thought to be minor. For the purposes of this background paper increases have been assumed to rise at 1% per year in line with the projections in the Regional Waste Strategy (*No Time to Waste, as listed in the references section at the end of this paper).*

4.11 Home composting is the most environmentally acceptable method of recycling many types of household biodegradable waste, with the compost produced being reused within the garden. However, household kitchen waste needs careful separation prior to composting to avoid problems with smells, flies and pathogens. Whilst home composting is a very effective waste management solution for green garden waste, it is felt that home composting of kitchen waste should not be encouraged (stakeholder working group,2004) due to the difficultly in carrying out the process without causing a nuisance. For similar reasons food and residual waste is thought to be unsuited to community composting schemes (stakeholder working group,2004).

4.12 Trade green waste arisings from the commercial sector vary in how easy they are to collect. Supermarkets are the most obvious source of food wastes. With the appropriate infrastructure it should be possible to capture the majority of this waste for further treatment or energy recovery. An estimate of the level of arisings of food waste is difficult to obtain, although the quantities are expected to be significant (stakeholder working group,2004). A trial food waste collection scheme at a Hampshire supermarket has been carried out, and recovered around 6 to 7 tonnes of food (mixed with green) waste per week. However, the scheme ceased at the end of the trial through lack of interest. The trail was however valuable in identifying that separate collection of food and green wastes from trade sources is possible, and that the quantities recovered could be significant. As landfill tax increases, interest in the separation of the waste should increase.

Table 3 – Estimated future Biodegradable Waste Arisings in Hampshire, Portsmouth and Southampton (excluding green wastes collected for composting) 1998/99

	2000/01 (tonnes)	**2002/03 (tonnes)**	**2010 (tonnes)**	**2020 (tonnes)**
Biodegradable Household waste (excluding green waste)[1]	331 235*	335 512	360 000	397 700
Commercial/Industrial Biodegradable Waste[2]	199 000*	201 595	214 000	237 000
TOTAL	**530 235**	**537 107**	**569 000**	**629 000**

(*source: Entec,2004)

(Note: the projected arisings for 2010 and 2020 reflect a 1% growth per year)

4.13 **Future Options for Resource Management**

4.14 The management of biowaste should support an integrated approach to waste management and natural resources by promoting material recycling, the closing of the nutrient loop and minimising final disposal, while recognising the need for favourable conditions for investments in the treatment companies (EC,2003). It is also necessary to ensure that the land spreading of stabilised biowaste or compost happens in a cost-effective manner and in such conditions that the potential drawbacks, in particular possible negative effects to human and animal health, wildlife and biodiversity and long-term impact on soil quality, are minimised and the positive aspects, notably from an agronomic point of view, are maximised (EC,2003).

4.15 Aerobic in-vessel composting of source separated food waste can produce a low grade compost which is semi-inert but difficult to market. The process is carried out within a building. The product can only be spread on agricultural land in accordance with animal by-products legislation, and markets would need to be developed from scratch. The product could potentially be used as daily cover to assist with the environmental management of landfill sites, but this would not constitute recycling, and there are cheaper waste treatment that could produce suitable landfill cover material.

4.16 Anaerobic digestion is a similar type of process to aerobic in-vessel composting, except that the process is carried out without oxygen. The technology is worth future investigation although it remains expensive at present. This is partly because it has yet to establish a track record in the UK, only treats part of the waste stream and requires considerable capital investment. The process produces biogas can be combusted directly in modified gas boilers or can be used to run an internal combustion engine, and residue that has a some value as a soil conditioner and also, with some systems, a liquid residue which has potential as a fertiliser (EC,2003). The issue of the treatment/disposal of the waste water from anaerobic digestion is also an important element to consider given the need to dispose of a relatively high amount of waste water (EC,2003).

4.17 Mechanical Biological Treatment (MBT) may play an important role as a complementary treatment option along the lines of the provisions of the Landfill Directive, which requires a pre-treatment of the waste to be landfilled to achieve further reduction of its biodegradability (EC,2003). It may also be well integrated with energy recovery from residual waste, whose pre-treatment may improve conditions for thermal treatment, giving the system the needed flexibility to cope with variations of calorific value as a consequence of progressive growth of the biological treatment of biowaste (EC,2003). It would be important to define conditions for the MBT process and rules relatively to the use of MBT residues. The objectives could be to clearly distinguish MBT residues from high-quality compost. At the same time, MBT process parameters could be optimised in order to reduce the biodegradability

of MBT residues in case of landfilling (EC,2003). Stabilised biowaste produced through Mechanical and Biological Treatment can be mixed with compost to produce a low quality soil improver. The process achieves a 50% volume reduction in the wastes through the quantities of moisture driven off.

4.18 The incineration of food waste is best carried out as part of a mixed waste stream, such as household waste, in order to mix it with high calorie energy sources (such as plastics). Separated food waste does not incinerate very well because it is too wet to burn efficiently.

4.19 Biodegradable waste can form some of feedstock for energy from waste plants (EfW), and can be used to generate electricity. There are already EfW plants at Chineham, near Basingstoke, and Fawley, and two more are currently being constructed at Marchwood and Portsmouth, which will be able to process 165,000 tpa of waste each. Chineham is able to process 95,000 tonnes per annum. This makes a total future waste management capacity of 425,000 tonnes per annum which will be available by 2010. These EfWs would not be able to process any trade waste. The Shanks EfW facility at Fawley is currently the only merchant facility available to take trade waste.

4.20 Pyroloysis is a developing technology that may be able to play a role in processing this waste some time in the future, although at present it is an extremely expensive treatment option. Worm farms (wormiculture) are a potential method of green waste composting but are not widespread at the current time, and the requirement for large areas of land and very careful management means they are likely to remain a niche solution.

4.21 There is no planned capacity for in-vessel composting (either aerobic or anaerobic) in the County, or Mechanical Biological Treatment (MBT). These technologies are not currently considered suitable for processing biodegradable waste because the technologies are too new, the treatments expensive and energy from waste currently represents a better disposal option (stakeholder workshop,2004). There may be future opportunities for in-vessel composting of food waste, if sufficient quantities can be separated from the general waste stream, however, uncertainty surrounding future animal by-products legislation, could mean that markets for the compost product are difficult to develop. Further research needs to be carried out into these technologies and the role they might play in the future management of Hampshire's biowaste (stakeholder workshop,2004).

4.22 Table 4 shows the permitted non-landfill waste infrastructure in the County, that could process bio-degradeable waste. In order to recover energy from biowaste, it is necessary that it is mixed with other waste types in order to burn effectively. However, the figures for EfW capacity represent the total capacity rather than the total amount of biowaste that could be processed and the figures showing the shortfall or surplus in capacity are of limited value. MBT could treat the whole of this waste stream, in a separated form, but in-vessel and anaerobic digestion could only treat parts.

Table 4 Permitted non-landfill waste management capacity in Hampshire suitable for treating food or residual biodegradable wastes for households

Site	Maximum Capacity (tpa)				2010		2020	
	EfW	In-vessel (aerobic)	Anaerobic digestion	MBT	Arisings	(Shortfall)/ surplus	Arisings	(Shortfall)/ surplus
Household waste	425 000	0	0	0	**360 000**	65 000	**397 000**	28 000
Non-household waste	60 000*	0	0	0	**214 000**	(180 000)	**265 000**	**(205 000)**
Totals	**485 000**	**0**	**0**	**0**	**574 000**	**(115 000)**	**662 000**	**(177 000)**

* Shanks facility currently takes MBM which is not included in the waste arisings. Contract will finish next year and other wastes could be sourced.

4.23 **Social Issues**

4.24 Most food waste is produced by restaurants, supermarkets and fast food chains and it is important that they are involved in the finding a solution to the problem. It is thought that some practices, such as supermarket 2 for 1 offers (BOGOF) and large restaurant portions can encourage over-shopping and it is necessary to engage in dialogue to see whether these practices can be improved. Reducing the amount of food wastes is difficult to achieve. It is likely to be more effective to target the key producers such as supermarkets to try and show the cost reductions of reducing wastes. Furthermore, it is important to tackle policies on disposal of out-of-date food. Many food retailers use freshness as a selling point, and this can inevitably lead to edible food being thrown away. An innovative solution to this problem can be schemes which give food past its sell-by date, but within its use-by date to homeless shelters which a main supermarket has trailed.

4.25 The “Just in time” policies practised by supermarkets, that provide foods in case the customers want them are very wasteful, as are Customs and Excise Rules require out of date food such as bananas being imported through the docks to be destroyed if they are not immediately distributed. However, some supermarkets are already providing food distribution programmes in some areas and supermarkets are also selling discount foods such as meat ends and broken biscuits in order to reduce waste and save waste disposal costs.

4.26 **Environmental Issues**

4.27 The Hampshire Soil Strategy will be relevant in identifying and addressing some of the environmental issues associated with this resource stream.

4.28 Quality standards are important to insure that composts and stabilised biowastes are directed to their most appropriate use environmentally. They should fix the maximum tolerable levels of pollutants as well as pathogens, and account should be taken of sanitisation aspects. These levels should be based on sound scientific evidence, on concepts for long-term safe application, and should be able to appease the concerns linked with the use of waste-derived products in agriculture (EC,2003).

4.29 The production of energy from the combustion of biogas produced by the anaerobic digestion of biowaste is classified as renewable energy and could reduce the need for use of fossil fuels. This also applies to EfW plants which burn untreated waste and sell electricity back to the national grid.

4.30 It could be envisaged introducing certain technical specification for MBT-treated biowaste to be landfilled, in such a way that stabilised biowaste would not be considered actively biodegradable any more. This would therefore perform a pre-treatment role and reduce the quantities of biodegradable waste landfilled (EC,2003).

4.31 Along with classification parameters, labelling requirements could be needed in order to inform end users of the feedstock material (separately collected biodegradable waste, garden waste, organic fraction from unsorted household waste, sewage sludge, green waste), of the characteristics of the product (organic matter, nutrients, pH, salinity, pollutants), of its correct use (soil improver, growing media, mulch), of its rate of application (to take account of the nutrient load) (EC,2003).

4.32 There are existing standard for catering and animal by-product waste, however, it is necessary to develop these definitions to cover state veterinary waste. The Environment Agency has a requirement for condemned food to be destroyed

4.33 Economic Issues

4.34 Disposal of biodegradable waste will become increasingly expensive with Landfill Tax set to increase £3 per year until it reaches £35 per tonne. Considerable savings in disposal costs are likely to be possible as tax rises, and other waste management technologies become increasingly viable.

4.35 Need to look at the justification for the costs of processing because source separated waste will have value. But also need to consider weight and volume for landfill if we cannot do anything with this material.

4.36 Public procurement of composts will help in establishing stable markets. This applies at both a local government and central government level. The use of compost in public sector schemes also increases the opportunities to sell in the private sector, because effective results can be shown.

4.37 Standard sampling procedures, harmonised at EU level, could be introduced. This would be a rather important point insofar trade between Member States is concerned because classification and labelling of compost should be uniform in the EU and this is heavily dependent on common sampling criteria and procedures (EC,2003). In this context, the Commission has actively participated in the setting up of a research consortium called "Horizontal" to which many Member States are also contributing. Main task of this consortium is the elaboration of horizontal standards in the fields of sludge, biowaste and soil. It is expected that the first standards should be available in 2006 (EC,2003).

4.38 There could be a possibility for adopting provisions for the testing, labelling and entry into the market of materials, particularly packaging, deemed to be compatible with the biological treatment of biodegradable waste. In particular, it could be proposed that a harmonised packaging logo be adopted at Community level. This logo would allow the general public an informed choice about packaging materials and would help in the separate collection of biodegradable waste.

4.39 Fiscal measures are very important and is currently not where it needs to be. Hampshire needs to lobby this and assume the market will correct itself. Landfill tax is very important in order to drive the demand for high quality material market.

4.40 Provisions should provide for minimum process requirements (residence time, temperature, environmental conditions etc) for anaerobic digestion, composting and mechanical/biological treatment (MBT) in order to ensure that the best techniques and standards are applied. This would be a crucial point in terms of market possibility for compost and of possible destinations for stabilised biowaste (EC,2003). Sanitisation requirements with respect to animal and human welfare should be introduced and sanitisation requirements for plant protection could be considered.

References

References

- European Commission – Draft Discussion Document for the Ad Hoc meeting on Biowastes and Sludges 15-16 January 2004, Brussels (EC.2003)
- Waste Not, Want Not (Strategy Unit, 2002)
- National Waste Strategy (DETR,2000)

- No time to waste (SEERA 2004)
- Review of Environmental and Health Effects of Waste Management (DEFRA, 2004)
- Hampshire Minerals and Waste Framework: Waste Forecasting Draft Interim
- Hampshire, Portsmouth and Southampton Minerals and Waste Local Plan Annual Monitoring Report 2002/3, (HCC November 2003).
- Hampshire Minerals and Waste Framework: Waste Forecasting Draft Interim Baseline Report (Entec,2004)
- Project Integra Waste Volume Service Plan 2003-2009 (Project Integra, 2003)
- Waste management options and climate change, Final report to the European Commission, DG Environment (Smith, Brown, Ogilvie, Rushton, Bates (AEA Technology),2001)
- *Hampshire Soil Strategy*

Further sources of information

Interviews

Mary Messer – Composting Association 15 April 2004
Stakeholder meeting 23 June 2004

Websites

www.urbanmines.org.uk/background.htm
www.financewales.co.uk/eng/news.php/id=74
www.wrap.org.uk

Appendix 2 Food and Residual Waste Recycling Options

Issues/Opportunities (general)

- Food and residual waste is currently landfilled, or used for EfW.
- Recycling high levels of food and residual waste using MBT, in-vessel composting and anaerobic digestion will have implications for the future requirement for EfW in the County.
- A significant proportion of this waste stream is landfilled and alternative treatment methods will have to be found in order to meet EU targets for the reduction of biodegradable household waste.
- Animal by-products legislation will have a significant impact on the likely future management methods for this waste stream.
- Use of sink disposal units for food waste could reduce the amount of this waste in the general waste stream

Proposed Actions (for the MRS Partners)

- Measures to reduce waste arisings will be important, and these should be encouraged.
- More investigation and research into opportunities for in-vessel composting , anaerobic digestion and MBT.

Proposed Policies (wording is indicative)

- Proposals for demonstration facilities to research the viability of new and existing treatment methods for food and residual waste will be favourably considered.
- Proposals for new in-vessel, anaerobic digestion and MBT facilities will be supported, where products have a guaranteed quality standard and fulfil a use other than landfilling.

Proposed Options

Option 1 (Baseline)

This option would lead to a recycling rate of 0%, but requires no new infrastructure.

Percentage recycled – 0%.

Infrastructure required – no new capacity.

Cost - This would be a zero cost option.

Option 2

This proposal would be to compost, or to produce a stabilised digestate from 20% of the food and residual waste arising in the County. This would require the provision of about 125,000tpa capacity of in-vessel, anaerobic digestion and/or MBT and would produce soil conditioner. Separate doorstep collections of household food and residual biodegradable waste, and separate collections of trade food and residual biodegradable waste for larger producers will be required in areas close the plant, to collect sufficient segregated waste to run the plant(s) at maximum capacity.

Percentage recycled – 20%.

Infrastructure required – One large, or several small scale facilities of anaerobic digestion, in-vessel composting and MBT of 125,000tpa total capacity. New waste transfer stations where demand is identified..

Cost - This would be a high cost option for households and medium cost to business

Option 3

This proposal would be to compost, or to produce a stabilised digestate from 40% of the food and residual waste arising in the County. This would require the provision of about 250,000tpa capacity of in-vessel, anaerobic digestion and/or MBT and would produce soil conditioner. Separate doorstep collections of household food and residual biodegradable waste, and separate collections of trade food and residual biodegradable waste for larger producers will be required in areas close the plant, to collect sufficient segregated waste to run the plant(s) at maximum capacity.

Percentage recycled – 40%.

Infrastructure required – Two large, or several small scale facilities of anaerobic digestion, in-vessel composting and MBT of 250,000tpa total capacity. New waste transfer stations where demand is identified.

Cost - This would be a high cost option for households and medium cost to business

Option 4

This proposal would be to compost, or to produce a stabilised digestate from 60% of the food and residual waste arising in the County. This would require the provision of about 375,000tpa capacity of in-vessel, anaerobic digestion and/or MBT and would produce soil conditioner. Separate doorstep collections of household food and residual biodegradable waste, and separate collections of trade food and residual biodegradable waste for larger

producers will be required in areas close the plant, to collect sufficient segregated waste to run the plant(s) at maximum capacity.

Percentage recycled – 60%.

Infrastructure required – Three large, or several small scale facilities of anaerobic digestion, in-vessel composting and MBT of 375,000tpa total capacity. New waste transfer stations where demand is identified..

Cost - This would be a high cost option for households and medium cost to business

Option 5 (stretching best practice)

This proposal would be to compost, or to produce a stabilised digestate from 95% of the food and residual waste arising in the County. This would require the provision of about 600,000tpa capacity of in-vessel, anaerobic digestion and/or MBT and would produce soil conditioner. Separate doorstep collections of household food and residual biodegradable waste, and separate collections of trade food and residual biodegradable waste will be required across the whole County.

Percentage recycled – 95%

Infrastructure required – Five large or several smaller scale facilities of anaerobic digestion, in-vessel composting and MBT of 600,000tpa total capacity. New waste transfer stations where demand is identified.

Cost - This would be a high cost option for households and high cost to the waste industry.

Scenario	Recycling rate	Infrastructure
Option 1 (baseline)	0% recycling	No new infrastructure
Option 2	20% recycling	One large, or several small scale facilities of anaerobic digestion, in-vessel composting and MBT of 125,000tpa total capacity. New waste transfer stations where demand is identified.
Option 3	40% recycling	Two large, or several small scale facilities of anaerobic digestion, in-vessel composting and MBT of 250,000tpa total capacity. New

		waste transfer stations where demand is identified.
Option 4	60% recycling	Three large, or several small scale facilities of anaerobic digestion, in-vessel composting and MBT of 375,000tpa total capacity. New waste transfer stations where demand is identified.
Option 5 (stretching best practice)	95% recycling	Five large or several smaller scale facilities of anaerobic digestion, in-vessel composting and MBT of 600,000tpa total capacity. New waste transfer stations where demand is identified.

Other options considered

The stretching best practice option will have considerable implications for end disposal options the County Council is committed to, and this will be considered later in the MRS process when end disposal options are addressed.

Sink disposal units could make a very significant contribution to household food waste disposal and are probably the best overall option for the management of this waste stream. This will be covered later in the MRS process under end disposal options

Appendix 3 MRS RESOURCE STREAM ANALYSIS

RESOURCE STREAM APPRAISAL

KEY FEATURES OF PREFERRED OPTION FOR AGRICULTURAL WASTE

Option selected: Option 3

Arisings (tonnes per annum)

	2003		2010		2020	
	Household	C&I	Household	C&I	Household	C&I
Food & Residual Waste	335,512	100,797	360,000	107,000	397,000	118,500
TOTAL	335,512	100,797	360,000	107,000	397,000	118,500

Resource Recovery (tonnes per annum)

	2003		2010		2020	
	Househld	C&I	Househld	C&I	Househld	C&I
Food and Residual Reuse	0	0	0	0	0	0
Food and Residual Recycling	0	0	144,000	42,800	158,800	47,400
Food and Residual Recovery	0	0	0	0	0	0
Unavoidable Waste	335,512	100,797	216,000	65,000	238,300	71,100

Existing Infrastructure

No infrastructure exists.

Additional Infrastructure Requirements

Two large, or several small scale facilities of anaerobic digestion, in-vessel composting and MBT of 250,000tpa total capacity. New waste transfer stations where demand is identified.

Collection Infrastructure Requirements

Separate doorstep collections of household food and residual biodegradable waste, and separate collections of trade food and residual biodegradable

waste for larger producers will be required in areas close the plant, to collect sufficient segregated waste to run the plant(s) at maximum capacity.

Societal Change Requirements

None

Market Development / Initiatives

Cost

This would be a high cost option for households and medium cost to business

Government Action Required

None