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October 2007

South Tyne & Wear Waste Management Partnership

Joint Municipal Waste Management Strategy

Gateshead Council
www.gateshead.gov.uk

South Tyneside Council

Sunderland City Council

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Headline Strategy

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1 INTRODUCTION

How waste is managed is an important issue and although the performance of South Tyne and Wear has improved in this area, with the public reducing waste, reusing and recycling materials, we can and need to do more. At the moment around 20% (1) of household waste is recycled with the remaining 80% currently going to landfill.

Continuing to throw away ever increasing amounts of waste, costs us money, is a loss of valuable resources and damages our environment. We need to continue reducing, reusing and recycling our rubbish to cut down the amount we throw away. By making small changes now we can, together, make a big difference by helping to ensure more sustainable waste management arrangements for the future.

That is why the Partnership of South Tyne and Wear Councils (Gateshead, Sunderland and South Tyneside) has been working closely together to draw up a Joint Municipal Waste Management Strategy for their area.

1.1.1 *How Has the Strategy Been Developed?*

The Strategy has been developed jointly by the Partnership councils. In preparing the Strategy, we have looked at a range of options - for example how we can reduce the amount of waste that is generated, how we can reuse, recycle and compost more waste and how we deal with any remaining waste that can't be reused or recycled. Details of this process are provided in a separate document *(Options Assessment).*

The possible environmental effects of the Strategy have been considered by undertaking a systematic appraisal known as a 'strategic environmental assessment'. The results of this process have been used to ensure the Strategy addresses all of the potential environmental impacts.

1.1.2 *What Does the Strategy Cover?*

The Strategy covers municipal waste, which includes waste collected from households, recycling collections, waste taken to recycling banks, collections of bulky waste, street sweepings, collection of household clinical waste, commercial/trade waste collected by the local authorities, fly tipped waste and waste accepted at household waste recycling centres. It covers waste management for the period 2007 – 2027.

The Strategy does not consider most industrial, commercial, construction or demolition wastes. These wastes are substantially managed by the private sector.

(1) All data used is from 2005/06

The Strategy does not consider the location of waste management facilities – this is a matter for Planning.

1.1.3 Other Documents

A series of reports accompanying this headline document contain more detail about the background to the Strategy and how it was developed. The documents that make up the full Strategy are:

- *Baseline Report*
- *Legislation and Policy Review*
- *Options Assessment*
- *SEA Environmental Report*
- *Consultation Report*
- *Action Plans*

1.1.4 Consultation

This document was produced as a draft document for public consultation. The consultation ran from 12th July until 20th August 2007.

2 OBJECTIVES, POLICIES AND TARGETS OF THE STRATEGY

2.1 OBJECTIVES OF THE STRATEGY

This Strategy sets out the objectives and targets that the South Tyne and Wear Waste Management Partnership (the Partnership) will aspire to over the 20 year Strategy period. The policies within this Strategy are aimed at helping to meet these targets and achieve the objectives that the Partnership has set.

1. The Partnership (1) has set the following objectives for prioritising waste management:

- Reduce the amount of waste that is generated;
- Reuse waste;
- Recycle and / or compost waste as far as this is practicable within economic and environmental constraints; and
- Recover energy from the remaining waste and finally dispose of residual waste safely.

2. In making decisions about how waste is managed, the objectives of the Partnership will be to:

- Reduce as far as practicable the amount of waste that is generated;
- Consider the most appropriate and sustainable methods and technologies for dealing with waste;
- Deliver waste services that offer value for money;
- Manage waste at the nearest possible waste management facility to reduce the carbon footprint of waste transport;
- Manage and dispose of waste generated within the 'Partnership area';
- Maximise recycling opportunities to turn one person's waste into another's resources;
- Maximise opportunities to create jobs in the waste sector;
- Ensure all is done to provide waste management services and facilities in the most user and environmentally friendly manner;

(1) South Tyne and Wear Waste Management Partnership

- Make services accessible to all people who live in, work in or visit the area, reducing their need to travel to dispose of waste;

- Manage waste in a way that takes account of the potential needs of future generations, avoiding, where practicable environmental damage and without endangering human health, taking into account climate change in its decisions; and

- Take account of life cycle impacts when dealing with waste and procuring goods and services.

3. The following objectives are those set out by the Partnership that are linked to waste reduction:

- To educate the public and other stakeholders on waste reduction matters raising awareness and responsibilities.

- To work with others in the Region to urge the Government to introduce measures, and will also work with industry, to reduce packaging.

- To 'lead by example' in the introduction of best practice in minimising waste from their own operations, including Council contracts and purchasing practices.

- To minimise waste generation both in the construction phase of new developments, whether domestic, commercial or industrial, and throughout the lifetime of the properties.

4. The Partnership has set the following objectives with respect to recycling and composting for the Strategy:

- To achieve the targets set out in this Strategy for recycling and / or composting and, in the longer term, to exceed the statutory targets set by Government where this is practicable.

- Ensure that viable recycling facilities are available to all residents, including those living in flats and in rural areas.

- To ensure that all new developments include facilities for recycling and composting of waste wherever practicable.

- To increase awareness of waste management issues at home, at school, at work and to our visitors to encourage behavioural changes that maximise participation in recycling schemes.

- Work with industry and organisations such as WRAP to find and develop markets for recyclables and recycled products**.**

- Assist in building capacity in the voluntary sector to promote/support reuse and recycling of materials.

5. The Partnership has set the following objectives regarding the disposal/treatment of waste:

- To meet national waste recovery targets or to exceed these in the longer term where this is practicable.

- Reduce the amount of biodegradable municipal waste landfilled in line with government allowances allocated to the councils and lessen the reliance on landfill.

6. The Partnership has set the following objectives regarding the provision of services and monitoring and review of the Strategy:

- To work together to source funding for making the necessary changes and to share in the costs and benefits of delivering the Strategy.

- To prepare and deliver communication strategies to promote reduction, reuse and recycling within the community and to ensure that education and information relating to waste and environmental services is available for all.

- To ensure that accurate, regular ongoing monitoring is carried out so that future performance (such as reductions in the amount of waste generated) can be measured and reported.

- To keep the policies included in this Strategy under review and update action plans as necessary (reviewing them at least every year) and revise the headline Strategy before 2013. New versions will be posted on the councils' websites.

2.2 GENERAL PRINCIPLES

To achieve the objectives presented above, the Waste Management Partnership has formulated the following overarching policies on how it will manage wastes in South Tyne and Wear.

Policy 1: The Partnership will follow the waste hierarchy set by the Government and firstly promote measures that reduce waste, then re-use waste, followed by recycling and composting and then finally recovery of value, including energy, from the waste prior to disposal.

Policy 2: In making decisions about how waste is managed, the Partnership will aim to:

- **Deliver waste services that offer value for money for the residents of South Tyne and Wear;**
- **Employ the most appropriate and sustainable methods and technologies for dealing with waste taking account of the overall objectives and aims detailed in this Strategy;**
- **Minimise the amount of waste that is landfilled, taking into account the cost of the alternatives;**
- **Provide waste management services and facilities in the most user-friendly and environmentally sound manner through appropriate design of services and use of the Planning system. This will include a requirement for minimising environmental impacts, such as visual intrusion;**
- **Make waste management services readily accessible to all people who live, work and/or visit the South Tyne and Wear area. This includes reducing the need for people to travel to reuse/recycle/dispose of waste and includes ensuring that facilities are available for dealing with hazardous wastes (arising directly from household or from the treatment of MSW);**
- **Consider resource use and take account of lifecycle impacts when procuring all goods and services rather than treating waste management as a separate issue;**
- **Manage waste in a way that not only avoids environmental damage and danger to human health, but which also takes account of the potential needs of future generations and, in particular, climate change;**
- **Maximise the recycling opportunities to convert one person's waste into another's resources;**
- **Use the opportunities presented by new waste management arrangements to create jobs in the waste sector and, in particular, to promote and support the involvement of social enterprises in the provision of waste management services; and**
- **Be self sufficient by managing and disposing of waste generated in South Tyne and Wear within the 'Partnership area' where this is feasible and in line with other policies.**

2.3 WASTE REDUCTION

The Partnership acknowledges the importance of waste reduction and will actively strive to reduce the amount of waste generated within South Tyne and Wear. This document follows the waste hierarchy and, as such, highlights the importance of waste reduction.

Our policies on waste reduction are as follows.

Policy 3: The Partnership will introduce measures to increase the level of education and understanding of waste reduction matters with all members of the general public and other stakeholders.

Policy 4: The Partnership acknowledges the impact of packaging on the overall amount of waste that is generated and will work with regional partners, industry and Government to reduce the amount of packaging produced.

Policy 5: The councils within the Partnership will introduce waste minimisation and reuse schemes in their own operations to lead by example and highlight best practice to the wider community. Where practicable, this will include waste reduction, reuse and recycling measures in contracts for council services. The councils will also endeavour to ensure that their contractors follow the same principles

The principles of waste minimisation and reuse of materials need to be incorporated into the whole life cycle of new developments from construction through to decommissioning.

Policy 6: The Partnership will use planning and permitting procedures to influence the level of waste generation throughout the whole life of new developments and redevelopments - from construction right through their operational lifetimes. This will be done irrespective of the nature of the developments, whether they are housing, commercial or industrial developments.

2.4 RECYCLING AND COMPOSTING

After reducing and reusing the waste that is generated, our objective is to recycle as much waste as is economically and environmentally appropriate. We have set recycling targets that we consider are challenging but practicable. In 2006/07 the Partnership recycled 20% - the aim is to increase this to 30% by 2009/10.

Policy 7: The Partnership will aim to achieve the following recycling / composting targets for household waste:

- **30% by 2010**
- **45% by 2015**
- **50% by 2020**

In the longer term, the Partnership will look to exceed the statutory targets set by Government, where this is practicable

Accessibility to services is vital in ensuring that the community is fully involved in recycling. The Partnership wants all residents to do their bit and therefore will strive to make recycling as easy as possible.

Policy 8: Viable recycling facilities will be made available to all residents, including those in flats and rural locations. Recycling facilities will be designed to be easy for residents to use. Any new developments will be required to include recycling and composting facilities wherever practicable. The three councils will aim to move towards harmonised arrangements for collection of recyclable materials.

Promotion of recycling services and increasing of awareness of waste matters is a priority of the Partnership.

Policy 9: The Partnership will seek to create a change in behaviour in the community by promoting increased public awareness of waste management issues. Awareness raising campaigns will be targeted at people at home, at school, at work and to our visitors with the aim of maximising participation in recycling schemes.

It is recognised that, for the recycled market to flourish, there needs to be an increase in demand in products made from recycled materials.

Policy 10: The Partnership will work with industry and organisations such as WRAP to encourage recycling of commercial and industrial waste and to find and develop markets for recyclable materials and recycled products. In addition, the Partnership will assist in building capacity in the voluntary sector to promote reuse and recycling of materials.

The Partnership recognises the purchasing power that the councils have and the influence that it can have in this area by setting an example to other organisations and helping to stimulate markets for recycled products.

Policy 11: In addition to introducing waste minimisation and reuse principles into their own operations, the councils within the Partnership will aim to purchase recycled products wherever feasible in order to stimulate the markets for recovered materials as well as leading by example and highlighting best practice to the wider community.

2.5 RESIDUAL TREATMENT

In 2006/07 we landfilled over three quarters of the municipal waste that we generated. We believe that we cannot continue to bury waste in the ground in such large quantities in the long term. There are strong environmental arguments for a move away from landfill. Landfilling of biodegradable wastes creates greenhouse gases and leachate for example. The Government specifically introduced a tax on landfills to encourage a move away from landfilling waste and has recently significantly increased this to speed up the adoption of other waste management methods.

Landfill will, however, always have a place in waste management – for disposal of residues from waste treatment processes and for direct disposal of a small proportion of wastes. South Tyne and Wear has a significant amount of landfill capacity and it is recognised that this is a regional asset. It is further recognised that this asset needs to be managed and utilised to the best effect.

The Government has set national targets for the recovery of waste (recycling and energy recovery combined) to promote a move away from landfill. In the medium and longer term we will aim to meet these targets although, given our current position, we have set of slightly lower target for the short term.

Government has also allocated specific allowances on the amount of biodegradable waste that we can landfill and these reduce over time. The Waste Disposal Authorities can only landfill biodegradable waste up to the allocated limits or must trade allowances from other authorities under the system known as the Landfill Allowance Trading Scheme (LATS). We aim to reduce the amount of waste we landfill as far as we can and to buy allowances only where this is considered the most appropriate course of action.

Policy 12: In line with the Waste Hierarchy, the Partnership will aim to maximise reuse, recycling and composting before the residual waste is treated. The Partnership will aspire to meet the Waste Strategy 2007 targets for reducing waste that is not reused, recycled or composted:

- **Maximum of 225kg per person by 2020**

It will also aim to meet the following targets for recovery of municipal waste, the 2015 and 2020 targets are national targets:

- **35% by 2010**
- **67% by 2015**
- **75% by 2020**

Where practicable these will be exceeded in the longer term.

The Partnership will aim to minimise the landfill of biodegradable waste, within economic constraints, in order to reduce methane emissions. It will aim to meet its LATS allowances and only landfill biodegradable municipal waste (BMW) up to the amount that each council is allocated. The Partnership councils will work together in achieving this goal.

The Partnership will also aim to recovery energy, as well as materials, from waste before final disposal and will require the capture and utilisation of landfill gas from that waste which is landfilled.

Trading of allowances with other Waste Disposal Authorities will be undertaken where this is considered to be the most appropriate course of action. Whilst acknowledging that landfilling will be required for the disposal of residual waste from waste treatment processes and for direct disposal of waste in some cases, the Partnership notes that landfill is at the bottom of the waste hierarchy and is the 'least desirable' option for waste management.

2.6 SELF-SUFFICIENCY

The Partnership aims to be self sufficient by managing and disposing of waste generated in South Tyne and Wear within the 'Partnership area' where this is feasible. However, we also accept that, in some circumstances, there may be very sound environmental and other reasons for using waste facilities outside of South Tyne and Wear.

Policy 13: The Partnership will provide support, through Planning policy for example, to the development of new recycling, composting and residual treatment capacity within South Tyne and Wear where this does not conflict with other policies or Planning requirements.

2.7 *FINANCING AND COMMUNICATIONS*

Our policies on Financing and Communications are as follows:

Policy 14: The Partnership will work together in sourcing funding to ensure the necessary changes to services are made. The costs and benefits of delivering this Strategy will be shared between the Partnership authorities.

Policy 15: The Partnership acknowledges that education and communication are key components of the Strategy. The Partnership will prepare a Strategy to promote waste awareness and, in particular, the three R's to the whole of the community.

2.8 *MONITORING AND REVIEW*

The Partnership will monitor its waste management performance and will review the Strategy as needed. The following policies highlight this:

Policy 16: Future performance monitoring is important to assess the effects of the Strategy. The Partnership will ensure that accurate, regular ongoing monitoring is carried out and that remedial steps are taken if it appears that targets are not likely to be met.

Policy 17: The Partnership will keep the policies included in this Strategy under review. Action Plans will be reviewed at least annually with a full Strategy review in 5 years. If required as a result of, for example, changes in legislation or local circumstances, the Strategy will be revised more frequently. Any changes to the Strategy will be subject to due democratic processes and further public consultation will be undertaken in the event of proposed significant changes to the Strategy. New versions will be posted on the Councils' websites.

In order for the Strategy to be implemented as planned, it will be essential that the aims and policies presented here are supported by appropriate policies within local development framework (LDF) documents and development planning documents (DPD).

Policy 18: The Partnership will monitor the development and adoption of LDFs and will have continuing dialogue with the Planning Authorities to ensure that the Strategy and emerging LDFs are mutually informed and support the development of appropriate facilities to enable the Strategy aims to be delivered. The aim will also be for Planning documents to support the policy of waste minimisation in new developments.

3 TARGETS

3.1 RECYCLING AND COMPOSTING

STWWMP has set a minimum target of recycling 50% of its household waste by 2019/20. The table below shows the interim targets that have been set.

Table 3.1 Recycling and Composting Targets

	2005/06 (Current level)	2009/10	2014/15	2019/20
STWWMP Recycling and Composting Targets	20%	30%*	45%	50%
National Recycling and Composting Targets		40%*	45%	50%

* It is acknowledged that attaining this target is highly ambitious for 2010. A more realistic figure at this time would be 30% due to a current lack of locally developed facilities.

3.2 WASTE RECOVERY

The national waste recovery targets from the *Waste Strategy for England 2007* are shown below.

Table 3.2 Recovery Targets

	2005/06 (current level)	2010	2015	2020
STWWMP Recovery Targets		35%*	67%	75%
National Recovery Targets	20%	53%*	67%	75%

* It is acknowledged that attaining this target is highly ambitious for 2010. A more realistic figure at this time would be 35% due to a current lack of locally developed facilities.

3.3 LANDFILLING OF WASTES

STWWMP Councils aim to meet the LATS targets that they have been set by Government (shown below) where possible. The Councils in the Partnership will actively support one another in fulfilling their LATS obligations. The Councils/Partnership may need to trade allowances in some years, and will do this if necessary.

Table 3.3 LATS Allocations

Local Authority Name	Base Year Figure	2005/06 allocation	2006/07 allocation	2007/08 allocation	2008/09 allocation	Target 2010 (BMW)	2010/11 allocation	2011/12 allocation
Gateshead MBC	122,450	117,299	109,572	99,270	86,392	70,938	63,042	55,146
South Tyneside MBC	49,885	47,904	44,933	40,971	36,019	30,076	26,728	23,381
Sunderland CC	109,336	104,808	98,015	88,958	77,637	64,052	56,922	49,793

Local Authority Name	Target 2013 (BMW)	2013/14 allocation	2014/15 allocation	2015/16 allocation	2016/17 allocation	2017/18 allocation	2018/19 allocation	Target 2020 (BMW)
Gateshead MBC	47,250	45,223	43,196	41,170	39,143	37,116	35,089	33,062
South Tyneside MBC	20,033	19,174	18,314	17,455	16,596	15,736	14,877	14,018
Sunderland CC	42,663	40,833	39,003	37,173	35,343	33,513	31,683	29,853

Annexes

Executive Summary

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1 EXECUTIVE SUMMARY

1.1 BASELINE INFORMATION

Gateshead, South Tyneside and Sunderland City Councils are working together to prepare a Joint Municipal Waste Management Strategy (Strategy) in line with the requirements of the Waste and Emissions Trading Act 2003 and other legislation.

This sets out how they will collectively address their obligations in respect of existing and future statutory targets for waste minimisation, recycling, composting (and other forms of recovery), as well as how to minimise the amount of biodegradable waste that is sent to landfill.

The *Baseline Report* provides an evaluation of the current arrangements for waste management for the financial year 2005/06, in support of the development of the strategy. It also provides information on what is required of the authorities in terms of future waste management, to inform the setting of objectives and the testing of options.

South Tyne and Wear produces some 367,500 tonnes of municipal waste each year, this equates to around 1,296 kg per household.

Municipal waste arisings are managed by the three councils (the South Tyne and Wear Waste Management Partnership). The Partnership recycled and composted 20% of its municipal waste in 2005/06 and landfilled the remaining 80%.

1.2 REVIEW OF LEGISLATION, NATIONAL, REGIONAL AND LOCAL POLICIES

The Municipal Waste Management Strategy needs to take account of the current legislation governing waste management and any changes that are known or anticipated. Relevant legislation is reviewed and the implications for the Strategy are discussed in Annex B of the Strategy.

1.3 ASSESSMENT OF OPTIONS FOR WASTE PREVENTION AND RE-USE

Numerous benefits may be gained from reducing the amount of waste that is generated by the community. Each of the waste prevention and re-use opportunities for South Tyne and Wear has been explored during the development of the Strategy. Risks and benefits, and prevention and reuse options were examined, including current approaches being undertaken in the partnership area. The potential costs and benefits were also examined to determine whether the Partnership will achieve a net benefit through development and implementation of waste prevention and re-use programmes.

Consideration was given to the:

- percentage of the waste stream that the waste type constituted;
- potential reduction (percentage) of the waste stream;
- target levels for the population;
- arisings (tonnage) of MSW diverted from landfill;
- savings in disposal costs;
- costs of initial infrastructure and ongoing programme costs; and
- total net financial benefit of implementing the waste prevention or re-use programme.

Based on these considerations, three options were developed:

Option 1: Do nothing

Option 2: Implement services that influence household behaviour:

- home composting;
- re-useable nappies;
- reuse;
- waste aware (SMART) shopping;
- unwanted mail; and
- product service businesses.

Option 3: Implement all programmes that are influenced by promotional and educational programmes:

- home composting;
- trade waste diversion;
- re-useable nappies;
- reuse;
- waste aware (SMART) shopping;
- unwanted mail; and
- product service businesses.

Implementing all programmes (*Option 3*) will result in the greatest reduction of waste. This option will require slightly greater investment of ongoing costs, although capital expenditure is approximately the same for both options.

Given that *Option 3* diverts the greater amount of waste, its net cost is slightly less than option 2 taking into account savings in reduced amounts of waste requiring disposal. *Option 3* will cost the Partnership approximately £1.5 million net per annum to implement. *Option 2* will cost in the order of £1.7 million net per annum, and is likely to divert 8% less waste than *Option 3.* This will need to be taken into account when the Partnership determines which waste minimisation and re-use options to implement.

The options discussed above were assessed against a variety of environmental, social and economic criteria. The criteria were developed and discussed with the Partnership and were also subject to wider consultation with the Strategic Environmental assessment (SEA) scoping report.

1.4 RECYCLING AND COMPOSTING OPTIONS APPRAISAL

A total of nine recycling and composting options were appraised in order to:

- confirm that targets set for recycling and composting are achievable, and that they can be included within the strategy; and
- help the Partnership authorities plan future service development through identifying which options are feasible and what the environmental and financial costs are likely to be.

The options assessed were:

- Encourage increased participation by a range of promotional/educational activities
- Enforcement through epa section 46
- Collect a wider range of materials from bring sites (eg. Plastic)
- Introduction of non household (commercial) recycling
- Collect wider range of materials at the kerbside (plastic)
- Collect wider range of materials at the kerbside (textiles)
- Collect wider range of materials at the kerbside (card)
- Collect wider range of materials at the kerbside (kitchen waste)
- Impacts of segregated weekly collections

For comparison, each option was assessed against a number of SEA criteria to determine its relative impact on the environment. Social and financial considerations were also taken into account.

The nine options that were appraised included a variety of measures such as increasing public participation in kerbside recycling, segregated weekly collections (SWC) and collecting an increased number of materials at the kerbside such as plastics, textiles, card and kitchen waste.

The options were assessed against a variety of environmental, social and economic criteria that were developed and discussed with the Partnership and were also subject to wider consultation with the SEA scoping report.

The option that comprises introducing SWC has the greatest potential environmental benefit as it is one of the options with the highest recycling and composting level. On the other hand, it is also potentially the most expensive to implement given the need for extensive public consultation and, potentially, the need for enforcement to ensure effective operation.

The option involving an increase in participation and capture rates also has a potentially high performance as judged by the assessment criteria. The overall difference in performance of these two options, which otherwise have a similar levels of environmental benefit, is due to the level of composting. The increased participation and capture option incorporates an increase in participation in all recycling and composting collections. The SWC option assumes an increase in dry recyclables above that of the other option, but does not assume an increase in green waste collections. The associated environmental benefits of avoiding the use of virgin materials for the recyclables collected are therefore greater for the SWC option.

The other options that were assessed were found to have relatively limited impacts; positive and negative. This is to be expected given that they do not involve large changes to the service.

1.5 RESIDUAL WASTE TREATMENT OPTIONS APPRAISAL

Different options for the management of residual waste were also assessed to inform the discussion on the best way to manage waste that has not been avoided, recycled or composted.

The options considered were:

- Anaerobic digestion of putrescible wastes
- Anaerobic digestion of all wastes
- MBT with RDF to EfW
- MBT with RDF to landfill
- Autoclave
- EfW
- Alterative Thermal Treatment
- Aerobic digestion
- EfW with CHP

The residual waste treatment options were designed to ensure that the Partnership meets the Government's requirements to reduce the amount of biodegradable waste that is landfilled.

The options were based on the assumption that the Partnership will achieve a 30% kerbside recycling level in 2010 and that this recycling rate will be maintained throughout the Strategy period. This level of recycling would enable the Partnership to meet the 2010 recycling and composting targets but further recycling and composting will be required to meet the 2015 and 2020 targets and this may need to be achieved by the use of appropriate treatment technologies.

The criteria used to appraise these options and to compare them against one another were developed as part of the (SEA) Process. Proposed criteria were derived from a review of national, regional and local policy documents to identify the main priorities for waste management and sustainable development in South Tyne and Wear. The criteria were then refined through consultation with key stakeholders.

The options were tested against the criteria using quantitative methods where possible - for example using modelling techniques based on publicly available datasets to calculate likely emissions to air and water. Where this was not possible, or where this was not appropriate, qualitative methods were used.

Autoclaving, scores highly on the environmental criteria and the amount of waste that is recovered/recycled and also diverted from landfill. This option is also quite cost effective. However, the technology it is not yet proven in the UK and it must be noted that it is not yet easily deliverable in this country. Coupled with the doubts over the destination of the residues, this results in a negative view on the possibility of this technology being successfully employed as part of South Tyne and Wear's waste management strategy.

Energy from Waste (EfW), and Advanced Thermal Treatment (ATT), both involve combustion of waste. ATT is an emerging technology and, like autoclaving, not yet proven in this country. It therefore scores badly on deliverability. EfW facilities are regarded as more deliverable in terms of track record and bankability however this appraisal does not take into account the planning risks and there is often public opposition to EfW plants. The final option comprises EfW with combined heat and power (CHP). This is most easily introduced along with new infrastructure and would work well as part of a new industrial estate or Eco park.

Health impacts were seen as an important criterion and the assessment shows that the impacts for all options are minimal. The option that performs worst is energy from waste, but this needs to be put into context and compared to other polluting industries. Waste management in general has a very limited effect on human health overall. This is highlighted in a report produced on the impacts of various industry sectors on human health (1).

Cost was also seen as one of the most important criteria by the Partnership and the anaerobic digestion, MBT with RDF and autoclaving options perform best against this criterion. Costs to implement CHP systems vary widely. This is due to very wide variations in the cost of installing the heat distribution system. If the distribution network is retro-fitted to existing housing or other users it can be very expensive to install whereas if it is included as part of a new development it will be less expensive but still costly.

EfW with CHP performs similarly to EfW without CHP, but with the added benefits of reduction in depletion of resources, reduction in Greenhouse gases

(1) The Review of Environmental and Health effects of Waste Management (ENVIROS, Birmingham University, Defra)

and other emissions. These benefits are related to the reduced need for heat generation. This option performs much higher in comparison to others in the matrix than EfW alone does.

Aerobic digestion performs moderately well for the environmental criteria, and especially well in the reduction of energy consumption. It is one of the best performing options for waste recycling and composting, recovery and diversion of waste from landfill. It is a technology that is proven to be working in the region and therefore scores well on deliverability.

1.6 REPORT OF PUBLIC CONSULTATION

Background

Local residents were given an opportunity to comment on a draft version of the strategy during a period of public consultation from 12th July to 20th August 2007.

Consultation Process

To obtain the public's participation and opinion, the draft Strategy was made available and distributed via a number of routes including libraries, Council buildings and Council websites. Press releases and posters were issued to raise awareness and seek feedback on the Strategy.

In total, 1085 questionnaires were returned during the consultation period; originating as follows:

- 592 from Gateshead;
- 364 from South Tyneside; and
- 129 from Sunderland.

14 sets of written comments were also received from a variety of stakeholders including interest groups (such as Friends of the Earth, BAN Waste), residents, One NE and the private waste sector.

Focus groups/meetings were organised across the Partnership area and attended by representatives from all three authorities. These were held as follows:

- 6 in Gateshead;
- 10 in South Tyneside; and
- 5 in Sunderland.

Roadshows were also held across the three authorities during the consultation period.

Two common Stakeholder events were held to which interest groups, neighbouring local authorities and the private waste sector were invited. In total 39 representatives attended these professionally facilitated meetings.

The aim of the meetings and focus groups was to provide the public with an understanding of the key points of the Draft Strategy and for them to provide the Partnership with specific feedback to be considered in developing the final version of the Strategy. The returned questionnaires, responses at meetings and written responses have been analysed to draw out key themes and messages.

Findings

The main findings from an analysis of the responses and feedback from the consultation exercise were as follows:

- Most members of the public were very supportive of the Strategy;
- The Strategy should contain more ambitious recycling/composting targets;
- Education/awareness is key to achieving the goals of the Strategy;
- Householders should be required, rather than just encouraged, to recycle;
- The kerbside recycling service should be improved and expanded;
- Additional recycling and composting should be provided but only at a reasonable cost;
- The public are very supportive of getting a benefit from waste; and
- There was strong agreement that the choice of waste treatment facilities/methods should not be based on cost alone.

Outcome

In finalising the Strategy, the Partnership has taken into account all of these points and pay due regard to the issues that have been raised through this process of public consultation. Several of the Strategy's policies have been revised to reflect the comments received (see *Table 4.1*).

1.7 ACTION PLANS

The action plans annex details the way that the partnership will deliver the strategy.

Annex A

Baseline Review

CONTENTS

1 EXECUTIVE SUMMARY

Gateshead, South Tyneside and Sunderland City Councils are working together to prepare a joint Municipal Waste Management Strategy (Strategy) in line with the requirements of the Waste and Emissions Trading Act 2003 and other legislation.

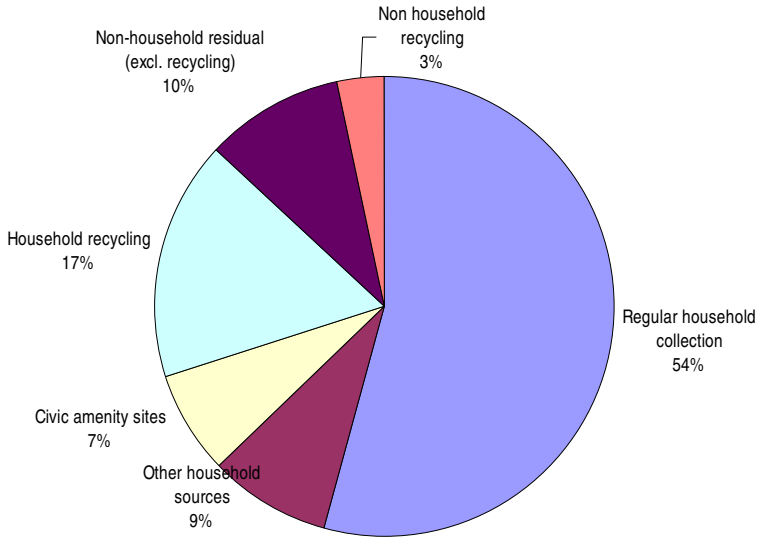
The Strategy aims to set out how the councils will collectively address their obligations in respect of existing and future statutory targets for waste minimisation, recycling, composting (and other forms of recovery), as well as how to minimise the amount of biodegradable waste that is sent to landfill.

This report provides an evaluation of the current arrangements for waste management for the financial year 2005/06, in support of the development of the strategy. It also provides information on what is required of the authorities in terms of future waste management, to inform the setting of objectives and the testing of options.

The South Tyne and Wear Waste Management Partnership produces some 367,500 tonnes of municipal waste each year, this equates to around 1,296 kg per household. *Table 3.1* shows how each metropolitan authority within the Partnership contributes to this total.

Figure 1.1 shows the proportions of household and non-household waste that made up municipal waste in South Tyne and Wear, in 2005/06. Over half of the municipal waste is composed of regular household collections and 13% of the municipal waste arises from non-household sources.

Figure 1.1 Municipal Waste in South Tyne and Wear (2005/06)



Source: Municipal Waste Management Statistics 2005/06, Defra

Gateshead, South Tyneside and Sunderland City Councils are working together to prepare a joint Municipal Waste Management Strategy (Strategy) in line with the requirements of the Waste and Emissions Trading Act 2003 and other legislation.

In simple terms, the Strategy will answer the following questions:

- Where is the Partnership now in terms of waste management?
- Where does the Partnership want to be and when?
- How will the Partnership reach these goals?

This report answers the first question and provides an evaluation of the current arrangements for waste management for the financial year 2005/06. Information provided in the report will be used to inform the goals and policies that are set in the strategy.

The remainder of the document is structured as follows:

- *Section 3:* Waste Arisings
- *Section 4:* Waste Management
- *Section 5:* Performance Against Targets
- *Section 6:* Next Steps
- *Section 7:* Summary and Conclusions

3.1 WASTE ARISINGS

In 2005/06 approximately 367,500 tonnes of municipal waste was collected in South Tyne and Wear. 87% of this was household waste, and the remainder is classified as non-household municipal waste, comprising:

- trade waste collections;
- rubble, tyres and soil, collected through Household Waste and Recycling Centres (HWRCs); and
- other non-household waste, which includes fly-tipping, tyres etc.

Table 3.1 Municipal Waste in South Tyne and Wear

	Gateshead	South Tyneside	Sunderland
Population	191,500	151,489	282,700
Households	91,053	68,302	124,013
Household Waste (t)	100,594	74,927	143,941
Non Household Waste (t)	13,139	17,909	16,977
Municipal Waste (t)	113,733	92,836	160,918
Waste per household (kg)*	1,249	1,359	1,298
Waste per head (kg)*	525	495	509

Sources: Gateshead, South Tyneside and Sunderland City Councils.
* These figures have been calculated using the data provided.

4 WASTE MANAGEMENT

4.1 WASTE REDUCTION & REUSE ACTIVITIES

Waste reduction is being promoted across the Partnership area in a number of ways:

Gateshead:

- A resident's permit access system for HWRCs was introduced in June 2005.
- The number of free bulky household waste collections has now been limited. In 2006, the unlimited collection service was limited to three per year and from April 2007 this will be reduced to one free collection, with others by payment.
- Since 1997, over 11,000 home compost units have been sold. Gateshead is now promoting home composting under the 'Do Your Bit' campaign which is funded by WRAP.
- Gateshead work in partnership with Waste Watch on the delivery of the WESP (Waste Education Support Programme) in schools and they also undertake other community presentations.

South Tyneside:

- South Tyneside introduced a campaign to minimise junk mail. They estimate that over 2,000 tonnes of this type of waste is dealt with each year in South Tyneside.
- South Tyneside is promoting home composting under the 'Do your Bit' campaign, which is funded by WRAP.
- A charging structure has been introduced for bulky waste collections in South Tyneside, taking effect in April 2006. Households can request up to 3 bulky waste collections per year, at a cost of £5 per collection. Any additional collections will cost £20 each.
- A permit scheme for vans using the HWRC is to be introduced in South Tyneside. This is in order to reduce the improper use of the site by traders depositing commercial materials free of charge.

Sunderland:

- Sunderland introduced limits for its bulky waste collection service in October 2003, which resulted in requests for service reducing from a peak of 145,161 to below 80,000 in 2006/07.
- New measures to improve regulation of the use of the Beach Street HWRC by the introduction of staff to encourage the use of recycling facilities and excluding traders were introduced in late 2005.
- Sunderland has been involved in the Home Composting under the 'Do your Bit' campaign with WRAP, since January 2007.

- Other minimisation advice is offered on their website and provided through structural communications campaigns.

The following sections give further details of the collection services provided by each of the metropolitan authorities including refuse collections, kerbside recycling and garden waste collections, bring site services and the Household Waste Recycling Centres (HWRCs).

Table 4.1 summarises the quantities of waste collected through different types of collections across the three metropolitan authorities and from the HWRCs.

Table 4.1 Breakdown of Waste Collected by Stream and Authority (2005/06)

	Gateshead	South Tyneside	Sunderland
Dry Recyclables (Kerbside)	7,378	5,165	10,174
Green Garden Waste (Kerbside)	6,869	6,945	8,501
Bring Sites / Drop Off Recycling	1,550	744	766
HWRC Recycling	2,153	760	1,778
HWRC Green Garden	1,381	1,427	1,308
Fridges	405	361	500
Other White Goods / Scrap Metal	217	23	62
Miscellaneous Recycling	25	304	3,828
Miscellaneous Green	25	121	36
Refuse Collection	59,942	44,277	94,953
Bulky Waste Residual	9,560	1,887	4,165
Litter & Street Sweeping	5,513	2,806	7,184
HWRC Residual	5,555	10,069	10,266
Clinical Waste	19	16	63
Animal Carcasses	2	6	4
Asbestos	0	15	55
Household Hazardous Waste	0	1	0
Miscellaneous/Rejected Waste/ Reuse	0	0	298
Total Household	**100,594**	**74,927**	**143,941**
Rubble	3,903	2,160	4,778
Tyres (all)	127	20	86
Gully Cleansing	1,037	0	657
Fly Tipping	512	1,713	3,454
Beach Cleaning	0	80	0
C&I / Other Non H/hold Collected	7,337	5,860	8,002
C&I/Other Non H/hold Received	0	6,045	0
C&I/Other Non H/hold Collected Recycled	223	101	0
C&I/Other Non H/hold Received Composted	0	1131	0
Total Non Household	**13,139**	**17,909**	**16,977**
Total Municipal	**113,733**	**92,836**	**160,918**

4.1.1 Refuse Collection Services

Table 4.2 summarises the arrangements that each waste collection authority makes for collection of refuse. The authorities provide wheeled bins for collection of refuse, with the exception of a minority of residents who are offered plastic sacks. All authorities collect refuse weekly and only Sunderland is accepting any side waste.

Table 4.2 Household Refuse Collection Arrangements in 2005/06

	Gateshead	South Tyneside	Sunderland
Container	240l wheeled bin (can request 140l bin or 360l bin if more than 6 residents) Paladins and other purposed designed bins, for example 1100l bins for communal properties.	240l wheeled bin (can request 140l or 360l if more than 5 residents) Paladins and other purposed designed bins, for example 1100l bins for communal properties.	240l wheeled bin (with 140 litre bins provided to aged persons dwellings and 360l bins provided to larger households but now only provided on a like for like replacement basis), and plastic sacks for a small number of residents. 1100l bins are used where communal arrangements apply, e.g. some apartment blocks and multi-storey flats.
Frequency	Weekly	Weekly	Weekly
Further Information	No side waste	No side waste	Up to two bags side refuse per property, per week
Contractor	In house	In house	In house
Contract end date	Not Applicable	Not Applicable	Not Applicable
Households	Approx 91,053	68,302	124,013
Tonnes (2005/06)	59,942	44,277	94,953

4.1.2 Kerbside Dry Recyclables Collection Services

Table 4.3 summarises the arrangements in place for collecting recyclables at the kerbside. All the authorities have the same arrangements and provide a fortnightly collection for paper, glass and cans at the kerbside.

Table 4.3 Kerbside Recyclables Collection Arrangements in 2005/06

	Gateshead	South Tyneside	Sunderland
Type	Mixed	Mixed	Mixed
Materials	P, G, C	P, G, C	P, G, C
Container	55l box	55l box	55l box
	Additional recyclate will be taken	Additional recyclate will be taken	Additional recyclate will be taken

Frequency	Fortnightly	Fortnightly	Fortnightly
Contractor	Premier (1)	Premier	Premier
Contract End	March 2008, option of two year extension	March 2008, option of two year extension	March 2008, option of two year extension
Households	87,646	66,900.	120,668
Tonnes	7,378	5,165	10,174

P = Paper, G = Glass, C = Cans

The partnering authorities have plans in place for either expanding or rolling out high rise recycling for three materials, namely paper, glass and cans. This will provide coverage to all properties with the exception of three blocks in Sunderland from which only glass and cans will be collected for recycling.

4.1.3 Garden Waste Collection Services

Table 4.4 summarises the arrangements made for collection of garden waste at the kerbside.

Table 4.4 Garden Waste Collection Arrangements in 2005/06

	Gateshead	**South Tyneside**	**Sunderland**
Materials	Garden	Garden	Garden
Container	240l wheeled bin No side waste	240l wheeled bin Additional material taken on request	240l wheeled bin No side waste
Charge?	No	No	No
Frequency	Mar - Nov (Fortnightly) Dec-Feb (Monthly)	Mar – Nov (Fortnightly) Dec – Feb (Monthly)	Mid Feb – Mid Dec (Fortnightly) Mid Dec – Mid Feb (No collections)
Households	52,541	50,000	60,000
Contractor	In house (1)	In house	In house2)
Destination	Tyne Dock (Premier) Anfield Plain – Coxhoe (Premier) Local farms (independent)	Tyne Dock (Premier)	North Tyneside (TS) (Sita) Joint Stocks, Coxhoe (Premier)
Tonnes 2005/06	6,869	6,945	8,501

(1) There is a separate processing contract for composting set up for three years from 2005 with the potential option to extend until 2010 with Premier
(2) Sunderland has contractual arrangements with Sita and Premier to accept and treat green waste up to April 2008 with the potential for up to a two year extension.

(1) Premier Waste Management Ltd - known as Premier throughout this document

4.1.4 *Collections of Recyclables through Bring Sites*

Table 4.5 summarises the arrangements for collection of recyclables through bring banks. Services are delivered through several different contracts.

Table 4.5 Bring Sites in 2005/06

Material	Detail	Gateshead	South Tyneside	Sunderland
Paper	Banks	34	27	38
	Contractor	Abitibi	Abitibi	Abitibi
		Joint contract including South Tyneside, Gateshead, Sunderland, North Tyneside & Darlington	Joint contract including South Tyneside, Gateshead, Sunderland, North Tyneside & Darlington	Joint contract including South Tyneside, Gateshead, Sunderland, North Tyneside & Darlington
	End date	Ongoing	Ongoing	Ongoing
Glass	Banks	26	18	13
	Contractor	Glass Recycling UK	Glass Recycling UK	Glass Recycling UK
	End date	Ongoing	Ongoing	Ongoing
Textiles, shoes	Banks	25	18	16
	Agreement with	Various: Scope, Salvation Army, The Variety Club	Various voluntary organisations	Various: Oxfam, Scope, CICD, Salvation Army, European Recycling Company
Cans & Foil	Banks	19	13	5
	Contractor	In house delivered to J & J Stanley, Swalwell	Premier	Serviced in house and delivered to J&J Stanley
Plastic bottles	Banks	0	1	0
	Contractor		Aim to Recycle	
Other	Each authority provides a few other banks at the bring sites for materials including oil, batteries, books, media, cartons and cardboard.			
	Tonnage	1,550	744	766

4.1.5 *Other Household Collections*

The authorities also provide collections of bulky waste and clinical waste from households. *Table 4.6* sets out the quantities of materials collected through these routes in 2005/06.

Table 4.6 Other Collections in 2005/06 (tonnes)

	Gateshead	South Tyneside	Sunderland
Bulky waste	9,560	1,887	4,165
Litter & Street sweepings*	5,513	2,806	7,184
Clinical waste collection	19	16	63

*Excludes fly-tipping.

4.1.6 Trade Waste Collections

All three authorities offer a trade waste collection service.

- Gateshead collected some 7,560 tonnes of commercial and industrial waste.
- Almost all of the commercial and industrial waste arising in Gateshead is collected and disposed of by private sector operators.
- South Tyneside handled 13,936 tonnes of commercial and industrial waste of which 5,961 tonnes were collected.
- The weighbridge at the Waste Transfer Station, Middlefields Depot is available for use by commercial & industrial businesses. There is a charge for using the weighbridge.
- Sunderland collected 8,002 tonnes of commercial and industrial waste.
- Sunderland provides a chargeable, commercial refuse collection service to businesses using a range of refuse storage containers and with differing collection frequencies. A special collection for large amounts of waste or bulky materials from commercial premises is also offered.
- One of Sunderland's principle contractors does provide for the recovery of some materials from the trade waste service.

4.1.7 Household Waste Recycling Centres (HWRCs)

South Tyne and Wear run four HWRCs, which are open to the public to deposit recyclables and waste. *Table 4.7* identifies the centres and the materials accepted. The Campground, Wrekenton HWRC is used by both Gateshead and Sunderland. Although the centre is located in Sunderland, it is owned and operated by Gateshead. Approximately 30% of users come from Sunderland and the operational costs of the centre are shared by the two councils in accordance with this split of users.

*Table 4.7 Details of Household Waste Recycling Sites**

	Metropolitan Authority	Aerosols	Aluminium	Books	Bric-a-brac	Cans & Tins	Car Batteries	Cardboard	Carrier bags	Cassettes	CDs & cases	Fluorescent tubes	Fridges and Freezers	Furniture	Glass	Garden Waste	Hardcore	Household batts	Household WEEE	Low grade wood	Newspaper	Metal items	Mobile Phones	Oil	Plastic bottles	Soil	Telephone Directories	Textiles/Shoes	Timber/Wood	Tyres	Yellow Pages	Household Waste
Cowen Road, Blaydon	G	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Campground, Wrekenton	G & S	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Middlefields	ST	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Beach Street	S	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

G = Gateshead, ST = South Tyneside, S = Sunderland

✓ = Accepts material and recycled

× = Accepts material not recycled

4.2 TREATMENT AND DISPOSAL

Each authority in South Tyne and Wear has a different combination of sites and facilities for the treatment and/or disposal of different types of waste.

- Premier manages the collection of kerbside dry recyclables for all three authorities.

- The recyclables are taken to Premier's depot at Tyne Dock where they are bulked up for onward transport to re-processors, for recycling around the country.

- Gateshead sends some of its green waste to Tyne Dock, but also sends materials to Annfield Plain (for onward transport to Joint Stocks at Coxhoe) and direct to local farms.

- Green waste from South Tyneside is sent to the centralised composting facility at Tyne Dock.

- Kerbside green waste from Sunderland is sent to North Tyneside Transfer Station and Joint Stocks, Coxhoe. A small amount of green waste also goes to local farms from the HWRC through the EcoTeam service (recycling of green waste and timber in partnership with Gateshead).

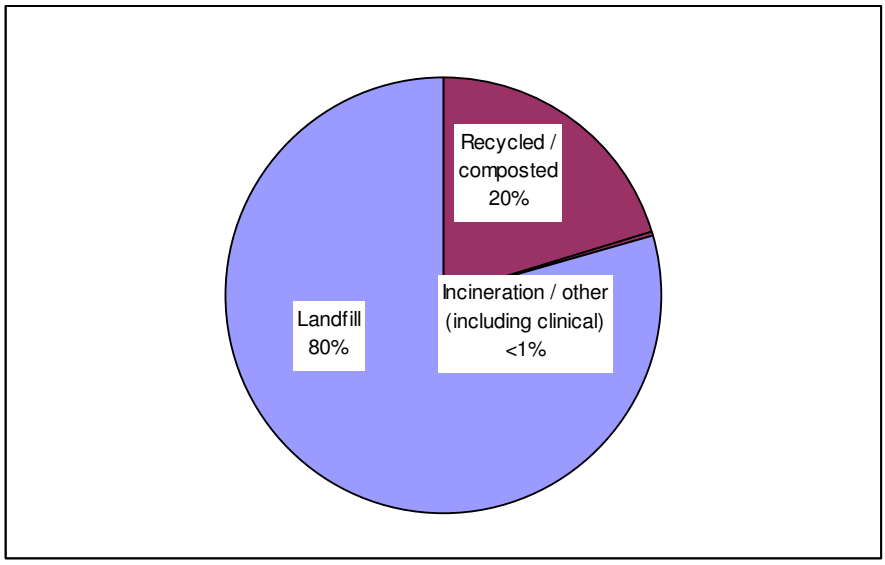
- General refuse is disposed at a number of different landfill sites.

- Residual waste from Gateshead is either sent directly to landfill or to landfill via the Campground Transfer Station. It is taken to a landfill in Blaydon, Gateshead.

- Waste from South Tyneside is taken to Middlefields Transfer Station and then Coxhoe landfill site in County Durham or Blaydon in Gateshead.

- Waste from Sunderland is deposited at Houghton Quarry, Sunderland (Biffa/Sita), Seaton Meadows, Hartlepool (Able), Impetus, Teesside or landfill in Blaydon, Gateshead a quantity of which is via transfer stations at Deptford and Washington.

Figure 4.1 Municipal Waste Management in South Tyne and Wear, 2005/06



Source: Municipal Waste Management Statistics 2005/06, Defra.

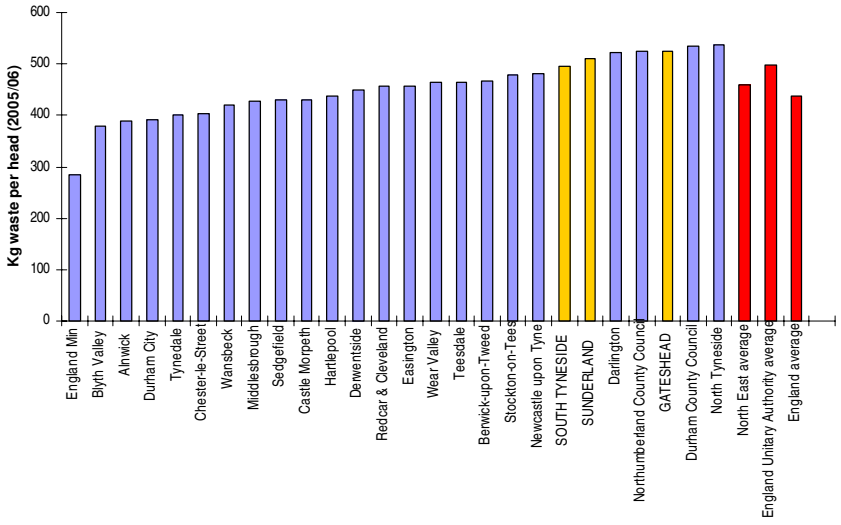
Figure 4.1 provides a summary of waste management methods in South Tyne and Wear. The majority of waste (80%) is being sent to landfill, with 20% recycled and composted and less than one percent managed through alternative methods.

5.1 WASTE GENERATION

Figure 5.1 shows a comparison of the authorities' performance, in terms of tonnes of household waste collected per head, against that in neighbouring authorities along with: the average for the North East; the average for unitary authorities in England; and the average for England.

It can be seen that for the Partnership Authorities, waste collected per head in 2005/06 was slightly higher than averages for the North East, for unitary authorities in England and for all of England.

Figure 5.1 Comparison of Household Waste Collected Per Head (BVPI 84a) in the North East (2005/06)



Source: Audit Commission Best Value Performance Indicator 84a for 2005/06.

5.2 RECYCLING & COMPOSTING

Statutory performance standards for recycling and composting have been set by the Government for the authorities. These are shown, against 2005/06 performance in *Table 5.1*. All the South Tyne and Wear Authorities met their statutory 2005/06 recycling targets of 18% each.

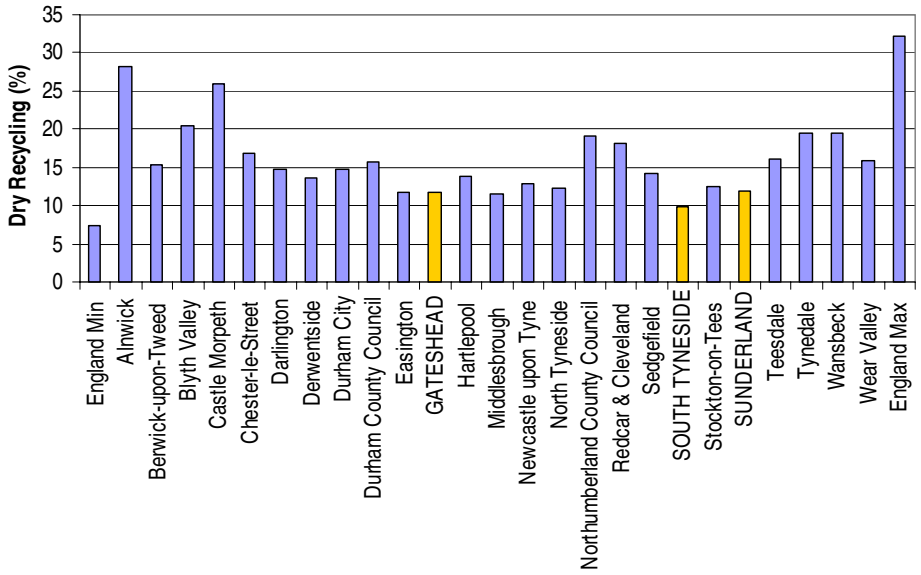
Table 5.1 ***Recycling and Composting in 2005/06 Against Statutory Standards and Future Targets (%)***

	2005/06 Target	2005/06 Achieved	2007/08 Target
Gateshead	18.0	19.9	20.0
South Tyneside	18.0	21.2	20.0
Sunderland	18.0	18.7	20.0

Source: Audit Commission Best Value Performance Indicators 82a and b.

Figure 5.2 compares the performance of the authorities in recycling (without composting) against that in neighbouring authorities, and also against the minimum and maximum rates achieved in England.

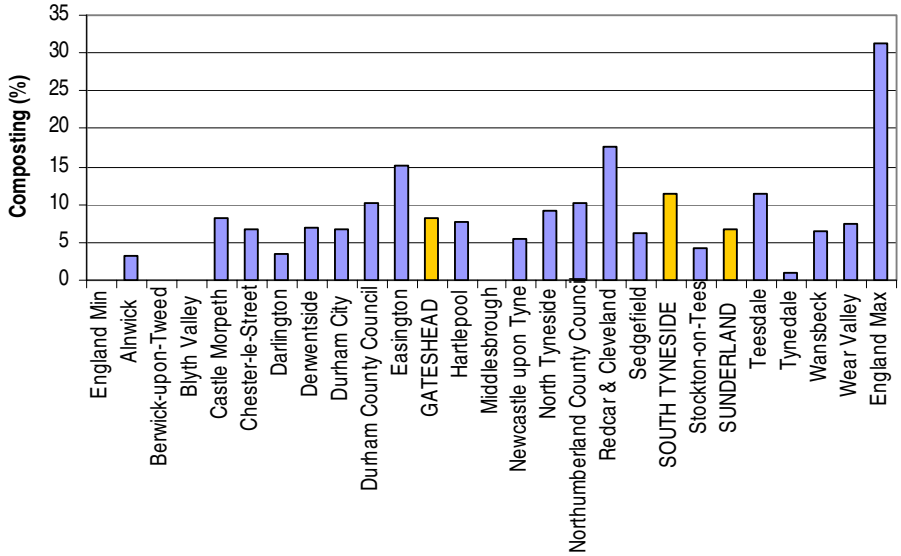
Figure 5.2 ***Comparison of Dry Recycling in the North East (2005/06)***



Source: Audit Commission Best Value Performance Indicator 82a for 2005/06.

A similar comparison of the performance of each authority in composting collected waste is shown in *Figure 5.3*.

Figure 5.3 ***Comparison of Collected Waste Composted in the North East (2005/06)***

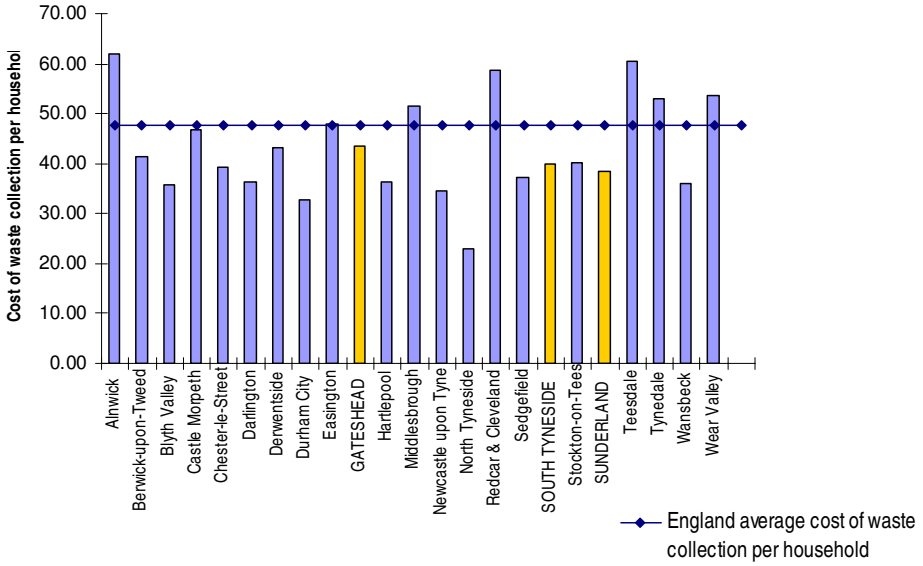


Source: Audit Commission Best Value Performance Indicator 82b for 2005/06.

5.3 *COSTS OF COLLECTION & DISPOSAL*

A comparison of the costs of collection under Best Value Performance Indicator BV86, the cost of household waste collection per household, against costs in collection authorities within neighbouring authorities is shown in *Figure 5.4*. This shows that authorities within South Tyne and Wear have similar waste collection costs to the rest of the area. It also indicates that this cost is lower than the average for England.

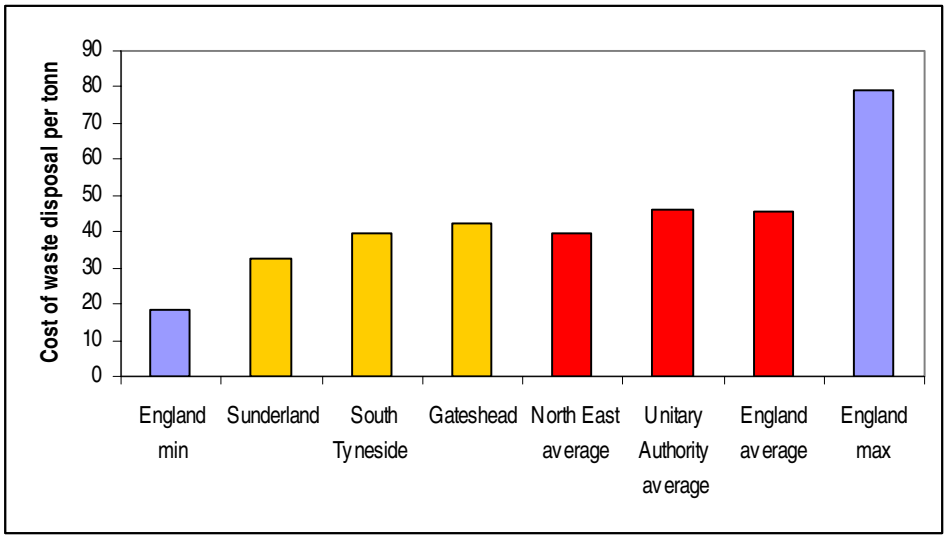
Figure 5.4 ***Cost of household waste collection per household (2005/06)***



Source: Audit Commission Best Value Performance Indicator 86 for 2005/06.

Figure 5.5 shows the cost of waste disposal per tonne for the three Partnership Authorities together with the averages for the North East, for all unitary authorities and for all of the authorities in England. Additionally, the maximum and minimum costs in England are also shown. Sunderland, South Tyneside and Gateshead respectively, have been highlighted within the figure. The figure shows that the cost for the three authorities lies towards the lower range of values.

Figure 5.5 Cost of household waste disposal per tonne for municipal waste (2005/06)



Source: Audit Commission Best Value Performance Indicator 87 for 2005/06.

The municipal waste management strategy must take account of the likely future increases in waste production and new requirements for managing waste in different ways.

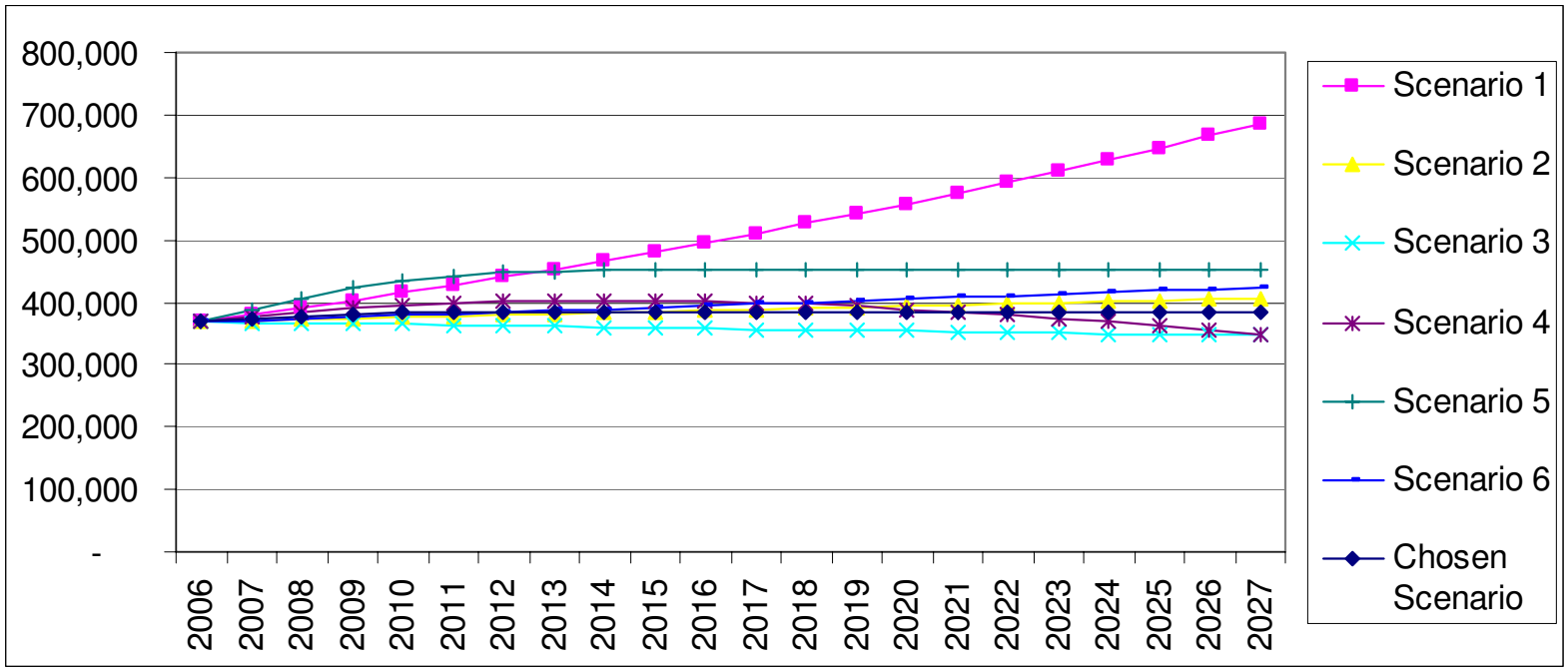
A number of growth scenarios were considered as described in *Table 6.1* and presented graphically in *Figure 6.1*. These were assessed by the Partnership and a composite scenario was selected as being the most appropriate for the development of the Strategy (see *Figure 6.1*). The chosen growth scenario is seen as an achievable rate, one which the introduction of waste minimisation measures will aim to meet. The growth rate will not be set as a target in the Strategy, however, as it was recognised that this is an evolving process and the best option is to provide a range in which the predicted outcome should fall.

Table 6.1 Waste Growth Forecasts

Scenario	Description
Scenario 1	a forecast of MSW arisings based on a constant 3% increase per annum, in line with the national rate quoted in *Waste Strategy 2000*;
Scenario 2	a forecast of MSW arisings based on the average growth rate experienced in South Tyne and Wear between 2001/02 and 2005/06(the historic 5-year growth rate);
Scenario 3	a forecast of MSW arisings based on the average growth rate experienced in South Tyne and Wear between 2003/04 and 2005/6 (the historic 3-year growth rate);
Scenario 4	a forecast demonstrating the affect of a rapid decrease in growth rate following, for example. the implementation of minimisation initiatives;
Scenario 5	a forecast of MSW arisings based on assumptions used in the Regional Spatial Strategy. Waste grows at a reducing rate to 2015 and then stays static from thereon.
Scenario 6	a forecast of MSW arisings based on the assumption from the waste partnership that waste will grow be 15% over the 20 year period.

The rate chosen to be used in the forecasting of waste growth is a hybrid of several scenarios: Waste arisings are forecast to grow by 1% per annum up to 2010 after which they will become static for the remainder of the strategy period.

Figure 6.1 *Waste growth rate predictions*



- In 2005/06 South Tyne and Wear authorities managed 367,500 tonnes of municipal waste of which 87% was household waste.

- One fifth of municipal waste is currently recycled or composted, with the remaining material being sent to landfill or to incineration (less than one percent of the waste is incinerated).

- All three metropolitan authorities have similar waste collection arrangements, with each providing:

    - a weekly refuse collection;
    - kerbside paper, glass and can collection; and
    - a kerbside green waste collection.

- The amount of waste collected per head does not vary significantly within South Tyne and Wear, and lies towards the higher end of the scale when compared with rest of the North East of England. Recycling and composting rates tend to be low compared with the rest of the region.

- Some waste minimisation initiatives have been undertaken across South Tyne and Wear. These largely relate to reducing bulky waste collections and control measures for HWRC site use, as well as home composting campaigns.

Annex B

Legislation Review

CONTENTS

1 LEGISLATION

The Municipal Waste Management Strategy needs to take account of the current legislation governing waste management and any changes that are known or anticipated. This section reviews relevant legislation.

1.1 EUROPEAN LEGISLATION

European legislation is, by and large, transposed into UK laws, rather than applying directly to local authorities, companies or individuals. However, it is useful to consider the background to the current UK waste management system and so this Section summarises briefly the relevant European instruments.

The aims and objectives of The European Community are clearly set out in the communication "Towards a thematic strategy on the prevention and recycling of waste" (COM (2003) 301) which was adopted by The European Parliament on 27 May 2003

The European Commission has also issued various directives designed to encourage sustainable waste management and these directives are reflected in our national and regional targets, the main directives are:

- Framework Directive on waste disposal (75/442/EEC)
- The Landfill Directive (99/31/EC)
- The Waste Electrical and Electronic Equipment Directive (02/96/EC)
- The End-of-Life Vehicles Directive (00/53/EC)
- The Hazardous Waste Directive (91/689/EEC)
- Disposal of Polychlorinated Biphenyls and Polychlorinated Terphenyls Directive (96/59/EC)
- The Waste Oil Directive (75/439/EEC)

The EU has recently published its thematic strategy (1) on waste management which will shape future legislative developments. The strategy places a greater emphasis on waste prevention, includes plans for supporting recycling (implying that a material-specific approach to recycling may be adopted in future), highlights the need to reduce the amount of biodegradable waste landfilled and also promotes lifecycle thinking for planning waste management for the future.

(1) Commission of the European Communities (2005) Taking sustainable use of resources forward: A Thematic Strategy on the prevention and recycling of waste COM(2005) 666 final

1.2 NATIONAL LEGISLATION AND POLICY

1.2.1 *Environmental Protection Act 1990*

The Environment Protection Act (EPA) 1990 is a regulatory regime that is designed to implement an integrated (air, land and water) approach to environmental regulation and protection. It sets out a wide range of environmental legislation and is the primary act (along with the associated regulations) that controls how waste is managed.

Part II of the Act sets out the main legislation for dealing with duties and responsibilities in relation to waste management.

Duty of Care

Section 34 of the EPA 1990 introduces a statutory Duty of Care applicable to all those producing and handling waste. This places a general duty on anyone who has responsibility for controlled(1) waste (waste producers, or anyone else who imports, carries, keeps, treats or disposes of it) to ensure it is managed properly and recovered or disposed of safely.

The Duty of Care Regulations 1991 provides the basis for a mandatory system of transfer notes, which must be completed when waste is transferred between parties. However, the Duty of Care is designed to be a self-regulating system, based on a code of good practice. In order to meet their duty, authorities are required to: prevent the escape of waste in their control; transfer waste only to someone who is authorised to accept it; ensure that waste is handled lawfully by others; and, upon transfer, provide details of the waste including a written description.

Local Authority Responsibilities

Sections 45-61 of the EPA 1990 set out the roles of waste collection and disposal authorities. As the three South Tyne and Wear authorities are all Unitary Authorities, they perform the functions of both the Waste Collection Authorities (WCA) and the Waste Disposal Authorities (WDA). These statutory duties have an essential role in the implementation of the waste management strategy. Waste collection authorities, amongst their other duties:

- must arrange for the collection of household waste;
- must arrange for the collection of commercial waste if requested;
- can prescribe how householders present waste for collection; and
- can charge for the collection of certain household wastes.

(1) 'Controlled Waste' is defined in section 75 of the EPA 1990. It includes: household waste; industrial waste; and commercial waste. Wastes handled by local authorities are controlled wastes and subject to regulation.

Waste disposal authorities, amongst their other duties:

- must arrange for the disposal of controlled waste; and
- must provide one or more places where residents can deposit their household waste, free of charge .

What does this mean for the strategy?

The Environmental Protection Act requires authorities to collect and dispose household waste appropriately. The Act also gives authorities the scope to prescribe how householders present waste for collection and to charge for certain waste collection services.

1.2.2 Landfill Regulations 2002

The Landfill (England and Wales) Regulations 2002 came into force in 2002. They implement the requirements of the EU Landfill Directive (1999/31/EC).

The Landfill Directive aims to deal with the social, environmental and economic impacts of landfill over its whole life cycle. It contains a mix of strategic objectives for reducing the amount and nature of wastes going to landfill, together with strict provisions for the regulation and management of landfills.

Key Directive provisions for local authorities relate to the gradual reduction of biodegradable municipal waste (BMW) (1) going to landfill and the promotion of alternatives such as recycling, composting and energy recovery from waste. To this effect, the Directive contains three, national targets aimed at reducing the amount of BMW disposed to landfill. For the UK (where a delay has been permitted) these are:

- by 2010: reduce the amount of BMW landfilled to 75 percent of that produced in 1995;
- by 2013: reduce the amount of BMW landfilled to 50 percent of that produced in 1995; and
- by 2020: reduce the amount of BMW landfilled to 35 percent of that produced in 1995.

To ensure that the UK will meet these targets, the Government has set BMW disposal allowances for each waste disposal authority. These are controlled by provisions made under the Waste and Emissions Trading Act 2003 and have a direct impact on the strategy for management of BMW.

The Directive has also brought other changes in waste management that have implications for South Tyne and Wear (ST&W), including:

(1) The Directive defines BMW as that which is capable of undergoing anaerobic or aerobic digestion, such as food and garden waste, paper and cardboard.

- a complete ban on the landfill of liquid wastes, infectious clinical wastes and certain hazardous wastes;
- a complete ban on the landfill of tyres since 2006;
- the requirement for separate landfills for hazardous, non-hazardous and inert wastes; and
- the introduction of a requirement for treatment of waste prior to landfill and the establishment of acceptance criteria for waste arriving at sites.

Meeting the requirements of the Landfill Regulations 2002 will increase the cost of using landfill as a means of disposal, which may have major implications for the authorities' budgets, particularly for the landfill of hazardous waste.

What does this mean for the strategy?

The Landfill Regulations form part of the law that requires authorities to reduce significantly the amount of biodegradable municipal waste that is landfilled. The Regulations indirectly influence the strategy by requiring authorities to find alternative ways of dealing with materials such as tyres, which can no longer be landfilled.

1.2.3 Landfill Tax Regulations 1996

In addition to the increased costs of using landfill that will result from the Landfill Regulations 2002, the Landfill Tax Regulations 1996 also impose a duty on landfill, based on the weight of waste deposited. The rate of tax varies according to the type of waste disposed, with a lower rate set for inert waste than active wastes.

The Landfill Tax stands at £24 per tonne for active waste in 2007/8 and is due to increase by at least £8 per tonne each year until reaching £48 per tonne by 2011.

What does this mean for the strategy?

The Landfill Tax Regulations make it increasingly expensive for authorities to dispose of waste in landfills. The strategy must therefore look at alternative methods of managing waste and keep in mind that the economics of non-landfill waste management methods may be more favourable in future.

1.2.4 Waste & Emissions Trading (WET) Act 2003

As indicated earlier, the Waste and Emissions Trading (WET) Act 2003 is intended to help the UK meet its national targets for reducing the amount of BMW disposed to landfill. It is implemented through the Landfill (Scheme

Year and Maximum Landfill Amount) Regulations 2004, which came into force on 22 July 2004.

The Act provides a framework for the Landfill Allowance Trading Scheme (LATS), a system whereby tradable landfill allowances will be allocated to waste disposal authorities each year. Each waste disposal authority is able to determine how to use its allocation of allowances in the most effective way. Allowances can be traded with other authorities, saved for future years (banked) or used in advanced (borrowed from future years). A fixed penalty of £150 per tonne of excess BMW landfilled will be enforced if local authorities do not have sufficient permits for the waste they landfill. The Government has indicated that local authorities who exceed their permitted allocation of allowance (including trading) will also have to bear the cost of any EU penalties imposed upon the UK in target years.

LATS was launched in full on 1 April 2005 and poses significant implications for the waste strategy. Allowances for all three authorities are shown in *Table 1.1*.

Table 1.1 BMW Landfill Allowance for ST&W

LATS(target years)	**Landfill Allowances**		
	Gateshead	South Tyneside	Sunderland
Baseline Figure	122,450	49,885	109,336
2006/07	109,572	44,933	98,015
2010	70,938	30,076	64,052
2013	47,250	20,033	42,663
2020	33,062	14,018	29,853

What does this mean for the strategy?

The Waste and Emissions Trading Act puts a strong financial incentive in place to encourage authorities to reduce the amount of biodegradable municipal waste landfilled or face fines or the cost of purchasing allowances from other authorities.

1.2.5 Waste Strategy 2000 and Statutory Recycling and Composting Standards

In order to comply with the Landfill Directive BMW diversion targets, the Government and National Assembly for Wales established a series of recovery targets for municipal waste in *Waste Strategy 2000*. They recognise that an essential part of achieving these is the drive towards more household recycling and composting. The key national targets are:

- by 2005: recycle or compost at least 25 per cent of household waste and recover value from 40 per cent of municipal waste (through recycling, composting, other forms of material recovery or energy recovery via waste combustion);

- by 2010: recycle or compost at least 30 per cent of household waste and recover value from 45 per cent of municipal waste; and
- by 2015: recycle or compost at least 33 per cent of household waste and recover value from 67 per cent of municipal waste.

The Partnership authorities met their 2005 recycling targets, these are shown in *Table 1.2*.

Table 1.2 ***Statutory Recycling and Composting Standards***

Authority	2005/6 Targets	2005/06 Actual level	2007/08 Target
Gateshead	18%	19.9%	20%
South Tyneside	18%	21.2%	20%
Sunderland	18%	18.7%	20%

What does this mean for the strategy?

The Statutory Recycling and Composting Standards place direct requirements on each of the authorities to achieve and maintain recycling and composting performance.

1.2.6 Waste Strategy 2007

The Government has recently published the Waste Strategy 2007. This includes:

- An increased focus on waste prevention
- Increased recycling and composting targets of more than 40% in 2010 and 45% in 2015 (beyond the current 30% and 33% targets) and to 50% by 2020
- Increased recovery targets of more than 57% in 2010, 63% in 2015 and 75% in 2020
- Reinforcement of the role of energy from waste as part of the overall national waste strategy

The document also indicates that revisions to recycling and composting standards are being considered including making the standards more material specific and providing incentives to reduce waste.

What does this mean for the strategy?

The strategy needs to take account of the Waste Strategy 2007 by setting appropriate goals and preparing a thorough action plan for waste prevention. It also needs to take account of the proposed targets in the new national strategy for recycling and composting and the comments regarding energy from waste.

1.2.7 Local Government Act 1999

All local authorities with responsibility for waste management have been designated Best Value authorities under the Local Government Act 1999, and are subject to the duty of Best Value.

Under this duty, authorities are required to deliver services to clearly defined standards, including cost and quality. This must be done by the most effective, efficient and economic means available, with a view to continuously improving services.

What does this mean for the strategy?

The Local Government Act sets out how authorities should deliver services, the strategy should take account of these requirements.

1.2.8 Household Waste Recycling Act 2003

The Household Waste Recycling Act 2003 came into force on the 30 October 2003. It requires English waste collection authorities, to collect at least two recyclable materials from households separate from residual waste by 31st December 2010.

What does this mean for the strategy?

The strategy should include an objective to collect two recyclable materials from households separately from residual waste by 2010.

1.2.9 Producer Responsibility Obligations (Packaging Waste) Regulations 1997

The Producer Responsibility Obligations (Packaging Waste) Regulations 1997 came into force in the UK in March 1997. They aim to achieve a more sustainable approach to packaging waste, reduce the amount of packaging waste going to landfill and implement the recovery and recycling targets set out in the EC Directive 91/62/EC on Packaging and Packaging Waste.

The regulations place legal obligations on businesses with a turnover of more than £2 million and who handle more than 50 tonnes/year of packaging to recover and recycle certain tonnages of packaging waste each year. Companies can reduce their obligation by reducing the amount of packaging they handle.

Obligated producers need to obtain Packaging Recovery Notes (PRNs) from an accredited reprocessor as evidence that recycling or recovery has occurred. An accredited reprocessor is a company that performs a recognised reprocessing activity (for example, glass recycling or energy recovery), which has been accredited by the Environment Agency (UK businesses).

The regulations have no direct obligations for the Partnership authorities. However, in order for the UK to meet proposed increased targets for packaging waste, more packaging waste will need to be extracted from the domestic waste stream. The authorities have a role to play in achieving this, by expanding kerbside recycling collection and promoting other recycling schemes and facilities.

What does this mean for the strategy?

The strategy should note that the Producer Responsibility Regulations place strong incentives on those that produce and use packaging to recover and recycle this material. There may be areas, for example, where the authorities and packaging waste compliance schemes could work in cooperation to increase recycling.

1.2.10 Waste Minimisation Act 1998

The Waste Minimisation Act became law in November 1998. It gives a local authority the power to 'do or arrange for the doing of anything which in its opinion is necessary or expedient for the purpose of minimising the quantities of controlled waste, of any description, generated in its area'.

The authorities are not obliged to carry out any initiatives relating to controlled waste minimisation. However, the Councils are already active in this area. Further information on initiatives is provided in the main report.

What does this mean for the strategy?

The strategy should set out a clear plan for waste prevention.

1.2.11 Ozone Depleting Substances Regulation 2000 (2037/2000)

The introduction of the Ozone Depleting Substances Regulation 2000 (2037/2000) brought about new requirements for the disposal of fridges and freezers. The regulations came into effect on the 1 January 2002 and require that CFCs are extracted from all fridges and freezers prior to final disposal or recovery. This required recovery of insulation foam in addition to 'degassing' of cooling circuits that authorities in ST&W have carried out for some time.

What does this mean for the strategy?

The strategy needs to take account of the Ozone Depleting Substances Regulations when considering how to manage waste refrigerators and freezers, though these requirements will effectively be included within the Waste Electrical and Electronic Equipment provisions.

1.2.12 Waste Incineration Regulations 2002

The Waste Incineration Regulations 2002 came into effect on 28 December 2002, in order to implement the EC Waste Incineration Directive (WID) (2000/76/EC).

The main aim of the WID is to 'prevent and limit negative environmental effects by emissions into air, soil, surface and ground-water, and the resulting risks to human health, from the incineration and co-incineration of waste'. It seeks to achieve this by requiring the setting and maintaining of stringent operational conditions, technical requirements and emission limit values for plants incinerating and co-incinerating waste. As such it is not directly concerned with the place of incineration in waste management strategies, but with ensuring that incinerators continue to be tightly regulated.

The requirements of the WID apply to virtually all waste incineration and co-incineration plants, going beyond the requirements of the 1989 Municipal Waste Incineration (MWI) Directives (89/429/EEC and 89/369/EEC). The WID also incorporates the Hazardous Waste Incineration Directive (94/67/EC) forming a single text on waste incineration. The WID will repeal these three Directives from 28 December 2005.

What does this mean for the strategy?

This strategy, whilst it may assess energy from waste as an option for waste disposal, does not assess individual technology types. If the authorities decide to include EfW as a means of managing residual waste they will need to ensure that, whatever technology is chosen, it must meet the requirements of WID, thus adhering to the objectives of the strategy.

1.2.13 Animal By Products Regulations 2003

The Animal By-Products Regulations (ABPR) 2003 came into force in England on 1 July 2003. This is the enforcing legislation for the EU Regulation on Animal By-Products (No. 1774/2002), laying down health rules concerning animal by-products not intended for human consumption.

These regulations impose a number of restrictions on the handling and treatment of waste that contains, or potentially contains, animal by-products. It is likely to affect all those who deal with animal by-products, including the authorities in ST&W.

The ABPR divide animal by-products into three categories and stipulate the means of collection, transport, storage, handling processing and use or disposal for each category. The issuing of approvals is the responsibility of the State Veterinary Service.

The regulations have implications on recycling and composting through the different controls placed on composting processes (depending on the types of

waste being composted). Authorities must take this into account when developing composting services.

What does this mean for the strategy?

If the strategy supports collection of kitchen waste for composting, it must take account of the specific requirements about how this material is collected and treated (the composting process must be in-vessel, to specific residence time and temperature requirements, for example).

1.2.14 End of Life Vehicles Regulations 2003

The EU End of Life Vehicles (ELV) Directive 2000/53/EC aims to reduce, or prevent, the amount of waste produced from ELVs and increase the recovery and recycling of ELVs that do arise.

The Directive became European law on 21 October 2000 and Member States should have transposed it into national law by 21 April 2002, but none were able to do this. Instead, the End-of-Life Vehicles Regulations 2003 (SI 2003/2635) came into effect on 3 November 2003. These regulations transpose most of the Directive's provisions into national law. In particular they:

- require that certain components are marked to aid recovery and recycling, and that information is provided to facilitate dismantling;
- contain challenging targets for reuse and recycling of ELV components (by 2006 reuse or recycle at least 80% and recover at least 85% of ELVs; by 2015 reuse or recycle at least 85% and recover at least 95% of ELVs);
- require the establishment of adequate systems for the collection of ELVs, and specifies the site, storage and operating standards that must be met by businesses permitted to treat ELVs;
- require that ELVs can only be scrapped ('treated') by authorized facilities, which must meet specified environmental treatment standards; and
- introduce a Certificate of Destruction to improve vehicle agency records.

The remaining Directive provisions, articles 5 and 7 relating to producer responsibility, have been transposed in to UK law and implemented through the End-of-Life Vehicles (Producer Responsibility) Regulations 2004. These state that:

- owners must be able to have their complete ELVs accepted by collection systems free of charge, even when they have a negative value, from 1 January 2007 at the latest; and
- producers (vehicle manufacturers or professional importers) must pay 'all or a significant part' of the costs of take back and treatment for complete ELVs.

What does this mean for the strategy?

The strategy needs to take account of the End of Life Vehicles Regulations when considering how to manage abandoned vehicles.

1.2.15 *Hazardous Waste (England and Wales) Regulations 2005 and the List of Wastes (England) Regulations 2005.*

The municipal waste stream contains wastes that may have hazardous properties and require special handling and disposal arrangements as part of the waste collection service. There are increasing legislative requirements for the separate collection of specific hazardous household wastes that have implications for the waste management strategy.

'Hazardous waste' contains substances or has properties that make it potentially harmful to human health or the environment. The management of such waste is controlled by a European Commission (EC) directive that is based on a hazardous waste list. Until very recently, in the UK, hazardous waste was managed according to the Special Waste Regulations (1996) which implemented the Hazardous Waste Directive (91/689/EC) and Special Wastes were those on the hazardous waste list developed by the EC.

The European Commission recently revised its list of hazardous wastes. Previously, the list included substances such as chemicals, asbestos and other toxic materials. The revised list, however, includes a much wider range of hazardous wastes than previously assigned hazardous status (250 categories of materials which were not previously considered as hazardous) and includes computers, fluorescent tubes, batteries and televisions. Two new regulations came into force in England on 16 July 2005 to implement the latest revisions of the EWC: the *Hazardous Waste (England and Wales) Regulations 2005* and the *List of Wastes (England) Regulations 2005*. The introduction of these new regulations is expected to increase significantly the total quantity of hazardous waste and the number of hazardous waste producers in the UK. They will also impact significantly on the way in which hazardous wastes are managed and the sites that are able to accept them.

What does this mean for the strategy?

The Strategy should take account of the new wider definition of hazardous wastes and the likely increase in cost of managing this waste stream.

1.2.16 *UK WEEE Regulations (SI 2006 No. 3289) , 2006*

The UK WEEE Regulations came into force on 2 January 2007. The Regulations set targets and requirements for the collection, treatment and recycling of WEEE. Waste electrical and electronic equipment is classified according to 10 categories. It covers all types, shapes and sizes of equipment

from electric toothbrushes to medical devices found in hospitals to vending machines. It is also makes distinctions between household WEEE and business WEEE and 'historic' and 'new' WEEE.

The costs for collection, treatment, recycling and disposal are to be borne by the producers (broadly speaking, the manufacturers, importers and retailers) of the EEE, hence it is a "Producer Responsibility" Directive.

For household WEEE, the UK is required to ensure that there is an adequate network of collection points for householders to separate their WEEE from other waste. There is no obligation on consumers to separate WEEE, they are encouraged to do so. There are no direct legal obligations placed on local authorities, although they are encouraged to establish their CA sites or transfer stations as designated collection facilities (DCFs). Producers are required to finance the collection of household WEEE from DCFs along with subsequent treatment and recycling.

Distributors or 'retailers' of household equipment also have legal obligations. They must either offer free takeback of WEEE when they sell a new item of EEE or pay into the 'Distributor Takeback Scheme' which subsequently finances the costs of establishing the DCFs.

For business WEEE, producers are required to ensure they have a system in place to ensure their equipment is treated, recycled and recovered when their customers discard the equipment (even if it is sometime later). In the case of historic WEEE, producers must finance the treatment and recycling costs only if the customer is buying a new similar product. Producers must finance the costs of treating and recycling all new WEEE. It is important to note that a producer can contractually oblige their customers to meet the costs in both cases.

Treatment and Recycling of WEEE

All separately collected household WEEE and all business WEEE will in future be required to be treated to new standards and meet specified recycling and recovery targets. The recycling and recovery targets are category specific (eg Category 1, large household domestic appliances, must be recovered to a level of 80% by average weight of appliance, with 75% being attributed to reuse or recycling of components, materials or substances).

Treatment requirements include removal of certain components and materials from WEEE (eg mercury containing components, plastics containing brominated flame retardants, cathode ray tubes) and then in some cases specialist treatment of the removed component (eg removal of fluorescent coating from cathode ray tubes). Guidance is available on interpretation of these requirements. The removal of materials or components does not necessarily need to take place before the shredding process.

What does this mean for the strategy?

The strategy needs to consider that some Household Waste Recycling Sites could become collection facilities for waste electronic and electrical equipment.

1.2.17 Forthcoming Legislation

Batteries Directive Proposals

Proposals for a new Directive on batteries and accumulators were issued by the European Commission on 24 November 2003. The reasons proposed for a new Directive are that existing legislation on batteries (Directive 91/157/EEC on Batteries and Accumulators Containing Dangerous Substances) only covers an estimated 7% of consumer batteries on the EU market. These are batteries with a certain mercury, lead and cadmium content. The new Directive will apply to all types of batteries irrespective of their shape, weight, composition or use.

The main aspects of the legislation that are likely to affect the authorities are the following proposed collection and monitoring obligations:

- collection schemes for used consumer batteries are to be established. These are to be free of charge to the consumer;
- a collection target of 160 grams per inhabitant for spent consumer batteries is to be met within four years of the Directive being transposed into UK law;
- 80% of portable nickel cadmium batteries are to be collected within four years of the Directive being transposed; and
- the quantity of spent portable nickel cadmium batteries entering the municipal solid waste stream is to be monitored.

There are also recycling obligations, including a proposed 90% of collected consumer batteries to be recycled, with a 55% recycling efficiency.

Although it has not yet been decided who will finance the collection and recycling of batteries, authorities are likely to see some increased costs through monitoring and reporting requirements.

The Batteries Directive was published in the Official Journal on 26 September 2006. The UK and all other Member States now have a deadline of 26 September 2008 to transpose the provisions into national law.

The Directive seeks to improve the environmental performance of batteries and accumulators and of the activities of all economic operators involved in the life cycle of batteries and accumulators, e.g. producers, distributors and

end users and, in particular, those operators directly involved in the treatment and recycling of waste batteries and accumulators.

When the Directive is transposed into law UK, it should reduce the quantity of hazardous and non hazardous waste batteries going to landfill and increase the recovery of the materials they contain. This is consistent with the objectives outlined in the Government's Waste and Sustainable Development Strategies.

What does this mean for the strategy?

The strategy may need to be reviewed if requirements are put in place to manage batteries separately from other waste streams.

The Municipal Waste Management Strategy should take into account the policies and strategies already put into place at the regional level. This section outlines those policies.

2.1.1 *Regional Spatial Strategy for the North East, Submission Draft, June 2005*

The Regional Spatial Strategy (RSS) sets out a long-term strategy for the spatial development of the North East. Some policies have an end date of 2021, but the overall vision, strategy and general policies are intended to guide development over a longer timescale. One of the key objectives of the strategy is to "reduce the amount of waste produced and treat and dispose of that which is generated in the most sustainable manner".

2.1.2 *Sustainable Waste Management (Policy 46)*

Policy 46 of the RSS sets out policies with respect to sustainable waste management:

Strategies, plans and programmes should give priority to initiatives which encourage behavioural change through:

- developing and implementing waste minimisation plans and schemes;
- implementing waste awareness and education campaigns;
- developing reuse schemes; and
- minimising the use of primary construction materials and the production of waste;

And should be based on the following key principles:

- the waste hierarchy with minimisation at the top, then reuse, recycling, composting, waste to energy and landfill;
- the proximity principle
- regional, and where appropriate, sub-regional self-sufficiency; and,
- of the regional waste management strategy for the North East.

A consultant's report '*Towards a Waste Management Strategy for North East*' was prepared for the region in 2003 to establish the preferred option for dealing with the region's waste. The preferred option for dealing with the region's waste is to meet and exceed recovery targets by 5% through recycling, composting and digestion with minimum disposal to landfill. The preferred option established specific targets for different waste streams:

- Municipal Solid Waste – to increase recovery to 72% by 2016
- Commercial and Industrial – to increase recovery to 73% by 2016
- Construction and Demolition – to increase recycling to 80% by 2016

What does this mean for the strategy?
The strategy needs to take account of the priorities for encouraging behavioural change and the means by which the regional spatial strategy suggests this is achieved. It also needs to consider the preferred options and targets for different waste streams.

2.1.3 Waste Management Provision (Policy 47) and Hazardous Waste (Policy 48)

Policy 47 of the RSS sets out policies on provision of capacity for waste management. It identifies waste arising tonnages and states that strategies, plans and programmes should provide the management capacity for these waste arisings. Policy 48 states that Waste and Local Development Frameworks should provide for a range of new facilities for the treatment and management of hazardous waste.

There are objectives for hazardous waste management. They are as follows:

Waste and Local Development Frameworks should provide for a range of new facilities for the treatment and management of 567,000 tonnes of hazardous waste per annum by 2010/11, 610,000 tonnes per annum by 2015/16 and 671,000 tonnes per annum by 2021/22.

What does this mean for the strategy?
The strategy should set out the waste management capacity requirements having regard to the tonnages of waste arisings set out in the RSS. The type and number of facilities should reflect local circumstances within the strategic framework established by RSS policies and also reflect the requirement for management of hazardous waste.

2.1.4 Towards a Waste Strategy for the North East, Consultation Summary, 2003

The vision for the North East in 2025 is a:

"waste management system that allows the region to prosper whilst reducing harm to the environment and preserving resources for future generation".

To achieve the vision, the preferred option for the North East in 2016 will involve:

- Maximising waste minimisation and re-use;
- Meeting household waste recycling targets of 33% by 2015 through recycling and composting;
- Meeting a recovery target for municipal solid waste of 72% and a recovery target for commercial and industrial waste of 73% through

recycling, composting, anaerobic digestion with a minimum disposal to landfill;
- Increasing the percentage of construction and demolition waste recycling to 80%.

This will require:

- New measures and initiatives to reduce the growth in waste volumes such as home composting;
- Immediate action to increase awareness, influence attitudes and promote waste minimisation, re-use and recycling;
- The promotion and development of new markets for recycled products both in the region and elsewhere;
- Ensuring that the region is served by a reliable, integrated waste management infrastructure that serves the collection, management and disposal requirements of all waste producers in the region. For municipal waste an immediate aim must be to roll out kerbside recycling collections throughout the region;
- Support and encouragement for everyone in the region to separate materials from waste at source and participate actively in recycling and composting initiatives; and
- New facilities to manage waste arisings in the region.

What does this mean for the strategy?
These objectives need to be considered when developing working objectives for the strategy.

2.1.5 Regional Economic Strategy 2006-2016

The main targets in achieving economic success will be to:

- Increase Gross Value Added (GVA) per person to 90% of the national average
- Increase employment by between 61,000 and 73,000 new jobs
- Create between 18,500 and 22,000 new businesses over the next 10 years.

This will enable the region to close the gap significantly with the rest of the UK in terms of our productivity, and ultimately improve our contribution to the national economy. In 2006, the GVA economic contribution per person in North East England stands at around 80% of the UK average.

The strategy has three main themes to achieve the targets: business, people and place, all of which are underpinned by the need for strong leadership. Particular actions are highlighted which actively support sustainable development.

For 'business':

- Specialist business support for encouraging resources efficiency;
- A strong focus on the development and deployment of low carbon technology and renewable energy within the 'Three Pillars' work; and
- A strong focus on the delivery of the Energy White Paper, 2003.

For 'people', a strong focus on economic inclusion including activities to:

- Improve access to employment;
- Raise economic participation in deprived communities; and
- Promote equality and diversity.

For 'place', a strong focus on delivering sustainable development best practice in regeneration and planning, including activities to:

- Ensure the incorporation of sustainable development principles and best practice in the planning, management and design processes of regeneration schemes;

- Concentrate on demand management and energy usage in transport schemes; and

- Promote, enhance and protect our natural, heritage and cultural assets.

The strategy also states that businesses will be encouraged to exercise best practice in managing waste, as well as highlighting the importance of environmentally conscious waste reduction.

What does this mean for the strategy?
The strategy should support the Regional Economic Strategy.

3 REVIEW OF LOCAL POLICIES

The Waste Strategy should fit in with the existing Joint Integrated Waste Management Services Contract and the local policies, plans and strategies adopted by the three unitary authorities in South Tyne and Wear. A review of these documents follows.

3.1 GATESHEAD

3.1.1 Gateshead's Community Strategy 2004-2007

By 2010 Gateshead wants to have:

- Children and young people who are empowered and supported to develop their full potential and have the life skills and opportunities to play an active part in society;
- A safe, fear free and tolerant community in which local people live and work;
- Local people who participate in a rich array of cultural and leisure opportunities;
- Local people who have the skills and opportunities to access rewarding jobs in the public and private sectors in and around Gateshead; more businesses locating, forming and growing in Gateshead;
- Local people who live in and contribute to a clean, pollution free, attractive and sustainable environment;
- Local people living longer and healthier lives;
- Local people who live in good quality, affordable homes, which meet their needs and are located within pleasant, safe and sustainable communities;
- Local people who learn throughout their lives and have the life skills to realise their full potential as individuals and active citizens;
- Local people supported by a network of care services appropriate to their needs and wishes; and
- Local people and businesses who have access to integrated, safe and affordable transport which supports economic growth and balances the needs of all users in a responsible way.

3.1.2 Gateshead Municipal Waste Strategy 2005-2025

The objectives of the strategy are:

- To have individuals living in and contributing to a clean, pollution free, attractive and sustainable environment;
- To develop a more sustainable system of waste management, promoting waste minimisation in the first instance, encouraging re-use and recycling, and minimising the quantity of waste disposed of without recovering value from it;
- To meet the challenging targets set by Government to recover value from waste and set in place arrangements to divert increasing amounts of biodegradable waste from landfill;
- To ensure that 'Best Value' principles are applied, and to secure an economic, efficient and effective waste management service;
- To work in partnership with others in the provision of the service, including government, other local authorities, the community sector and the private sector; and
- To meet the increasing expectations of residents, and to seek to engage the wider community via the Council's Strategic Partnership arrangements.

The proposed strategy for meeting waste challenges is to:

- Reduce the growth in waste arisings through the use of waste reduction and minimisation programmes;
- Increase the current level of recycling and composting towards our target of 25% by 2010 and periodically review targets during the life of the strategy;
- Treat the remaining residual waste to ensure that Gateshead meets yearly UK Government landfill targets between now and 2020; and
- Provide sufficient future landfill capacity for any waste which is either unsuitable for recycling or treated to recover value from it.

Gateshead Council will continue to raise awareness on waste and promote initiatives which could reduce the amount of waste. The Council will discount the construction of a local Energy from Waste (EfW) facility and other scenarios involving the onsite burning of Refuse Derived Fuel (RDF) unless no other deliverable solutions which enable future landfill targets, particularly those for 2010 and 2013, to be met can be implemented.

3.2 SOUTH TYNESIDE

3.2.1 South Tyneside's Community Strategy 2004-2007

The strategy sets out aims supported by a number of objectives in six priority areas. These are:

- Enterprise and Jobs;
- Healthy Living and Care;
- Safer Communities ;
- Learning, Creativity and Culture;
- Housing and Environment; and
- Stronger Communities

The agreed aims include:

- creating a culture where innovation and new enterprise flourish;
- helping businesses to survive, develop and grow;
- getting more people into employment and self-employment;
- helping disadvantaged and under represented groups into employment and self-employment;
- creating the right conditions for better health;
- tackling crime and its causes;
- improving transport;
- promoting cutting edge planning and inspirational urban design;
- strengthening community cohesion;
- increasing involvement in decision making; and
- increasing opportunities and access to services.

3.2.2 South Tyneside Waste Management Strategy

The five key aims of the strategy are as follows:

1. To provide a framework through co-operation and partnership with Private Sector Partners, Neighbouring Authorities, and the voluntary sector through which to achieve future EU and national targets for landfill diversion, waste recovery, and diversion;

2. To provide a Strategy that increases the sustainability of waste management within the Borough;

3. To deliver Best Value in waste management;

4. To increase public awareness of the issues relating to the future management of waste, with the specific aim of increasing public participation in waste minimisation, re-use and recycling; and

5. To provide a strategy for waste that meets the requirements of the National Waste Strategy and the Landfill Directive, whilst minimising the impact of the rising cost of waste management.

It is intended that the strategy will achieve the following key objectives:

- Minimise the cost to the community
- Create the greatest benefit to the environment
- Achieve the primary targets of the National Waste Strategy

3.3 SUNDERLAND

3.3.1 The Sunderland Strategy 2004-2007

The strategic objectives are:

- Creating a prosperous city;
- Extending cultural opportunities;
- Improving the quality, choice and range of housing;
- Improving health and social care;
- Reducing crime and the fear of crime;
- Raising standards and increasing participation in learning;
- Developing an attractive and accessible city; and
- Creating inclusive communities

3.3.2 Sunderland Waste Management Strategy

The key aims of the strategy are to:

- Identify achievable means of securing compliance and where possible exceeding the requirements of EU and national targets for recycling, diversion of wastes from landfill and recovery of value, for the City of Sunderland. In doing so the strategy will provide a framework for the Council to work towards, meet and potentially exceed the requirements of the National Waste Strategy and Landfill Directive;

- Increase the sustainability of waste management within the City;
- Deliver best value in Waste Management;

- Increase public awareness in relation to waste management issues and encourage their ownership by householders and other stakeholders; and

- Achievement of these aims in both a sustainable and cost-effective manner.

Annex C

Options Assessment

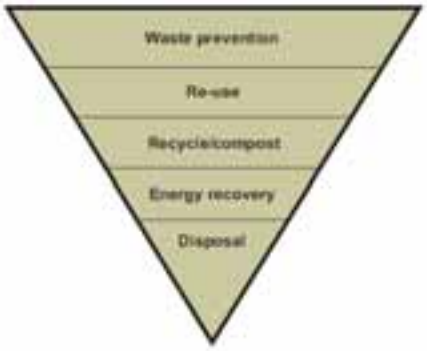
CONTENTS

1 ASSESSMENT OF OPTIONS FOR WASTE PREVENTION AND RE-USE

1.1 INTRODUCTION

In line with its commitment to sustainable development, the National Waste Strategy 2007 aims to change the way waste is managed. Government policy seeks to break the link between economic growth and the amount of waste produced and to drive the management of waste up the waste hierarchy of reduction, re-use, recycling and composting, and energy recovery (*Figure 1.1*). Where waste is produced it should be viewed as a resource to be put to good use – disposal should be the last option for dealing with it.

Figure 1.1 Waste Hierarchy, Waste Strategy 2007



The Government requires that any waste management strategy produced by local authorities should start by considering the practical extent to which the amount of waste produced can be reduced. Waste minimisation must take priority. Government suggests that authorities should then repeat the process for each subsequent stage in the hierarchy in turn (re-use, recycling & composting and energy recovery). Disposal of waste should be seen as the last option but should, nevertheless, still be addressed.

1.2 WASTE PREVENTION AND REUSE

Arisings of municipal solid waste (MSW) in South Tyne and Wear have grown from 360,718 tonnes in 2001/02 to 368,703 tonnes in 2005/06; an increase of 1.9%. This assessment explores the potential for waste minimisation in terms of the amount of waste avoided, and provides an assessment of the options for increased waste prevention and re-use in South Tyne and Wear.

Approaches targeting specific waste streams that contribute to municipal solid waste (MSW) arisings have been assessed, including:

- promotion of home composting;
- promotion of waste-aware shopping;

- reduction of junk mail through the mailing preference scheme;
- promotion of reusable nappies;
- diversion of trade waste;
- promotion of business services that encourage the loaning, hiring and leasing of products; and
- support for re-use of items, local waste exchanges and charity stores.

All of these approaches are reduction options, except the last which is a re-use measure.

Considerations of the potential for segregated weekly collections of MSW or reducing bin size have not been made here as potential waste minimisation measures. It has been suggested that such approaches may result in reduced arisings of MSW, however a separate study would be required to determine the overall impact of such schemes.

This report identifies material streams that can be reduced or re-used and estimates the consequent reductions in the amount of waste landfilled. It outlines general benefits and risks involved with waste minimisation programmes for different waste streams.

The aims of this report are to:

- explore the full potential of waste minimisation;
- examine how effective different waste minimisation options are; and
- assist with decision making in approaches to waste minimisation.

It is important to note that the data used in this report are up-to-date at the time of research. Growth estimates for MSW arisings and population, for example, have been calculated according to current projections and these may change in the future. Many figures have also been based on the Household Waste Prevention Toolkit prepared by the National Resource and Waste Forum.

1.3 BENEFITS OF WASTE PREVENTION AND RE-USE

Numerous benefits may be gained from reducing the amount of waste generated within the community. The Government's focus on the waste hierarchy, and thus waste prevention and re-use, is supported by the National Resource and Waste Forum, which has identified the following benefits (1):

- reducing demands on finite natural resources and the often 'hidden' adverse environmental impacts of resource extraction and harvesting;

- reducing the transport impacts that are often significant in overall environmental impact terms (as shown by life cycle assessment methods);

(1) NRWF (2006) Household Waste Prevention Toolkit, updated July 2006.

- meeting the demands of EU legislation, particularly the biodegradable municipal waste (BMW) diversion targets of the Landfill Directive as specified in the Landfill Allowance Trading Scheme;

- reducing the cost of waste management by reducing the need for waste collection, disposal, treatment and landfill levies, freeing up resources for other priority investments, such as public education and health care; and

- encouraging social inclusion and economic development through creating jobs and training opportunities for the most disadvantaged in society.

There are additional benefits, specific to the waste minimisation and re-use options, and these are discussed in the relevant sections below.

This section explores each of the waste prevention and re-use opportunities for South Tyne and Wear Waste Management Partnership (the Partnership). An introduction to each option is provided, including a list of risks and benefits, and prevention and re-use options are then explored, including current approaches being undertaken in the partnership area. Finally a cost/benefit summary involving the determination of whether the Partnership will achieve a net benefit through development and implementation of waste prevention and re-use programmes, is provided. Projections for MSW arisings take account of the discussions held at a waste minimisation workshop held during the development of the Strategy and see a reduction in waste growth to 0% by 2010.

This modelling looks at the overall impact that waste prevention and reuse programmes will have on the MSW arisings within South Tyne and Wear. Many of the calculations and assumptions used here are based upon the *National Resource and Waste Forum (2004) Household Waste prevention Toolkit, updated July 2006.* Further analysis of the waste composition data would be required before embarking on large prevention and re-use initiatives.

2.1 PREVENTION: HOME COMPOSTING

Home composting prevents garden and vegetable waste from entering the waste stream and, as such, is an important contributor to targets for the diversion of biodegradable municipal waste (BMW) from landfill, helping to achieve the Landfill Allowance Trading Scheme (LATS) targets. The Government wants at least 50% of households to participate in home composting(1). *Table 2.1* highlights benefits and risks associated with initiating further home composting programmes.

Home composting schemes may be eligible for WRAP and Community Composting Network support. There is also the availability of 'Compost Advisors' who can assist with educating the community.

Table 2.1 ***Home Composting - Benefits and Risks***

Specific Benefits	Risks
• Reduced need to buy peat-based composts • Further public engagement/awareness • Reduced costs for collection and disposal • Avoidance of LATS penalties • Reducing resource/energy use	• Quantities of waste diverted may not reach expected levels due to low demand/participation rate resulting from lack of knowledge • Cost of bins • Lack of space

(1) National Resource and Waste Forum (2004) *Household Waste prevention Toolkit. Part B: Specific Waste Prevention Activities.*

The three authorities in the Partnership have adopted the promotion of home composting initiatives as a means of reducing household waste generation through the WRAP home composting scheme. They have been working with WRAP since January 2007 to encourage home composting.

A green waste collection service has also been introduced across the Partnership area and this, in effect, targets some of the same materials that could be composted at home. This has been taken into account when calculating the potential benefits of expanding the home composting scheme.

There are further opportunities for the Partnership to increase the level of home composting. *Table 2.2* summarises an assessment of the potential for diversion of garden and kitchen waste from households with gardens (1). If 50% of households participate in home composting, by 2020/21, it has been estimated that just under 1% of total MSW arisings can be reduced. In theory, over 60% of household waste (by weight) can be composted(2). However, in practice, approximately 30% of household waste can be composted easily at home, or in the community(3) – equating to approximately 360kg per household. Realistic composting estimates are discussed below in the assumptions.

Table 2.2 Targets for home composting

Year	No. of households in STWWMP with gardens and those not served by green waste collection*	Target no. bins distributed (cumulative)	No. of additional bins required (actual)	Potential for additional diversion/yr (at 150 kg/hhld)
2005/06	45,696	2,285	2,285	343
2010/11	47,035	9,407	7,122	1,411
2015/16	48,207	16,872	7,465	2,531
2020/21	49,211	24,605	7,733	3,691

* It has been assumed that 20% of those served by a green waste collection will also request a home compost bin.

Assumptions: Diversion tonnages are based on data taken from the Household Waste Prevention Toolkit relating to individual authorities that suggest home composting quantities typically range from 100-200kg (4); an average of 150kg has been used for this assessment (5). According to a recent report by Defra, new home composting bins being given out under a national scheme are diverting an average of 220kg per household each year, while existing home composting units have been found to be diverting around 60kg per household each year. The article suggests that the average diversion per bin is currently estimated as 145kg per household (6). The number of households with gardens includes detached, semi-detached or terraced

(1) It was assumed that dwellings defined as detached, semi-detached or terraced have gardens.
(2) Strategy Unit Report - *Waste not Want not*
(3) National Resource and Waste Forum (2004) *Household Waste prevention Toolkit. Part B: Specific Waste Prevention Activities.*
(4) National Resource and Waste Forum (2006) *Household Waste Prevention Toolkit. Part B: Specific Waste Prevention Activities*
(5) It is estimated that 60% of household waste is compostable, however, only 30% of this material is easily composted in the home or community. Up to 360 kg of material could be composted each year, however real composting rates sees only 100 - 200 kg composted annually. *Household Waste Prevention Toolkit: Part B Specific Waste Prevention Activities July 2006*
(6) Home composting bins "diverting 170,000 tonnes a year" (31.01.07), Letsrecycle website. Accessed 8 February 2007 http://www.letsrecycle.com/materials/composting/news.jsp?story=6491

properties, although in South Tyne and Wear a large majority of terraced properties do not have gardens. Therefore it is estimated that 20% of properties are considered to have gardens. Currently 57% of households have a green waste collection service and of those it is predicted that 20% will request a home compost bin.

Cost and benefit: Costs involved in this programme include infrastructure, such as composting bins, and two support staff to manage the programme as well as volunteers. Programme costs offset against avoided disposal costs, will result in an estimated net annual financial cost of approximately £26,200 in 2010/11 with a net annual financial benefit of £60,800 in 2020/21.

2.2 *PREVENTION: WASTE AWARE (SMART) SHOPPING*

Householders can influence waste arisings through informed purchasing to reduce the amount of material entering the home. They can also reduce waste by buying more durable goods, or reusing and repairing products in the home. Being 'waste aware' involves shoppers:

- taking their own plastic bags to supermarkets;
- choosing products that use less packaging;
- buying products made of recyclable materials; and
- buying refills (generally available for products such as fabric conditioner, some cosmetics and washing powders).

Some local authorities, such as Surrey County Council and the London Borough of Richmond, have implemented smart/sustainable shopping programmes or Shop SMART (Save Money and Reduce Trash). Kennet District Council is currently looking at ways to encourage the use of re-usable containers (such as those used for doorstep deliveries of milk and fruit juice) in order to reduce packaging waste [(1)]. Consumer purchasing decisions can impact upon more than 60% of waste generated from purchased goods[(2)].

Targeting various stakeholders will be essential to ensure the success of a smart shopping programme. Encouraging industry to reduce packaging materials in supermarkets is another big issue but one over which local authorities have much less control. Incentivising prevention programmes may assist with reducing waste within the community. Ultimately, educating the community to consider the impact of their choices on the environment is likely to lead to long-term behaviour change and thus greater success regarding waste prevention. Benefits and risks associated with initiating a shop smart campaign across the Partnership area are summarised in *Table 2.3*.

(1) Kennet District Council (2007) Community Development Executive Committee, Packaging Motion, Report by Mark Smith, 16th January 2007. [Accessed 21 February 2007.] http://www.kennet.gov.uk/leg_dem/web_comm_minutes.nsf/0/c63757c91a26396e80257265005018b7/$FILE/Packaging%20Motion.doc

(2) Resource and Waste Forum (2006) *Household Waste Prevention Toolkit: Part C Marketing Behaviour Change*

It is important to stress that behavioural changes are essential for smart shopping programmes to be successful. Householders, supermarkets, authorities and packaging manufacturers/suppliers all need to be involved in changing current practices in order for packaging to be reduced and for more informed purchasing to be undertaken. Raising awareness through advertising is an important way to change current shopping habits.

Table 2.3 Waste Aware (SMART) Shopping Schemes –Benefits and Risks

Specific Benefits	Risks
• Campaign may have wider benefits in raising environmental awareness • Reduce resource/energy use	• Difficult to achieve major reductions in waste without industry cooperation and government intervention such as plastic bag tax, indirect/direct charging for waste collection and disposal

Currently, there are no waste aware (smart) shopping schemes in South Tyne and Wear, so the potential impact of introducing a scheme is likely to be significant. *Table 2.4* summarises an assessment of the potential for diversion of shopping/packaging waste within the Partnership. If 50% of the community reduce their shopping/packaging waste (which is 60% of the waste stream) by only 10% by 2020/21, up to 3% of total MSW arisings can be reduced.

Table 2.4 Targets for reduction of shopping waste within current waste materials

Year	Expected reduction in waste generation per household	Households involved in change of behaviour	Target tonnage excluded
2005/06	10%	5%	1,106
2010/11	10%	20%	5,201
2015/16	10%	35%	9,101
2020/21	10%	50%	13,002

Assumptions: This analysis is based on studies(1) that have calculated:

- that shopping waste constitutes 60% of the waste stream; and
- that a 10% reduction of waste from each household can be achieved

Cost and benefit: The costs involved in such a programme include contribution to the salary of a Local Authority coordinator focused on waste prevention and re-use. Taking account of this cost and the estimated avoided disposal costs, will result in an estimated net annual financial benefit of £167,300 in 2010/11 rising to £430,700 in 2020/21.

(1) *Household Waste Prevention Toolkit [Unpublished version] Part C Marketing Behaviour Change August 2004* http://www.nrwf.org.uk/documents/NRWFToolkit_PART_C.pdf p 22

2.3 PREVENTION: UNWANTED MAIL

Unwanted mail, including advertising materials and free newspapers, accounts for around 3% of household waste [1]. Preventing unwanted mail relies on householders refusing handouts/free papers and by committing to the mailing preference service. In order for householders to be aware of these schemes, authorities need to raise awareness and provide information relating to these schemes. Benefits and risks associated with initiating a Mailing Preference Service promotional campaign across the sub-region are summarised in *Table 2.5*.

Table 2.5 Unwanted Mail Schemes –Benefits and Risks

Specific Benefits	Risks
• Once a household has committed to the Mailing Preference Service, reductions will be observed after 3-4 months • Where co-mingled recycling services are offered, the reduction of this waste stream will allow more capacity within kerbside boxes • Reduction in resource/energy use	• To achieve maximum reduction, householders will need also to commit to reducing unwanted mail by refusing handouts, flyers and free newspapers and magazines • Reduced quantity of material for recycling

The Mailing Preference Scheme is currently promoted only in parts of South Tyne and Wear so opportunities exist to extend the programme.

Table 2.6 summarises an assessment of the potential for diversion of unwanted mail waste from households. If 50% of the community reduce unwanted mail waste by 2020/21, up to 1% of total MSW arisings could be reduced.

Table 2.6 Targets for reducing unwanted mail within the MSW stream

Year	Proportions of households participating	Target tonnage excluded
2005/06	5%	365
2010/11	20%	1,716
2015/16	35%	3,003
2020/21	50%	4,291

Assumptions: The quantity of unwanted mail generated within households was estimated at 3% (or 0.6kg per household per week)[2].

Cost and benefit: Such a programme would require continued contribution to the salary of a Local Authority coordinator. Taking this cost and the avoided disposal costs into account, the estimated net annual financial benefit would be £49,600 in 2010/11 rising to £136,500 in 2020/21.

(1)Resource and Waste Forum (2006) *Household Waste Prevention Toolkit: Part C Marketing Behaviour Change*
(2)Resource and Waste Forum (2006) *Household Waste Prevention Toolkit: Part C Marketing Behaviour Change*

2.4 *PREVENTION: REUSABLE NAPPIES*

Using reusable nappies instead of disposable nappies can contribute to the diversion of waste from landfill. For reusable nappy initiatives to be successful there needs to be a change in behaviour and attitudes towards the use of these nappies from householders. There needs to be an increase in awareness of these schemes and some authorities subsidise or incentivise such schemes to encourage their uptake. The effectiveness of these schemes relies heavily on successfully changing the behaviour of householders. *Table 2.7* highlights benefits and risks associated with expanding reusable nappy diversion schemes.

Table 2.7 Reusable Nappies –Benefits and Risks

Specific Benefits	Risks
• Greater participation in schemes will ensure ongoing availability • Reduction in resource/energy use	• An initial investment in the nappies is required which can be an economic barrier to some families. • Participation may be dependant on environmental debates regarding the costs and benefits of real nappies

There are already some reusable nappy initiatives in the Partnership area.

Table 2.8 summarises an assessment of the potential for diversion of disposable nappies waste from the household waste stream. If 35% of parents use reusable nappies by 2020/21, up to 0.3% of total MSW arisings could be reduced.

Table 2.8 Targets for the promotion and use of Reusable Nappies

Year	Estimated No. of babies in South Tyne and Wear	Babies in reusables	Target no. of babies in reusables	Potential diverted arisings (tonnes)
2005/06	21,638	4% (1)	866	147
2010/11	21,413	15%	3,212	544
2015/16	21,354	25%	5,339	905
2021/21	21,327	35%	7,464	1,265

Assumptions: Recent studies have estimated that babies generally wear nappies for 2.5 years(2). During this time, a baby will use approximately 3650 nappies (4 per day), equating to approximately 169.5 kgs per child over the 2.5 years(3). Based on these estimates, potential reductions have been calculated, as shown in *Table 2.8*. The impact of existing schemes has been considered in the calculations.

(1) Recent research by the EA (2004) determined that the market share of reusable nappies was less than 4%. Life Cycle Assessment of Disposable and Reusable Nappies in the UK, May 2005, http://www.environment-agency.gov.uk/commondata/acrobat/nappies_1072099.pdf, p21

(2) Life Cycle Assessment of Disposable and Reusable Nappies in the UK, May 2005, http://www.environment-agency.gov.uk/commondata/acrobat/nappies_1072099.pdf

(3) Life Cycle Assessment of Disposable and Reusable Nappies in the UK, May 2005, http://www.environment-agency.gov.uk/commondata/acrobat/nappies_1072099.pdf

The number of babies in South Tyne and Wear was estimated by determining the percentage of the population in the 0-4 age category and multiplying by 0.625 (1/4 * 2.5) to ascertain the proportion of the population between the ages of 0 and 2.5 years. This figure was used instead of the number of babies born in the Partnership area, as babies not born within South Tyne and Wear would not be included in such calculations if they moved into the area. Likewise, this portion of the population may change if babies move out of the area.

Cost and benefit: The costs for this programme include contribution to the salary of a Local Authority coordinator focused on waste prevention and re-use. This cost and the avoided disposal costs will result in an estimated net annual financial cost of £71,200 in 2010/11 decreasing to an annual cost of £43,700 in 2020/21.

2.5 PREVENTION: TRADE WASTE DIVERSION

Illegal disposal of trade waste at Household Waste Recycling Centres (HWRCs) contributes to the MSW arisings. All three authorities actively discourage illegal trade waste deposits. Diversion of this material assists with managing and financing MSW and allows the sub-region to comply with the Duty of Care. The objective of the Duty of Care is to ensure that all waste is managed correctly from the place where it is produced to the point of final disposal. Penalties for breaching the Duty of Care include unlimited fines and imprisonment. In order to meet LATS targets, it is essential that this waste stream be diverted from HWRCs to the commercial waste stream. *Table 2.9* highlights benefits and risks associated with initiating trade waste diversion programmes.

Table 2.9 Trade Waste Bans – Benefits and Risks

Specific Benefits	Risks
• Reduction in the calculated amount of MSW arisings • Potential increase in trade waste recycling due to unavailability of free disposal channels	• Commercial vehicle bans introduced without a permit system may result in complaints • Potential to encourage fly-tipping (1) • Potential for waste to be placed within kerbside bins (2)

Some common approaches to targeting illegal trade waste deposited at HWRCs are already employed by the Partnership authorities; control measures are used at HWRCs, for example, to prevent traders from entering the sites. Additional measures include tackling waste from childminders and home workers and possibly implementing trade 'bring' sites.

In conjunction with current efforts, further reductions may be made to decrease the amount of trade waste in the MSW stream. *Table 2.10*

(1) Dudley and North Lincolnshire noticed a slight increase in fly-tipping following the implementation of schemes, but this could this be linked directly to the scheme itself. Cameron-Beaumont & Bridgewater (2002). *Trade waste input to CA sites.* Network Recycling, WPSD. Chapter 4

(2) This may be reduced by auditing companies, asking them to provide their waste duty of care document given to businesses by waste providers

summarises an assessment of the potential for diversion of trade waste from the authorities' waste disposal facilities. If a 50% reduction in the illegal deposit of trade waste can be achieved by 2020/21, a reduction of up to 0.6% of total MSW arisings could be achieved.

Table 2.10 Targets for the diversion of trade waste from MSW at HWRC's

Year	Total tonnage of trade waste at HWRC's	% Reduction of trade waste in MSW stream	Target tonnage excluded
2005/06	4,424	5%	221
2010/11	4,604	20%	921
2015/16	4,604	35%	1,611
2020/21	4,604	50%	2,302

Assumptions: The estimated amount of MSW collected by the Partnership in 2005/6 was 368,703 tonnes, with 15% of this waste expected to be collected at HWRC's. South Tyne and Wear has estimated that approximately 8% of waste collected at HWRCs is illegal trade waste.

Cost and benefit: Costs for annual programmes, such as education and maintaining a permit scheme, and cost savings based on avoided collection and disposal costs, will result in an estimated net annual benefit to Council of £64,200 in 2010/11 rising to £172,900 in 2020/21. Targeting this waste stream should result in an overall benefit to the Partnership.

2.6 PREVENTION: PRODUCT SERVICE BUSINESSES

The product service approach involves encouraging the loan, hire and lease of services rather than goods or, where goods are purchased, this is combined with services including upgrade, delivery, cleaning or maintenance, to enhance the longevity of the product. Overall, this approach reduces the amount of new materials entering the system and ultimately the future waste stream. This approach includes:

- Libraries – public libraries, now include, music CDs, videos, DVDs and internet services, whilst toy libraries loan toys.
- Hire, rental and repair services.
- Local Exchange Trading System (LETS) schemes – people have an account which is used for earning and spending 'credits' that can be exchanged for time and or equipment within the community eg mowing lawns in exchange for cleaning gutters such that each community member does not need to own a lawn mower and ladder (www.letslinkuk.org).
- Milk rounds and other bottle return arrangements (eg with local breweries).

- Organic box – these are boxes delivered to the householder containing seasonal vegetables. The boxes help prevent waste as little or no plastic packaging is required.

- Gardening services - this reduces the number of gardening tools householders purchase (thereby reducing the number of new items entering the market) as companies will carry out any gardening that is required with their own tools.

- Product refill services.

- Outside/food catering services – these can assist with minimising the use of disposable tableware and excessive food wastage through catering experience.

- Informal sharing of equipment such as DIY and garden tools.

Local authorities can assist with establishing and supporting such schemes to ensure their long term stability. Product service promotion is crucial and should highlight all the benefits to the householder, while addressing any concerns. *Table 2.11* highlights the benefits and risks associated with product service businesses.

Table 2.11 Product service businesses –Benefits and Risks

Specific Benefits	Risks
• Reduction in resource/energy use • Access to goods/services – offer more affordable access to goods • Job creation and training • Social inclusion • Reduction in MSW arisings	• Need for ongoing commitment from organisers and community to avoid unfair distribution of goods and services

South Tyne and Wear already has a range of services that are included in the above list. However, services are not widely promoted, neither is there a central information database where residents can access product service business information. Thus, there is further scope for all Authorities to promote these businesses and increase waste prevention. *Table 2.12* summarises an assessment of the potential for diversion of waste from households by using product service businesses. If 25% of households replace purchases with product services by 2020/21, up to 0.3% of total MSW arisings could be reduced.

Table 2.12 Targets for product service businesses prevention of waste materials

Year	Households requiring change in behaviour	Target tonnage excluded
2005/06	5%	92
2010/11	10%	256
2015/16	15%	480
2020/21	25%	959

Assumptions: Research suggests that diversions of between 0.5 and 1% of MSW arisings can be made through preventing waste generation by using services provided by businesses, rather than residents investing in buying/purchasing products themselves [(1)].

Cost and benefit: The costs involved in such a programme may include start-up grants for social enterprises and support funding for existing enterprises, and one salaried staff member. These costs and the avoided disposal costs will result in an estimated net annual financial cost of £60,200 in 2010/11 decreasing to an annual cost of £33,400 by 2020/21.

2.7 *RE-USE: UNWANTED GOODS*

Re-use involves passing on used goods (with or without sorting/refurbishment) to those who can make further use of them. Re-use presents the Partnership with a low cost opportunity to increase tonnages diverted from the waste stream.

One study found that 77% of upholstered furniture and 60% of domestic appliances disposed at HWRC sites could theoretically be refurbished and re-used[(2)]. Furthermore, HWRC sites committed to re-use have been found to generally have higher recycling rates, as a result of increased public awareness and staff motivation[(3)]. Other schemes such as Freecycle, a web-based free trading system, have proved to be successful at allowing the community to maximise re-use opportunities. To maximise the re-use potential of the waste stream, development and delivery of a re-use scheme should be facilitated, coordinated and promoted by a strong network at the Partnership level. This will also assist with raising awareness and participation. *Table 2.13* highlights benefits and risks associated with initiating re-use campaigns across the Partnership area.

Table 2.13 Re-use Schemes –Benefits and Risks

Specific Benefits	Risks
• Creation of jobs and training opportunities • Provision of low-cost goods for low-income families, schools and charities • Help to meet requirements of the WEEE Directive • Second-hand and charity stores can distribute reusable materials and raise money • Reducing resource/energy use • Hazardous waste reduction such as electrical equipment and paint.	• Poor public image/pre-conceived negative images of used goods can become a barrier to establishing a successful scheme • Concerns include security (eg computers), liability (H & S), and selling and keeping money on-site. • Goods donated to charitable organisations may be returned to HWRC sites [(4)]. • Some re-use schemes may delay waste going to landfill rather than permanently diverting it.

(1) National Resource and Waste Forum *Waste Prevention Toolkit* - Part A, August 2004

(2) Anderson (1999) *Recycle, re-use, burn or bury?*

(3) Cameron-Beaumont, Bridgewater & Seabrook (2004). *National Assessment of Civic Amenity Sites: maximising recycling rates at civic amenity sites.* Future West, Network Recycling. Chapter 3.3

(4) This may be overcome by supplying charities with a subsidy to dispose these goods at HWS sites.

Re-use in the community and the home offers the potential to reduce arisings of many items of waste including packaging, electrical equipment, furniture, wood, textiles, books, CDs, bicycles, tools, and paint.

The Partnership can increase efforts to re-use goods that would otherwise become waste. *Table 2.14* summarises an assessment of the potential for diversion of reusable material waste from households. If 25% of households re-used goods, by 2020/21 up to 1.3% of total MSW arisings could be reduced. This figure is in line with a Network Recycling study of nine HWRC sites with re-use systems in place, which found that 0.5–2% of HWRC throughput could be realistically collected for re-use(1).

Table 2.14 Targets for re-use of current waste materials

Year	Proportions of households participating	Target tonnage re-used assuming 2% reusable	Target tonnage re-used assuming 5% reusable
2005/06	5%	369	922
2010/11	10%	767	1,918
2015/16	15%	1,151	2,878
2020/21	25%	1,918	4,796

Assumptions: Generally, estimates lie between 2 and 5% of total MSW material arisings that can be re-used(2). These figures have been used to calculate the lower and upper bounds of what might be achieved in South Tyne and Wear. An in-depth waste composition analysis will allow the Partnership to better understand the potential re-use diversion rate from the waste stream.

Cost and benefit: The costs of such a programme involve establishing a re-use facility, salaried staff and general running costs. These costs and the avoided disposal costs will result in an estimated net annual financial cost of £46,800 in 2010/11 with a net financial benefit of £62,900 in 2020/21. These benefits are subject to any offset in re-use credits (3).

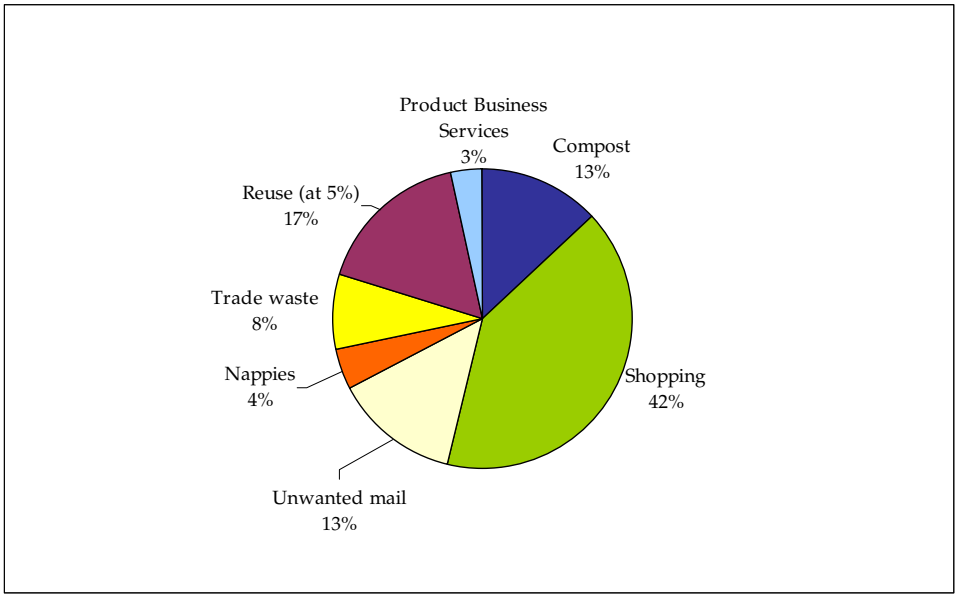
(1) Cameron-Beaumont, Bridgewater & Seabrook (2004). *National Assessment of Civic Amenity Sites: maximising recycling rates at civic amenity sites.* Future West, Network Recycling. Chapter 3.3

(2) Oxfordshire CC estimate that 5% of goods can be re-used or refurbished (as stated in the London Remade, London Borough of Richmond Upon Thames Waste Reduction and Re-use Strategy (2004); Environment Protection Authority Municipal Solid Waste, Source Reduction and Re-use further state that 2-5% of MSW arisings can be re-used (http://www.epa.gov/epaoswer/non-hw/muncpl/sourcred.htm).

(3) http://www.defra.gov.uk/corporate/consult/recycling-credits05/consultation.pdf

The net benefit of prevention and re-use programmes needs to be considered when deciding on the most effective course of action and to allow decision makers to apportion resources appropriately. *Figure 3.1* highlights the maximum diversion rates that might be expected if the targets discussed in the preceding section are achieved. A combination of prevention and re-use programmes is recommended so that the general message of the need to reduce waste is reinforced.

Figure 3.1 Relative contribution of various prevention and reuse measures to the total 'avoidable' waste at 2020/21 levels



The indicative cost - benefits(1) discussed in the previous Section and the relative contribution that each can make to avoiding waste as shown in *Figure 3.1* will assist with selecting the most cost-effective solutions and ensuring that disproportionate resource allocation does not occur. It is important to remember that the cost savings presented here are based upon diverting the total calculated potential tonnages of waste. If these targets are not achieved, neither will the cost savings. Ongoing accurate monitoring of household waste arisings and waste composition analysis would be required to understand any reduction in waste generation.

Estimated future costs do not include inflation or increases in collection and disposal costs (including increases in landfill levies and LATS penalties), thus greater financial benefits could be expected in the future.

(1) Based on data provided by the National Resource and Waste Forum Waste Prevention Toolkit, Part A 2004

Table 3.1 Estimated costs for implementation of waste prevention and re-use campaigns – 2010/11 – 2020/21

Waste Reduction / Reuse Initiative	Likely impact			Tonnes diverted per year			Avoided costs @ £38 per tonne [1]			Capital Expenditure	Annual cost	Net annual benefit			Financial Gain per tonne		
Home composting	0.4%	to	1.0%	1,400	to	3,700	£53,800	to	£140,800	£1,713,600 [2]	£80,000 [3]	-£26,200	to	£60,800	-£19	to	£16
Shop SMART	1.2%	to	3.0%	4,600	to	11,500	£175,600	to	£439,000	£0	£8,300 [4]	£167,300	to	£430,700	£36	to	£37
Unwanted mail	0.4%	to	1.0%	1,500	to	3,800	£57,900	to	£144,900	£0 [5]	£8,300 [6]	£49,600	to	£136,500	£33	to	£36
Reusable nappies	0.1%	to	0.3%	500	to	1,300	£20,800	to	£48,300	£0	£92,000 [7]	-£71,200	to	-£43,700	-£131	to	-£35
Trade waste	0.2%	to	0.6%	900	to	2,300	£72,500	to	£181,200	£0	£8,300 [8]	£64,200	to	£172,900	£70	to	£75
Re-use	0.5%	to	1.3%	1,900	to	4,800	£73,200	to	£182,900	£250,000 [9]	£120,000 [10]	-£46,800	to	£62,900	-£24	to	£13
Product ser. bus.	0.1%	to	0.3%	300	to	1,000	£9,800	to	£36,600	£100,000 [11]	£70,000 [12]	-£60,200	to	-£33,400	-£236		-£35
Communications[13]											£264,000						
Total	**2.91%**	**to**	**7.38%**	**11,100**	**to**	**28,400**	**£463,600**	**to**	**£1,173,700**	**£2,063,600**	**£650,900**	**£76,700**	**to**	**£786,700**	**-£35**	**to**	**£143**

(1) These costings are based on the BVPI data for 2005/06. For trade waste these costs are £78 per tonne as they include both collection and disposal costs. The other initiatives only include disposal costs.

(2) Based on one mobile shredder @ £100k plus £15 composter subsidy for 50% of households with gardens
(3) Three support staff @ £20K each to co-ordinate volunteers and projects
(4) One salary only – the cost of this coordinator has been evenly distributed amongst the programs that do not have support staff.
(5) Annual cost - part of overall WP communications budget
(6) One salary only – the cost of this coordinator has been evenly distributed amongst the programs that do not have support staff.
(7) No allowance has been made for offering cash subsidies
(8) One salary only – the cost of this coordinator has been evenly distributed amongst the programs that do not have support staff.
(9) This is arbitrary and can vary considerably between projects - the report stated £500,000 however an estimate of £250,000 has been made for 1-2 reuse sheds, including installation, lighting etc
(10) Includes 3 salaried staff and general running costs - again, may vary considerably

(11) Start-up grants for social enterprises
(12) Support funding for enterprises, including one salaried staff member at £20,000 per year.
(13) £0.8 per household on waste prevention campaign - part of wider waste communications strategy that will cost twice this

Sections 2 and *3* identified areas where resources can be allocated to ensure the maximum reduction of waste materials entering the MSW stream.

Consideration was given to the:

- percentage of the waste stream that the waste type constituted;
- potential reduction (percentage) of the waste stream;
- target levels for the population;
- arisings (tonnage) of MSW diverted from landfill;
- savings in disposal costs (and collection and disposal costs for the trade waste option);
- costs of initial infrastructure and ongoing programme costs; and
- total net financial benefit of implementing the waste prevention or re-use programme.

Based on these considerations, a selection of options has been developed:

Option 1: Do nothing. This involves maintaining the current baseline and will not incur any further costs.

Option 2: Implement services that influence household behaviour:

- home composting;
- re-useable nappies;
- reuse;
- waste aware (SMART) shopping;
- unwanted mail; and
- product service businesses.

Option 3: Implement all programmes that are influenced by promotional and educational programmes:

- home composting;
- trade waste diversion;
- re-useable nappies;
- reuse;
- waste aware (SMART) shopping;
- unwanted mail; and
- product service businesses.

Figure 4.1 is a diagrammatical representation of the costs and benefits of implementing each of the above options. The costs are assessed against total tonnage diverted and total net benefits, based on 2020/21 diversion estimates of maximum potential reductions in the selected waste streams.

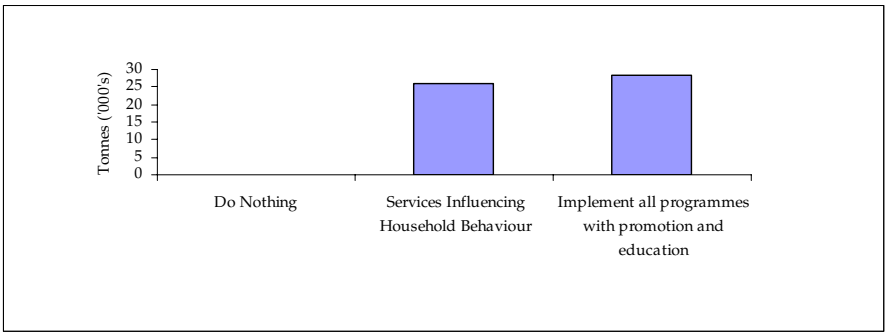
Option 3 diverts the greatest amount of waste, however it will cost the Partnership approximately £1.5 million per annum. This is because the annual costs and capital expenditure outweigh the potential disposal and collection savings. *Option 2* has the potential to cost up to £1.7 million per annum, and diverts only 8% less of the waste of *Option 3* (*Figure 4.2*). This option will cost the Partnership more as it diverts less waste therefore resulting in higher costs per tonne. This should be taken into account when the Partnership is determining which waste minimisation and re-use options to implement.

Although implementing all programmes (*Option 3*) will result in the greatest reduction of waste, this option will require slightly greater investment of ongoing costs. Capital expenditure is the same for both options.

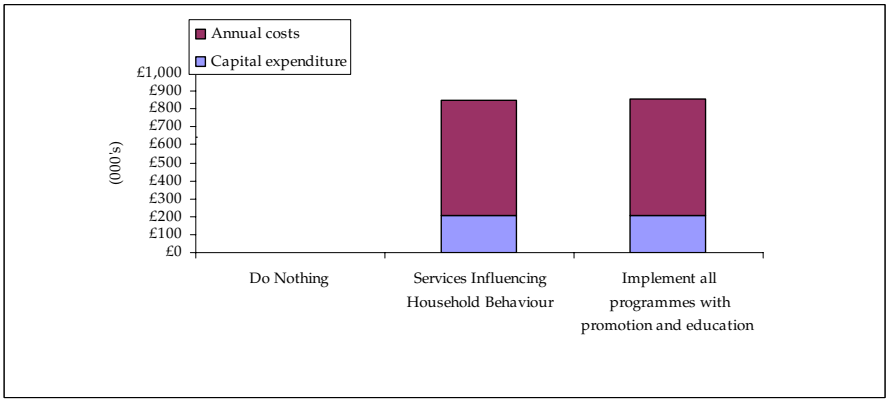
The figures used for all options, except 'do nothing' include a waste communications campaign for all households.

Figure 4.1 ***Diagrammatical representation of the financial costs and benefits of implementing waste reduction and re-use campaigns, based on expected diversion targets as at 2020/21.***

Total tonnes of material reduced



Annual costs and amortised capital expenditure costs (over 10 years) of implementing the various programmes



Costs per tonne from implementing reduction and re-use campaigns

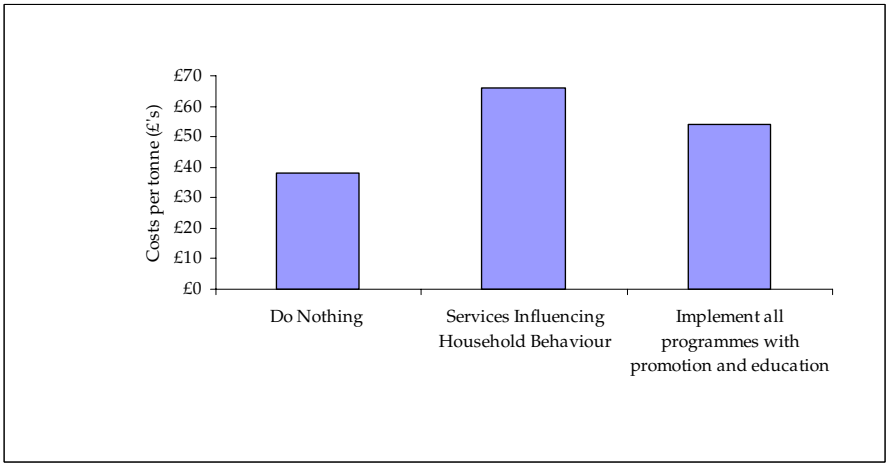
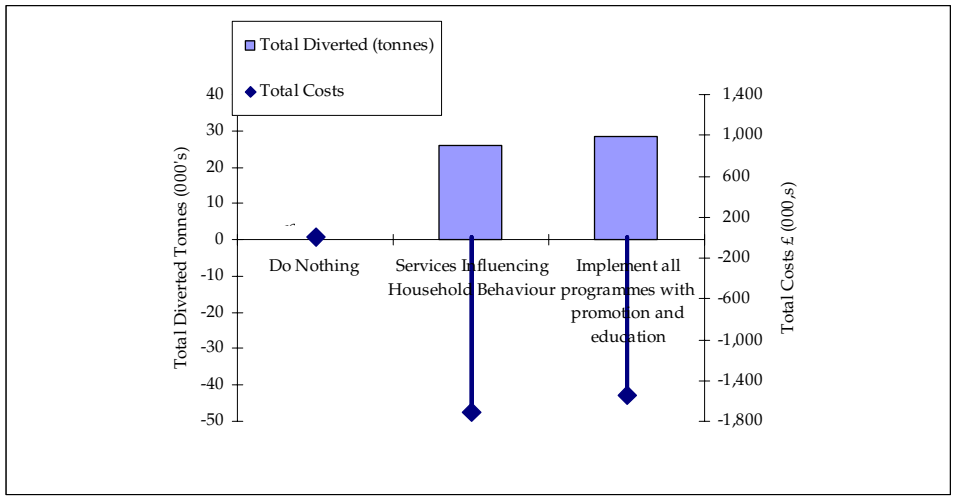


Figure 4.2 ***Diagrammatical representation of the total annual tonnages diverted versus the total annual costs***



It is recommended that the Partnership select a range of initiatives that best meets their waste diversion objectives and which can be adequately resourced to ensure that the waste diversion tonnages are realised.

Once the Partnership has selected an approach, it will need to determine the best combination of programmes to deliver for each waste stream. Broad, quick and easily initiated programmes should be implemented. The National Resource and Waste Forum *Waste Prevention Tool Kit, August 2004 (updated July 2006)* (http://www.nrwf.org.uk/Reportsandpublications.htm) was developed for Local Government to provide guidance on how to:

- develop and make a business case for waste prevention and re-use programmes;
- select, plan and implement waste prevention schemes; and
- create and run a waste prevention communication campaign and change consumer behaviour

It is essential that ongoing monitoring is conducted to determine the success of any programme, to allow problems to be rectified and successes to be shared with other Authorities.

5 ASSESSMENT MATRIX

5.1 OPTIONS ASSESSMENT

The options discussed above have been assessed against a variety of environmental, social and economic criteria, see box below. The criteria were developed and discussed with the Partnership and were also subject to wider consultation through the SEA scoping report. The assessment matrix uses a series of symbols to show the relative impacts of each option against the criteria.

Box 5.1 Criteria Used to Assess Options

Number of Jobs Created
Inclusion of social enterprise promotion
Creation of new waste-related businesses
Costs of waste management
Promotion and implementation of information and awareness-raising activities
Emissions to air of key pollutants
Emissions of greenhouse gases
Consumption and generation of energy
Impact on biodiversity
Compliance with Waste Hierarchy
Amount of waste produced
Levels of recycling and composting
Amount of biodegradable municipal waste landfilled
Amount of waste landfilled
Effect on ability to achieve self-sufficiency
Effect on depletion of resources
Effect on access to services
Effect on public participation
Effect on waste transport

Table 5.1 Assessment Matrix

Criteria	Option 1 – Status quo	Option 2 – Householder behavioural change	Option 3 – All schemes with education campaign	Comments
Number of Jobs Created	0	+	+	A very small number of new jobs will be created both for the operation of reuse schemes and for support and promotion within the local authorities. No additional jobs are likely to be created with option 3.
Inclusion of social enterprise promotion	0	+	+	Reuse schemes can help to support new social enterprises.
Creation of new waste-related businesses	0	+	+	A small number of new waste-related businesses may be created in reuse schemes (including nappies)
Costs of waste management	0	+	++	The reduction of waste transport and treatment costs through waste minimisation schemes will have a positive impact on the economy. A net benefit of £4.2m pa by 2020/21 is predicted for option 3 even when scheme costs are taken into account. Option 2 has an estimated net benefit of £3.9m pa by 2020/21.
Promotion and implementation of information and awareness-raising activities	0	+	++	Promoting schemes that include educational campaigns will have a positive impact through raising awareness. Options 2 and 3 both involve schemes that have the potential to result in behavioural change and increased education. The greater amount of awareness raising activities, the better informed the general public are and therefore the greater the impact on waste reduction.
Emissions to air of key pollutants	- -	-	-	Pollutants are emitted from both waste treatment/disposal operations and from waste transport. Reducing the amount of waste requiring treatment and disposal by an estimated 12% will reduce the level of emissions correspondingly. Option 3 will not affect the amount of waste to be transported and treated compared to option 2...

Criteria	Option 1 – Status quo	Option 2 – Householder behavioural change	Option 3 – All schemes with education campaign	Comments
Emissions of greenhouse gases	+	++	++	Reducing MSW by up to 12% will reduce emissions of greenhouse gases from facilities and transport. The requirement for new resources, particularly metals, also has a negative impact through the generation of greenhouse gases. Therefore, the greater amount of reuse, the greater the reduction in greenhouse gas emissions. Home composting will reduce likelihood of methane emissions from landfill, although landfill gas capture is now standard practice at most landfill sites. Poorly managed compost heaps can be a source of methane. Trade waste diversion will not affect the quantity of waste to be managed and therefore will not affect greenhouse gas emissions.
Consumption and generation of energy	+	++	++	Reducing MSW by up to 12% will reduce energy consumption required for waste collection and disposal. The requirement for new resources, particularly metals, also has a negative impact due to the requirement of energy consumption for extraction and processing. Therefore, the greater amount of reuse, the lower the energy requirements. The reuse and shopping/mail schemes will also reduce energy consumption for the manufacture of new goods and materials. Note that nappy schemes have a neutral effect on energy consumption, and that the home composting may reduce the generation potential from landfill gas.
Impact on biodiversity	+	++	++	Home composting could significantly reduce the consumption of peat-based composts in ST&W if 50% of households with a garden participate. This is likely to have biodiversity benefits by avoiding damage to peat habitats.
Compliance with Waste Hierarchy	+	++	++	Being top of the waste hierarchy, a 12% reduction in waste arisings is positive.
Amount of waste produced	+	++	++	Option 2 will reduce waste arisings by 12% by 2020/21. Option 3 will not affect the amount of waste produced compared to option 2.
Levels of recycling and composting	0	0	0	Several schemes will promote the reuse of household goods and home composting, but there will be no effect on BVPI performance.
Amount of biodegradable municipal waste landfilled	+	++	++	The decrease in the level of waste produced, particularly green waste will have a positive impact on the amount of BMW sent to landfill. Landfilled biodegradable waste will be reduced by up to 27,650 tpa by 2020/21.
Amount of waste landfilled	+	++	++	Reduction in waste production should lead to reduction in waste sent to landfill, by an estimated 57,900 tpa by 2020/21.

Criteria	Option 1 – Status quo	Option 2 – Householder behavioural change	Option 3 – All schemes with education campaign	Comments
Effect on ability to achieve self-sufficiency	0	0	0	Reducing the amount of waste generated can assist an area to deal with its own waste, as there is less requirement for treatment and disposal capacity. However, the amount of waste reduction (57,900 tpa by 2020/21) is not large enough to significantly affect the ability to achieve net self-sufficiency.
Effect on depletion of resources	+	++	++	All schemes will help to reduce resource depletion by avoiding consumption of new resources, either through reuse of goods and materials or by reducing consumption. Trade waste diversion will not affect levels of resource depletion.
Effect on access to services	0	+	+	Access to services will increase by offering new schemes/services to householders. The reuse schemes will support the creation of new services and can supply low-cost goods to disadvantaged individuals, groups, charities and schools.
Effect on public participation	0	+	+	All schemes are reliant on public participation. The public will be made more aware of services and have more chance to take part in schemes that have an effect on them. A minimum of 1 in 5 households may be participating in schemes in 2010/11, although this is expected to rise to over 50% of households by 2020/21.
Effect on waste transport	+	++	++	Removing an estimated 57,900 tpa from the waste stream by 2020/21 will reduce the requirement for waste transport for collection and disposal. This is equivalent to the capacity of 4825 collection vehicles and 2632 waste transport vehicles.

++	excellent	+	good	x	unknown
0	no change	-	poor	- -	detrimental

6 RECYCLING AND COMPOSTING OPTIONS APPRAISAL

6.1 INTRODUCTION

This section of the options appraisal considers recycling and composting options in order to:

- confirm that targets set for recycling and composting are achievable, and that they can be included within the strategy; and
- help the Partnership authorities plan future service development through identifying which options are feasible and what the environmental and financial costs are likely to be.

Recycling and composting options have been assessed for the Partnership as a whole. Many options examine the impacts of making similar changes such as adding new materials, increasing the number of households served by a collection and increasing participation. All options are based on 2005/06 figures and systems. The options examined could be introduced individually or in combination in order to meet targets.

For comparison, each option has been assessed against a number of Strategic Environmental Assessment criteria to determine its relative impact on the environment. Social and financial considerations have also been taken into account. The criteria, listed in *Box 1.1*, were developed and discussed with the STWWMP and were also subject to wider consultation through the SEA scoping report.

Box 6.1 Criteria Used to Assess Options

Number of jobs created
Inclusion of social enterprise promotion
Costs of waste management
Promotion and implementation of information and awareness-raising activities
Emissions to air of key pollutants
Emissions of greenhouse gases
Consumption and generation of energy
Renewable energy generation
Promotion of measures to reduce impacts of climate change
Effect on waste hierarchy
Levels of recycling and composting
Level of recovery
Amount of biodegradable municipal waste landfilled
Amount of waste landfilled
Effect on ability to achieve self-sufficiency
Effect on depletion of resources
Impact on fly-tipping
Impact on human health
Effect on access to services
Effect on public participation
Effect on amenity
Effect on communities
Effect on waste transport
Promotion of alternatives to road transport
Impact on car use
Deliverability

Appendix A. provides the technical detail on how the assessments have been undertaken. Key issues to note from this are that:

- the composition of waste is assumed to be as per the Kerbside Collection Waste Analysis report, Entec, 2007;
- the assessment against air quality impacts was examined in terms of the impact on acidification (acid rain, damage to buildings, soil and lakes) as this includes the gases sulphur dioxide, nitrous oxides, hydrochloric acid, hydrofluoric acid and NH3; this is only an examination of global effects and ignores local air quality issues for which the Partnership councils have a statutory responsibility for management;

- gases contributing to the greenhouse effect are aggregated according to their impact on radiative warming, compared to carbon dioxide as a reference gas;
- energy consumption and generation is based on the use of diesel;
- resource depletion assessments, based on emission factors associated with the resource requirements (tonnes of diesel, kilowatts of electricity, tonne-kilometres of waste transported), are reported in tonnes of crude oil equivalents;
- impact on health has been determined from information in a Defra study and is quoted in terms of the number of 'death equivalents' per million tonnes of waste throughput. The emission factors were calculated using the Ecoinvent Life Cycle Inventory Database v1.2.

6.2 BACKGROUND

All three authorities collect paper, glass and cans for recycling on a fortnightly basis by means of kerbside collection in 55 litre boxes. The Partner authorities have plans in place for either expanding or rolling out high rise recycling for three materials: paper, glass and cans. This will provide coverage to all properties with the exception of three blocks in Sunderland from which only glass and cans will be collected for recycling. Garden waste is collected fortnightly or monthly depending on the time of year and suspended during winter in Sunderland.

The authorities also have Bring Bank facilities for paper, glass, textiles/shoes, cans/foils, plastic bottles and cartons.

All three authorities offer a trade waste collection service.

Almost all of the commercial and industrial waste arising in Gateshead is collected and disposed of by private sector operators.

In South Tyneside, the Waste Transfer Station, Middlefields Depot is available for use by commercial & industrial businesses. There is a charge for using the service.

Sunderland provides a commercial refuse collection service to businesses, using a range of refuse storage containers and with differing collection frequencies. It charges for this service. A special collection for large amounts of waste or bulky materials from commercial premises is also offered.

6.3 THE OPTIONS

6.3.1 BASELINE – ACCEPT THE PREVAILING PARTICIPATION LEVELS OF NATURAL PARTICIPATION

Current participation is estimated to be approximately 50%. To provide a benchmark against which to compare the other options, this option assumes the prevailing rate of participation.

6.3.2 OPTION 1 – ENCOURAGE INCREASED PARTICIPATION BY A RANGE OF PROMOTIONAL/EDUCATIONAL ACTIVITIES

This option assumes an estimated 70% participation rate – the increase being achieved through awareness raising and education schemes.

6.3.3 OPTION 2 – ENFORCEMENT THROUGH EPA SECTION 46

This option assumes an estimated 90% participation rate. Enforcement of recycling will bring high levels of involvement however it may have other consequences in the form of householder dissatisfaction, fly tipping and use of street (litter) bins for household waste.

6.3.4 OPTION 3 – COLLECT A WIDER RANGE OF MATERIALS FROM BRING SITES (PLASTIC)

The amount of plastic recovered for recycling from bring sites is only a quarter of that recovered from kerbside schemes (1). Kerbside recycling is estimated to be 5.5 kg/hh/annum (2), therefore 1.4 kg/hh/annum was assumed as the potential yield for bring sites.

6.3.5 OPTION 4 – INTRODUCTION OF NON HOUSEHOLD (COMMERCIAL) RECYCLING

This option assumes an estimated 50% recycling rate for glass and collected separately from commercial waste customers.

6.3.6 OPTION 5 – COLLECT WIDER RANGE OF MATERIALS AT THE KERBSIDE (PLASTIC)

The typical rate of kerbside plastic recycling (achieved by authorities in England) is 5.5kg/hh/annum and it is assumed that this rate could be achieved in South Tyne and Wear.

(1) Taken from 'UK Plastic bottle recycling survey 2006, WRAP'
(2) Taken from 'UK Plastic bottle recycling survey 2006, WRAP'

6.3.7 OPTION 6 – COLLECT WIDER RANGE OF MATERIALS AT THE KERBSIDE (TEXTILES)

The typical rate of kerbside textile recycling (achieved by authorities in England) is 2.3kg/hh/annum (1) and it is assumed that this rate could be achieved in South Tyne and Wear.

6.3.8 OPTION 7 - COLLECT WIDER RANGE OF MATERIALS AT THE KERBSIDE (CARD)

The typical rate of kerbside card recycling [achieved by authorities in England??] is 17.9kg/hh/annum (2) and it is assumed that this rate could be achieved in South Tyne and Wear.

6.3.9 OPTION 8 - COLLECT WIDER RANGE OF MATERIALS AT THE KERBSIDE (KITCHEN WASTE)

It is assumed that kerbside collection of kitchen waste for composting could be achieved at similar levels of coverage and participation as those currently being achieved for green waste. At these levels the amount of kitchen waste collected would be 100kg/hh/annum.

6.3.10 OPTION 9 – SEGREGATED WEEKLY COLLECTIONS FOR WASTE AND RECYCLABLE MATERIALS

This involves the introduction of a segregated weekly collection with residual waste being collected in one container and materials for recycling being collected in another. Recycling collections would include paper, glass, cans, textiles and plastic bottles. This option includes some form of education, advertising the scheme. The scheme is self enforcing in a way; it restricts the level of waste that can be thrown away by not providing another option.

6.4 OPTIONS ASSESSMENT

The results of the options assessment are presented in the matrix shown in *Table 1.1*. The options have been assessed against a variety of environmental, social and economic criteria that were developed and discussed with the STWWMP and were also subject to wider consultation with the SEA scoping report. The matrix presents the assessment results as a series of symbols showing the relative impacts of each option against the criteria. Where quantitative data are available, these are shown to differentiate between the options and the baseline.

(1) Taken from 'Maximising Recycling, tackling residuals, Eunomia, Avon FoE and Network Recycling'
(2) Taken from 'Maximising Recycling, tackling residuals, Eunomia, Avon FoE and Network Recycling'

Table 6.1 Assessment Matrix

Criteria	Option 1 (education schemes)	Option 2 (enforcement schemes)	Option 3 (bring site plastic)	Option 4 (non household)	Option 5 (kerbside plastic)	Option 6 (kerbside textiles)	Option 7 (kerbside card)	Option 8 (kerbside kitchen waste)	Option 9 (SWC)	Comments
Number of jobs created (full time equivalent posts)	(3) 0	(14) 0	(0) 0	(1) 0	(1) 0	(0) 0	(3) 0	(1) 0	(28) 0	All options will create similar numbers of jobs. These jobs are not collection jobs but are at the processing end of the recycling process. The total is not significant for the Partnership overall although it may be locally important. Option 9 would create the most jobs.
Costs of waste management	See table below for details of each scheme. All options will incur some initial costs for advertising the new service. Options 2, 8 and 9 have the potential to be the most expensive options to implement. Option 2 is likely to be expensive due to the costs relating to employing new enforcement staff and the introduction of measures to regulate and monitor household performance. Option 8 will incur high capital costs as In Vessel Composting will be required to deal with the collected material. Option 9 will incur costs associated with the education of the public, the enforcement of the new scheme and dealing with any increase in fly tipping etc. All of these three options do have the potential to collect large amounts of materials for recycling, however, and therefore to generate revenue through this, whilst avoiding landfill costs.									
Emissions to air of key pollutants (tonnes of SO_2 equivalents)	(-650) +	(-1,300) +	(-51) 0	(-212) +	(-447) +	(-351) +	(-616) +	(-9) 0	(-7,116) ++	All options reduce the level of key pollutants being emitted to air. Option 9 reduces the level by the most, with option 3 and 8 having very little effect.
Emissions of greenhouse gases (tonnes of CO_2 equivalents)	(-103,353) +	(-206,706) +	(-14,796) 0	(-33,897) +	(-128,673) +	(-45,112) +	(-64,137) +	(-3,143) 0	(-1,239,602) ++	All options reduce the level of greenhouse gases emitted to air. Option 9 reduces the level by the most, with option 8 having very little effect.
Consumption and generation of energy (Gj)	(-1,838,933) +	(-3,677,865) +	(-796,105) 0	(-711,450) 0	(-6,948,077) +	(-2,278,258) +	(-876,037) 0	(-110,017) 0	(-39,783,887) ++	All options will result in a net saving in energy because of the avoidance of consumption through recycling of materials which reduces the need for the extraction and processing of raw and intermediate materials. Option 9 reduces the level by the most as this increases recycling, and especially dry recyclables, by the most.

Criteria	Option 1 (education schemes)	Option 2 (enforcement schemes)	Option 3 (bring site plastic)	Option 4 (non household)	Option 5 (kerbside plastic)	Option 6 (kerbside textiles)	Option 7 (kerbside card)	Option 8 (kerbside kitchen waste)	Option 9 (SWC)	Comments
Renewable energy generation	0	0	0	0	0	0	0	0	0	No effects found on renewable energy from any options. Reducing the amount of waste sent to landfill reduces the amount of landfill gas created and therefore also the amount that can be used to generate energy.
Promotion of measures to reduce impacts of climate change	+	+	0	+	+	+	+	0	++	All options will reduce the impacts on climate change through reducing greenhouse gas emissions by increased recycling of resources and by reducing the landfill of biodegradable waste which will help to reduce the risk of fugitive emissions of methane from landfill, a potent greenhouse gas. However, the significance of this effect also depends on the form of residual treatment.
Compliance with waste hierarchy	+	++	0	+	+	+	+	+	++	All options will increase recycling, and hence move the way that waste is managed up the waste hierarchy from disposal to recycling. The options that recycle the most are therefore more in line with the waste hierarchy.
Amount of waste produced	0	0	0	0	0	0	0	0	0	No difference to the baseline. All options look to shift waste from the disposal stream to the recycling stream rather than reducing waste.
Levels of recycling and composting (tonnes of extra material recycled and composted over the strategy period)	(396,752) additional 5.5% +	(793,504) additional 11% ++	(8,408) additional 0.1% 0	(76,568) No additional h'hold recycling. Non-h'hold up by 1.9% +	(73,525) additional 1% +	(21,490) additional 0.3% +	(176,017) additional 1.4% +	(149,616) additional 1.1% +	(779,905) additional 10.9% ++	All options increase recycling and composting. Option 2 has the greatest effect on this, with Option 9 having a similarly large effect. The percentage increases shown relate to increases in BVPI 82 a&b.
Level of recovery (tonnes of extra r&c over strategy period)	(396,752) +	(793,504) ++	(8,408) 0	(76,568) +	(73,525) +	(21,490) +	(176,017) +	(149,616) +	(779,905) ++	As no other recovery occurs in these options bar recycling and composting, these results are the same as those above.

Criteria	Option 1 (education schemes)	Option 2 (enforcement schemes)	Option 3 (bring site plastic)	Option 4 (non household)	Option 5 (kerbside plastic)	Option 6 (kerbside textiles)	Option 7 (kerbside card)	Option 8 (kerbside kitchen waste)	Option 9 (SWC)	Comments
Amount of biodegradable municipal waste landfilled (tonnes of avoided BMW landfilled over strategy period)	(-329,927) +	(-659,853) ++	(0) 0	(-24,576) +	(0) 0	(-10,745) +	(-176,017) +	(-149,616) +	(-313,681) +	Options 3 and 5 do not have a positive impact on this criterion, where all other options do. Option 2 has the most positive impact, followed by option 1 and 9. Options 4 and 6 have minimal impact.
Amount of waste landfilled (tonnes of avoided total waste landfilled over strategy period)	(-396,752) +	(-793,504) ++	(-8,408) 0	(-76,568) +	(-73,525) +	(-21,490) +	(-176,017) +	(-149,616) +	(-779,905) ++	Assessment against this criterion is similar to the recycling and composting criterion as the amount of waste recycled and composted is the same as that diverted from landfill. Options 2 and 9 therefore come out the best as they divert the most waste from landfill.
Effect on ability to achieve self-sufficiency	- -	- -	-	-	-	-	-	-	-	By increasing the level of recycling the options are increasing the dependence on other regions for the reprocessing capacity for certain recyclables. As landfill is predominantly sourced in the region demand for this remains unaffected, although decreased.
Effect on depletion of resources (tonnes of crude oil equivalents)	(-40,589) +	(-81,179) +	(-14,560) 0	(-16,403) 0	(-127,055) +	(-41,953) +	(-19,766) 0	(-1,663) 0	(-774,444) ++	Option 9 has by far the greatest effect judged against this criterion. Options 3, 4, 7 and 8 will have minimal effects.
Effect on access to services	0	0	0	0	0	0	0	0	-	Adding materials has a marginal benefit in terms of 'access to services' and increasing participation has no effect. The introduction of an SWC may be seen as having a negative impact by householders however householders will still receive a collection service for the same materials and it is proven to increase recycling rates to 30% and above.

Criteria	Option 1 (education schemes)	Option 2 (enforcement schemes)	Option 3 (bring site plastic)	Option 4 (non household)	Option 5 (kerbside plastic)	Option 6 (kerbside textiles)	Option 7 (kerbside card)	Option 8 (kerbside kitchen waste)	Option 9 (SWC)	Comments
Effect on public participation	+	++	0	+	+	0	+	+	++	Options 2 and 9 perform the best against this criterion. This is due to the significant increase in public participation estimated under these schemes.
Effect on amenity	+	++	0	+	+	0	+	+	++	Amenity has been assessed by comparing factors including levels of noise, dust and sight pollution. Options 2 and 9 would reduce the effect on the amenity of the local area by the most. This is because they reduce the amount sent to landfill by the most and landfill scores worst in this assessment.
Effect on communities	0	0	0	0	0	0	0	0	0	All options will have a marginal positive affect on the community in terms of provision of services and creation of jobs.
Effect on waste transport (tonne/km)	(3,011,174) -	(5,665,960) - -	(21,039) 0	(1,022,601) -	(62,517) 0	(41,006) 0	(2,589,408) -	(256,673) -	(6,306,307) - -	The amount of waste transported increases in relation to the level of recycling that is achieved for each option. Option 9 and option 2 therefore perform worst, transporting the most waste to reprocessors rather than more local landfills. To give some point of reference the baseline level of tonne kilometres is 8.5 million.
Promotion of alternatives to road transport	x	x	x	x	x	x	x	x	x	The options for recycling and composting can not really distinguish between road transport and other forms. The only practical way to collect waste from households is by road.
Inclusion of social enterprise promotion	x	x	x	x	x	x	x	x	x	All options could incorporate some form of social enterprise involvement. In certain circumstance this may be harder than others, however it is not beyond the realms of possibility.

Criteria	Option 1 (education schemes)	Option 2 (enforcement schemes)	Option 3 (bring site plastic)	Option 4 (non household)	Option 5 (kerbside plastic)	Option 6 (kerbside textiles)	Option 7 (kerbside card)	Option 8 (kerbside kitchen waste)	Option 9 (SWC)	Comments
Impact on fly tipping	+	- -	0	0	0	0	0	0	- -	The introduction of enforcement schemes for recycling may have the effect of antagonising some residents. This may lead to an increase in fly tipping. Equally option 9 may have effect of people opposing the new scheme by fly tipping. The education of the public in waste issues and recycling could feasibly have a positive impact and reduce fly tipping.
Impact on human health	0	0	0	0	0	0	0	0	0	All options have a minimal positive impact on human health. It is noted that option 9 has the highest positive impact, however none of the impacts are deemed significant.
Impact on car use	0	0	-	0	+	+	+	0	+	The introduction of new bring banks could increase car use, as people travel to recycle their plastics. The introduction of new kerbside recycling services however could have the opposite effect, reducing the need for people to travel to bring sites and CA sites as they recycle from home. The exception is kitchen waste as people would not have been transporting this anyway. Card may have been taken to CA sites, as may plastic, whilst textiles may have been taken to charity shops or CA sites.
Deliverability	0	-	0	0	+	0	+	-	+	The introduction of additional materials to the kerbside collection will have minimal impact on deliverability of the service. Option 2 will require training and additional officers for enforcement. SWC will require less vehicle operations.

++	excellent	+	good	x	unknown	
0	no change	-	poor	- -	detrimental	

Table 6.2 *Impacts of Recycling Options*

Option	Explanation
Option 1 – Increase in participation and capture rates following education scheme introduction	• There will be costs associated with publicising the scheme, and incentivising people to use the new scheme. It is suggested that typically, ballpark estimates of the need for education tend to be around £1 per household per annum. Evidently, this cost will be borne collectively by the entire scheme and will not be for each additional recyclable collected. Source: Costs for Municipal Waste Management in the EU, 2001. • Potential for a small increase in collection costs as additional materials will exert a new pressure on the existing collection. • At the point where there is no further capacity on the vehicles or time for the crews there would be a step-wise cost increase for a new vehicle and crew. • Potential for increase in revenue from the sale of additional recyclables. This revenue is dependent upon the value of recyclables collected. • Potential for off-setting of costs through the LATS regulations if biodegradable waste is diverted away from landfill. • For those authorities not fully utilising their existing infrastructure the cost of investment in education is more likely to be offset by net gains.
Option 2 – Increase in participation and capture rates due to enforcement measures	• There will be costs associated with publicising the new scheme and explaining enforcement measures. These publicity costs may be higher than other schemes as the public may not find it easy to accept enforcement measures. • Increased administrative costs due to requirement of Street Enforcement Officers and operational changes to recycling crews. • Increased administrative costs related to processing and logging any enforcement measures taken. • The direct incentive for increased participation in recycling should generate extra income through the additional materials collected, and this may cover the administrative costs. However, this is dependent upon the recyclables collected as income generated varies between materials. • Potential for off-setting of costs through the LATS regulations if biodegradable waste is diverted away from landfill.
Option 3 – Introduction of plastics at bring site	• There will be costs associated with publicising changes in the scheme and promoting recycling. • A bring site is less expensive to operate than a collection service. However there are additional costs associated with cleaning and maintaining the bring sites (http://www.wasteonline.org.uk/resources/WasteWatch/BeyondTheBin_files/page3.html .

Option	Explanation
Option 4 – Introduction of non household recycling	• There will be costs associated with publicising the introduction of the new service and ensuring that the non-household groups are fully engaged with the scheme. • The additional collection of recyclables is likely to require a greater number of vehicles and drivers. • There is likely to be financial gain through the sale of additional recyclables. Again, this is dependent upon the nature of the material collected. Cardboard can generate up to £60 per tonne and glass can generate between £11-30 per tonne, depending upon the type of glass collected. • Through diverting non-household waste from the MSW stream, landfill costs can be avoided for the authorities.
Option 5 – Introduction of plastics at kerbside	• There will be costs associated with publicising the new scheme. It is suggested that typically, ballpark estimates of the need for education tend to be around £1 per household per annum. Evidently, this cost will be borne collectively by the entire scheme, and will not be for each additional recyclable collected. Source: Costs for Municipal Waste Management in the EU, 2001. • There are higher collection costs associated with collecting plastics due to the relatively low bulk density of plastics, the higher contamination rates, the diversity of plastics and the possibility that existing infrastructure systems are unsuitable. • Collection costs will also change according to how the plastic will be collected. If the plastic is collected as part of the existing collection, waste will need to be sorted at a MRF prior to sale and therefore consideration of transportation and processing costs will be necessary. Alternatively if the plastic is collected separately, there will be costs associated with containers and possible modifications required to the collection vehicles. If additional vehicles are required, costs will increase further. • Potential for increase in revenue from sale of additional recyclables. Recent market values show that the revenue is highly variable depending upon the type of plastic that is collected. For example, mixed plastic bottles can generate up to £180 per tonne whilst PVC may only generate £10-25 per tonne.

Option	Explanation
Option 6 – Introduction of card at kerbside	• There will be costs associated with publicising the new scheme. It is suggested that typically, ballpark estimates of the need for education tend to be around £1 per household per annum. Evidently, this cost will be borne collectively by the entire scheme, and will not be for each additional recyclable collected. Source: Costs for Municipal Waste Management in the EU, 2001. • The disadvantage of card is that it is low weight and very bulky. Collection of cardboard would involve either re-designing the use of space on current collection vehicles or using a separate vehicle, and this may exert a pressure on the existing system. Also, mixing paper and card reduces the value of the collected material. There is potential for a small increase in collection costs as the collection of card at the kerbside may result in an increase in the number of staff carrying out collections. (http://www.bathnes.gov.uk/committee_papers/WasteManagement/wm000912/10CARDREC.htm). • Potential for small increases in revenues from sale of additional recyclables. Recent market values indicate that cardboard can generate up to £60 per tonne. • There may be the potential for reducing some of the cost through collecting cardboard with organic waste. However, this is dependent upon whether the processing facility will accept cardboard.
Option 7 – Introduction of textiles at kerbside	• There will be costs associated with publicising the new scheme and promoting textile recycling. It is suggested that typically, ballpark estimates of the need for education tend to be around £1 per household per annum. Evidently, this cost will be borne collectively by the entire scheme, and will not be for each additional recyclable collected. Source: Costs for Municipal Waste Management in the EU, 2001. • Collection of textiles would involve re-designing the current collection vehicles and a bespoke collection box may be required. There are consequently financial costs involved. (http://www.guildford.gov.uk/NR/rdonlyres/7C55782C-CD19-4619-ADCA-D28F83517D65/0/Item10TextilesRecycling.pdf) • Additional revenue may be generated.

Option	Explanation
Option 8 – Introduction of kitchen waste at kerbside	• There will be costs associated with publicising the new scheme. It is suggested that typically, ballpark estimates of the need for education tend to be around £1 per household per annum. Evidently, this cost will be borne collectively by the entire scheme, and will not be for each additional recyclable collected. Source: Costs for Municipal Waste Management in the EU, 2001. • The partnership is considering collecting kitchen waste separately and from previous research according to the Kerbside Analysis Tool (KAT) modelling having a separate collection will be marginally cheaper than a combined food and green waste collection (eg £19 food only vs. £22 combined food and garden and 15kT vs. 22kT collected tonnes).. • Kitchen waste added to green waste increases the treatment costs considerably as in-vessel composting is required to ensure that the waste is compliant with ABPR regulations. Windrow composting likely to cost between £15 – 25 per tonne while in-vessel composting is likely to cost between £35 – 50 per tonne. • Additional vehicles and crew will be required on implementation of this scheme. • Costs of any additional collecting receptacles will also need to be considered. • Significant potential for off-setting of costs through the LATS regulations through the diversion of biodegradable waste away from landfill.
Option 9 – Introduction of Segregated weekly collection	• There will be high costs associated with public consultation and promotion of the scheme in order to ensure that the scheme is fully accepted and utilised. • Waste minimisation officers may be required to visit households that feel that an SWC is not sufficient. There may be costs associated with enforcing the scheme, for example refuse may become mixed with recyclables if the public perceive that the SWC scheme is not sufficient. • There is the potential for greater fly-tipping which would increase costs in street cleaning / collecting waste. • If there is a significant increase in recycling, it is possible that a greater number of vehicles and crew will be required. • A greater number of materials will be segregated and there is potential for revenue from sale of recyclables. • There is potential for greater diversion of waste from landfill, and therefore avoidance of LATS penalties.

6.5 CONCLUSIONS

The option that considers introducing SWC clearly has the greatest potential environmental benefit as it is one of the options with the highest recycling and composting level. On the other hand it is also potentially the most expensive to implement given the need for extensive public consultation and, potentially, the need for enforcement to ensure effective operation.

Option 2 is the other option with a potentially high performance as judged by the assessment criteria. The difference in performance of these two options, which otherwise have a similar levels of environmental benefit, is due to the level of composting. Option 2 incorporates an increase in participation in all recycling and composting collections. Option 9 sees an increase in dry recyclables above that of Option 2, but it has been assumed that it does not increase green waste collections. The associated environmental benefits of avoiding the use of virgin materials for the recyclables collected are therefore greater in Option 9. Were the increase in greenwaste collection to be included in a scheme like that in Option 9, then similar results to that of Option 2 may be found, however it is likely that any increase in greenwaste through SWC would not be at the same level as Option 2. Both of these options however are controversial in their introduction as there may be opposition to them due to potential issues that may arise. They could increase incidents of fly tipping, thus also affecting costs. These options would also rely heavily on behavioural changes from residents for them to be implemented successfully.

The other options have relatively limited impacts; positive and negative. This is to be expected given that they do not involve large changes to the service.

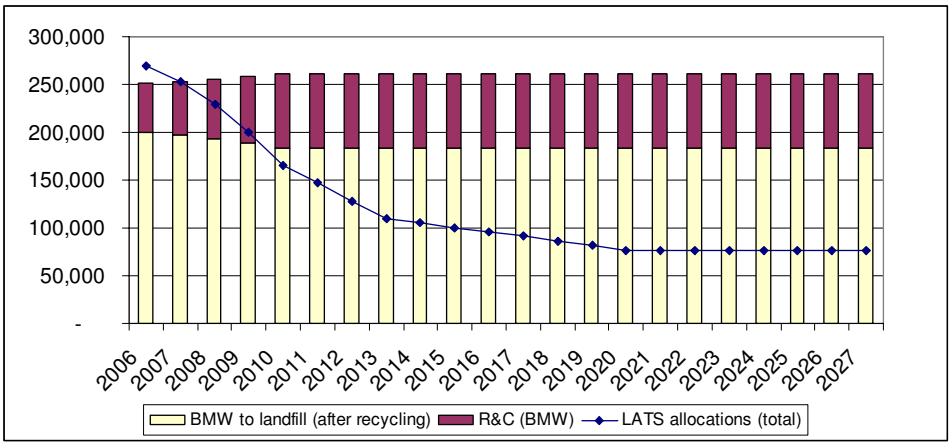
Although there is no clear 'third best' option, after Options 2 and 9, Option 1 scores highest for a number of criteria (eg levels of recycling/recovery, diversion of biodegradable waste from landfill).

This section of the options appraisal considers the management of residual waste. This assessment will inform the discussion on the best way to manage waste that has not been avoided, recycled or composted.

7.1 ASSESSMENT OF OPTIONS

The options examined as part of this assessment are designed to ensure that the Partnership as a whole meets the Government's requirements to reduce the amount of biodegradable waste that is landfilled. Disposal authorities such as the councils in the Partnership have been set allowances for the amount of biodegradable waste that they are permitted to landfill and these reduce each year from 2005 to 2020. If they don't need to landfill as much waste as their allowance or if they need to landfill more than their allocated allowance, disposal authorities are allowed to trade these allowances under the terms of the Landfill Allowance Trading Scheme (LATS). Below is a projection of the LATS targets for STWWMP compared with the forecast biodegradable municipal waste (BMW) arisings taking into account waste minimisation and recycling and composting. It is apparent that, from 2010 onwards, the level of BMW that will require disposal exceeds the combined LATS allowance specified by Government. This 'gap' between the level of recycling and the LATS targets will need to be bridged either by trading allowances or by increasing the recovery of materials to fill the gap.

Figure 7.1 LATS Gap analysis



The chart below shows the amount of allocations that the Partnership would need to buy in order to meet their landfill targets if there is no recovery capacity provided by a treatment facility. Basically this is a 'business as usual' (assuming 30% recycling by 2010) LATS balance.

Figure 7.2 LATS Gap Analysis 2

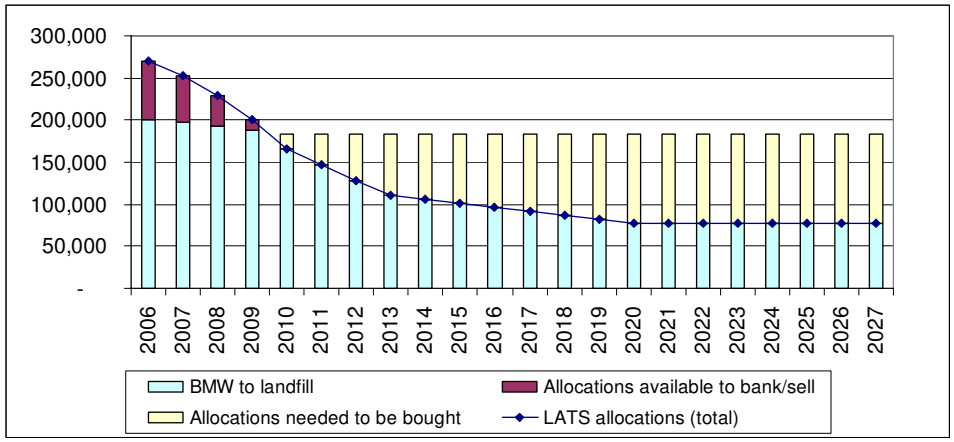


Table 7.1 below provides figures to show what capacity is required to recover enough waste to meet LATS targets, both in terms of the BMW tonnages and the total waste tonnages. This was calculated using the 68% BMW assumption used by Government when allocating LATS permits

Table 7.1 Recovery Capacity Required

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Recovery of BMW required	0	0	0	0	17,573	35,947	54,319	72,693	77,409	82,126	86,841
Recovery of total waste required	-	-	-	-	25,843	52,863	79,881	106,901	113,837	120,773	127,707

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Recovery of BMW required	91,557	96,274	100,990	105,706	105,706	105,706	105,706	105,706	105,706	105,706	105,706
Recovery of total waste required	134,643	141,579	148,515	155,450	155,450	155,450	155,450	155,450	155,450	155,450	155,450

7.2 THE OPTIONS

The options below have been based on the assumption that the Partnership will achieve a 30% kerbside recycling level in 2010 and that this recycling rate will be maintained throughout the strategy period. This is in line with meeting the 2010 recycling and composting targets however further recycling and composting will be required to meet 2015 and 2020 targets and this may need to be achieved by the use of appropriate treatment technologies.

7.2.1 BASELINE – ACCEPT THE CURRENT LANDFILLING LEVELS AND CONTINUE WITH NO RESIDUAL TREATMENT

This option is used purely as a comparator and is not intended as a realistic option for the Partnership to consider.

7.2.2 OPTION 1 – ANAEROBIC DIGESTION OF PUTRESCIBLE WASTES

Anaerobic digestion is the degradation of waste in an enclosed vessel without the presence of air. Some separation of materials is undertaken prior to the treatment of the waste. This options looks at treating the putrescible element of MSW in an anaerobic digestion plant. AD facilities, as a rule, are much more efficient at treating putrescible wastes than treating total residual wastes.

7.2.3 OPTION 2 – ANAEROBIC DIGESTION OF ALL WASTES

This option also looks at treating residual wastes at an anaerobic digestion facility, as for *Option 1*, but in this case all of the residual waste is assumed to be treated rather than just the putrescible fraction.

7.2.4 OPTION 3 – MECHANICAL BIOLOGICAL TREATMENT (MBT) WITH OUTPUT OF RDF FOR USE IN OFF SITE ENERGY FROM WASTE PLANT

MBT is a combination of waste treatment techniques – combining mechanical separation with biological treatment. Mechanical biological treatment (MBT) can be used to stabilise wastes and/or to create a refuse derived fuel (RDF). MBT plants may be configured differently depending on the desired outputs. The MBT plant may be configured to maximise the generation of material that can be used as a fuel (RDF) in an energy from waste plant. This option minimises the use of landfill as the residues from energy from waste are small and can mostly be recycled as aggregate. It does produce some hazardous waste. Although this end use is not guaranteed, for the purposes of this assessment, it has been assumed that 100% of the output will be used in this way.

7.2.5 OPTION 4 – MECHANICAL BIOLOGICAL TREATMENT WITH OUTPUT STABILISED FOR USE IN LANDFILL

This option looks at the landfilling of the output. This option reduces the mass of waste going to landfill and reduces its biodegradability.

7.2.6 OPTION 5 – AUTOCLAVING

Autoclaving is a treatment technology that sterilises waste and produces a 'fluff' material as an output that can be used as an RDF. The process also separates and cleans materials making them more valuable for recycling. This option looks at the use of an autoclave facility to treat the residual waste. The output of the autoclave is then assumed to be used as RDF and sent to an energy from waste facility. Although this end use is not guaranteed, for the

purposes of this assessment, it has been assumed that 100% of the output will be used in this way.

7.2.7 OPTION 6 – ENERGY FROM WASTE

Energy from waste (EfW) facilities burn waste to generate energy in the form of electricity and/or heat. They typically include a process to remove metals and the remainder of the waste is burnt. After the waste has been burnt, the solid residues are reduced to approximately 30% of the original mass of the waste. The residues comprise of inert bottom ash and hazardous fly ash. This option is the combustion of waste, with electricity generation. It assumes some recovery of materials for recycling – primarily ferrous metals. This option minimises landfill as the residues from energy from waste are small and most can be recycled as aggregate. It does produce some hazardous waste (fly ash).

7.2.8 OPTION 7 – ADVANCED THERMAL TREATMENT (ATT)

ATT processes act like EfW facilities in that they combust (or partially combust) waste leaving a residue that needs to be landfilled. Proponents of ATT processes claim better control over air emissions such as dioxins and offer more flexibility in recovering value from the waste compared with EfW. However, they are also more complicated and complex processes. This option assesses Gasification type processes. As with *Option 6* it looks at the thermal treatment of wastes following pre-sorting of metals.

7.2.9 OPTION 8 – AEROBIC DIGESTION

Aerobic treatment is essentially the composting of wastes in the presence of air. This option has been modelled to estimate the outputs of a facility similar to that which is already operating in the North East. It essentially an in vessel aerobic treatment plant with separation of certain recyclables.

7.2.10 OPTION 9 – ENERGY FROM WASTE WITH COMBINED HEAT AND POWER (CHP)

This option looks at energy from waste as in *Option 6* but includes the recovery of heat as well as electricity – so called combined heat and power (CHP). Such plant offers the benefit of much greater recovery of value from the waste although it requires the presence of an end user to utilise the heat and the installation of a network of hot water pipes to convey the heat to the end users.

7.2.11 CRITERIA USED TO TEST OPTIONS

The criteria that have been used to appraise the options and to compare them against one another are shown in *Box 1.1.* These criteria were developed as part of the Strategic Environmental Assessment (SEA) Process. Proposed criteria were derived from a review of national, regional and local policy documents to identify the main priorities for waste management and

sustainable development in South Tyne and Wear. The criteria were then refined through consultation with key stakeholders.

Box 7.3 Criteria Used for Appraisal of Options for Residual Waste

Number of jobs created
Costs of waste management
Promotion and implementation of information and awareness-raising activities
Emissions to air of key pollutants
Consumption of water resources
Impact on water quality
Emissions of greenhouse gases
Consumption and generation of energy
Renewable energy generation
Promotion of measures to reduce impacts of climate change
Effect on waste hierarchy
Levels of recycling and composting
Level of recovery
Amount of biodegradable municipal waste landfilled
Amount of waste landfilled
Amount of hazardous waste generated
Effect on ability to achieve self-sufficiency
Effect on depletion of resources
Impact on human health
Effect on amenity
Effect on communities
Effect on waste transport
Promotion of alternatives to road transport

7.2.12 METHOD USED TO TEST OPTIONS

The options were tested against the criteria using quantitative methods where possible - for example using modelling techniques based on publicly available datasets to calculate likely sulphur dioxide emissions. Where this was not possible or where this was not appropriate, qualitative methods have been used. All of the options take account of impacts from the treatment method itself, impacts of products (eg recycling) and impacts of residues (eg those materials sent to landfill). The impacts of each option were assessed up to 2027. *Appendix A* provides more detail on the options assessment method.

The key assumptions made in the assessment of options are that:

- separate collection systems for recycling and composting will meet the agreed targets of 30% in 2010 and will then carry on at that rate throughout the remainder of the Strategy period;
- for anaerobic digestion, the residue will be spread on land;
- for Option 4, mechanical biological treatment (MBT), material of a low calorific value will be produced and sent to landfill;

- for Option 3, mechanical biological treatment, and Option 5, autoclaving, material of a high calorific value will be generated and used as refuse derived fuel in energy from waste plants;
- for the autoclaving option, the fibre-type material that is generated will have a 50% moisture content;
- the residue material from the autoclave process will be sent for disposal at a landfill;
- for energy from waste and gasification, 80% of ferrous metals in the waste stream will be recycled;
- for energy from waste and gasification, bottom ash from the combustion processes will be used as aggregate, assumed to be 27% of original mass; and
- for energy from waste and gasification, the fly ash that is generated will be sent to hazardous waste landfill, assumed to be 3.7% of original mass.

7.3 THE ASSESSMENT MATRIX

The results of the options assessment are presented in the matrix shown in *Table 7.2*. The options have been assessed against a variety of environmental, social and economic criteria that were developed and discussed with the Partnership and were also subject to wider consultation with the SEA scoping report. The matrix presents the assessment results as a series of symbols showing the relative impacts of each option against the criteria. Where quantitative data are available, these are shown to differentiate between the options and the baseline.

Table 7.2 Assessment Matrix

Criteria	Option 1 AD putresc	Option 2 AD all	Option 3 MBT/RDF	Option 4 MBT/landfill	Option 5 Autoclave	Option 6 EfW	Option 7 ATT	Option 8 Aerobic Dig	Option 9 EfW - CHP	Comments
Number of jobs created	(15) +	(14) +	(40) +	(39) +	(43) +	(38) +	(62) +	(39) +	(38) +	All scenarios create a small number of additional jobs. The total is not significant for the region overall although it may be important locally. Scenarios 5 and 7 perform best in this respect.
Costs of waste management (Rated 1-10, 1 being the chepest)	4 -	3 +	3 +	3 +	1 +	7 -	8 - -	3 +	10 - -	Option 5 is the cheapest option both in terms of capital expenditure and operational costs. It must be noted, however, that due to the limited number of plants to base these costs on, the costs may only be regards as broad estimates and they may be underestimates. The reliability of the technology and the market for the outputs can not be disregarded either. Options 2, 3, 4 and 8 are also good performers in terms of lower CAPEX and higher savings in OPEX. Option 9 performs poorly in this option as it is potentially very costly to install.
Promotion and implementation of information and awareness-raising activities	0	0	0		0	0	0	0	0	None of the options perform significantly differently from the baseline level against this criterion.
Emissions to air of key pollutants	(-419) +	(-2,526) +	(-10,213) ++	(-904) +	(-7,978) ++	(-1,505) +	(-1,894) +	(-3,075) +	(-8,415) ++	SO_2 is modelled as being an indicator of key air pollutants. Options 3, 5 and 9 perform the best in terms of reducing the amount of SO2 produced.
Consumption of water resources	Some types of AD process require significant quantities of water as inputs.	Some types of AD process require significant quantities of water as inputs.	Unlikely to consume significant quantities of water other than for wash-down.	Unlikely to consume significant quantities of water other than for wash-down.	Requires water to steam treat the waste, although likely to be re-circulated within the process.	Requires process water for washing flue gases.	Steam may be used to heat the waste.	Unlikely to consume significant quantities of water other than for wash-down.	Requires process water for washing flue gases.	Some of the technologies proposed require water as part of the process. The amounts needed vary with the technology but no precise figures are known. Potential resource consumption should be taken into account in decisions on locating facilities.

Criteria	Option 1 AD putresc	Option 2 AD all	Option 3 MBT/RDF	Option 4 MBT/landfill	Option 5 Autoclave	Option 6 EfW	Option 7 ATT	Option 8 Aerobic Dig	Option 9 EfW - CHP	Comments
Impact on water quality	Process water will need to be managed to control any effluent.	Process water will need to be managed to control any effluent.	Pollution from process water is unlikely, although any wash-down water will require drainage management on-site	Pollution from process water is unlikely, although any wash-down water will require drainage management on-site	Process water will need to be managed to control any effluent.	Produces effluent which will require management.	Is likely to produce effluent which will require management.	Pollution from process water is unlikely, although any wash-down water will require drainage management on-site	Produces effluent which will require management.	Significant pollution is unlikely from any of the technologies as long as the facilities are managed in line with good practice. The significance of any potential impacts depends on the sensitivity of the receiving waters and should be assessed and controlled through the permitting processes.
Emissions of greenhouse gases	(-166,838) +	(-724,656) +	(-1,281,719) ++	(-189,005) +	(-1,595,522) ++	(142,093) -	(-37,562) +	(-827,190) +	(-589,922) +	Option 5 produces the least greenhouse gases, reducing the level by over 1.5 million tonne equivalents below the baseline position. Option 6 is the worst performing as it increases the level of greenhouse gases emitted.
Consumption and generation of energy	(-1,233,898) +	(-18,281,908) ++	(-3,324,641) +	(-725,725) +	(-19,425,633) ++	(-4,813,705) +	(-5,684,322) +	(-31,730,915) ++	(-17,925,984) ++	Options 2, 5, 8 and 9 have the greatest effects in terms of reducing consumption of energy. Over 15 million tonnes of crude oil equivalents are saved by each of these options.
Renewable energy generation	0	0	+	0	+	++	++	0	++	Options that use combustion to produce heat and power, or that produce a material which is used in a plant that will produce heat and power, perform highest in this case. Options 6, 7 and 9 therefore score the highest.
Promotion of measures to reduce impacts of climate change	+	+	++	+	++	-	+	+	+	This criterion is linked to the environmental impacts criteria. The production of CO_2 will lead to climate change as will the production of Methane. Options 3 and 5 perform best as they result in the least amount of CO_2 and methane being released to the atmosphere.
Compliance with waste hierarchy	++	++	+	+	++	+	+	++	+	This criterion reflects the amount of recycling/composting and recovery that is carried out by each option. The options that perform best in this respect are options 1, 2, 5 and 8. The amount of recovery is high and the proportion of that which is recycling/composting is highest in these options, therefore putting them higher up the waste hierarchy.

Criteria	Option 1 AD putresc	Option 2 AD all	Option 3 MBT/RDF	Option 4 MBT/landfill	Option 5 Autoclave	Option 6 EfW	Option 7 ATT	Option 8 Aerobic Dig	Option 9 EfW - CHP	Comments
Levels of recycling and composting	(511,549) ++	(545,272) ++	(64,388) +	(63,778) +	(507,633) ++	(0) 0	(0) 0	(536,452) ++	(0) 0	Options 6, 7 & 9 involve combustion of wastes and therefore can not include any recycling against recycling and composting targets, therefore there is no difference to the baseline for these options. In reality these operations do carry out recycling of metals and often the bottom ash from the processis recycled, a 0 is recorded though as these do not count against r&c targets. The best performing options are 2 and 8 closely followed by 1 and 5.
Level of recovery	(765,909) +	(1,226,630) +	(1,161,369) +	(63,778) +	(1,903,998) ++	(1,388,076) ++	(1,405,679) ++	(1,396,428) ++	(1,388,076) ++	Options 5 and 7 perform the best against this criterion. Combustion options do not perform well for recycling/ composting. However when it comes to recovery they are very effective.
Amount of biodegradable municipal waste landfilled.	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	The amount of biodegradable municipal waste landfilled does not vary across the options according to the modelling. In practice, if the residues from any treatment process are to be landfilled the impact on landfill diversion would need to be confirmed by analysis of the BMW content of the residues and agreement with the EA.
Amount of waste landfilled	(-1,278,646) +	(-1,958,491) ++	(-2,160,723) ++	(-1,958,491) ++	(-2,119,185) ++	(-1,958,491) ++	(-1,958,491) ++	(-2,000,322) ++	(-1,958,491) ++	Options 3 and 5 are the best performing options, diverting over 3 million tonnes of waste from landfill. Options 2, 4, 6, 7, 8 and 9 all divert slightly less waste from landfill.
Amount of hazardous waste generated	(0) 0	(0) 0	(0) 0	(0) 0	(0) 0	(63,638) -	(81,792) -	(0) 0	(63,638) -	Only combustion options produce hazardous waste in the form of fly ash. All other options are no different to the baseline in producing no hazardous waste.
Effect on ability to achieve self-sufficiency	0	0	0	0	0	0	0	0	0	All facilities could be located within South Tyne and Wear. Movement of products (refuse derived fuel, compost, recyclables) outside the authority would present the main method of differentiation between options.
Effect on depletion of resources	(-61,699) +	(-441,316) ++	(-728,551) ++	(-64,682) +	(-772,895) ++	(-241,276) ++	(-307,298) ++	(-646,041) ++	(-500,161) ++	All options have a positive effect on the level of resources depletion (they all decrease depletion). Options 3, 5 and 8 are the best performing however options 2, 6, 7 and 9 all reduce resource depletion significantly.

Criteria	Option 1 AD putresc	Option 2 AD all	Option 3 MBT/RDF	Option 4 MBT/landfill	Option 5 Autoclave	Option 6 EfW	Option 7 ATT	Option 8 Aerobic Dig	Option 9 EfW - CHP	Comments
Impact on human health	(-0.0017) +	(-0.0026) +	(0.0498) -	(0.0113) -	(0.0695) -	(0.1247) -	(0.0243) -	(-0.0120) +	(0.1247) -	Options 1, 2 and 8 all have slightly positive impactss on health, whilst the others all have slightly negative impacts. However, all the overall impacts, positive and negative, are very small. Options 6 and 9 have the largest detrimental effects, however this is still not very significant.
Effect on amenity	(-7.67) - -	(-11.75) - -	(5.12) +	(0.00) 0	(4.75) +	(-4.92) -	(-4.65) -	(1.92) +	(-4.92) -	Amenity scores show Options 3 and 5 to be the best options, with Options 1 and 2 scoring the worst. Options 6, 7 and 9 also had negative impacts.
Effect on communities	See comments	See comments	See comments	See comments	See comments	See comments	See comments	See comments	See comments	New waste facilities will all have impacts on the communities within which they are located, both positive (in terms of jobs) and negative (in terms of amenity). Impacts will be similar for all options.
Effect on waste transport	See comments	See comments	See comments	See comments	See comments	See comments	See comments	See comments	See comments	For this criterion, the impacts are related to the quantity of outputs from each of the processes requiring onward transport and the distance to markets or disposal. However, locations, and hence distances, are not known at this stage. Impacts in the vicinity of facilities will be assessed and mitigated through development control.
Promotion of alternatives to road transport	See comments	See comments	See comments	See comments	See comments	See comments	See comments	See comments	See comments	Construction of new facilities gives an opportunity to consider potential for alternatives to road transport in decisions on location. In reality, options will be constrained also by the source of inputs and destination of outputs and are likely to be limited.

Criteria	Option 1 AD putresc	Option 2 AD all	Option 3 MBT/RDF	Option 4 MBT/landfill	Option 5 Autoclave	Option 6 EfW	Option 7 ATT	Option 8 Aerobic Dig	Option 9 EfW - CHP	Comments
Deliverability	+	-	++	++	- -	++	- -	++	-	Options 3, 4 and 6 are all technologies that are currently in use. Options 5 and 7 are seen as emerging technologies. They are not yet established in the UK and as such a certain risk would be associated with them. Also option 5 relies on an output for it's residues that is undetermined at this time. Options 1 and 2 involve a treatment technology that has a limited usage. Option 2 is not seen as being particularly reliable for treating total residual wastes. Option 9 includes an existing technology, but incorporating CHP into current infrastructure can be problematic. To include CHP in infrastructure built at the same time is much easier. This criteria does not take into account issues with planning.

++	excellent	+	good	x	unknown		
0	no change	-	poor	- -	detrimental		

7.4 CONCLUSIONS

As noted previously, the assessment criteria were developed as part of the Strategic Environmental Assessment (SEA) Process and were derived from a review of national, regional and local policy documents to identify the main priorities for waste management and sustainable development in South Tyne and Wear. During a Partnership stakeholder workshop in May 2007, these criteria were ranked in terms of their relevance and importance to South Tyne and Wear. The following conclusions reflect the scoring of the different options against the criteria as well as the ranking of the criteria in terms of their importance.

Option 5, Autoclaving, scores highly on the environmental criteria and the amount of waste that is recovered/recycled and also diverted from landfill. This option is also quite cost effective. However, the technology it is not very reliable and it must be noted that it is not yet easily deliverable in this country. Coupled with the doubts over the destination of the residues, this results in a negative view on the possibility of this technology being successfully employed as part of South Tyne and Wear's waste management strategy.

Option 6, Energy from Waste (EfW), and Option 7, Advanced Thermal Treatment (ATT), both involve combustion of waste. ATT is an emerging technology and, like Option 5, not yet proven in this country. It therefore scores badly on deliverability. Energy from waste facilities are regarded as more deliverable in terms of track record and bankability, however this appraisal does not take into account the planning risks and there is often public opposition to EfW plants. Option 9 includes CHP which is most easily introduced along with new infrastructure and would work well as part of a new industrial estate or Eco park.

Health impacts were seen as an important criterion and shows that the impacts for all options are minimal. The option that performs worst is energy from waste, but this needs to be put into context and compared to other polluting industries. Waste management in general has a limited effect on human health overall anyway, this is highlighted in a report produced on the impacts of various industry sectors on human health (1).

Cost was seen as one of the most important criteria by the Partnership and Options 2, 3, 5 and 8 perform best against this criterion. Costs to implement CHP systems vary widely. This is due to very wide variations in the cost of installing the heat distribution system. If the distribution network is retro-fitted to existing housing or other users it can be very expensive to install whereas if it is included as part of a new development it will be less expensive but still costly. It was not possible to include a quantitative estimate in this study.

(1) The Review of Environmental and Health effects of Waste Management (ENVIROS, Birmingham University, Defra)

Option 9 (EfW with CHP) performs similar to Option 6 (EfW), but with added benefits of reduction in depletion of resources, reduction in greenhouse gases and other emissions. These benefits are related to the reduced need for power and heat generation. This option performs much better in comparison to others in the matrix than EfW without CHP.

Options 1 and 4 do not perform as well relative to some of the other technologies. This can be explained as Option 1 treats only the putrescible fraction of the waste, assuming the rest is landfilled and Option 4 assumes that the output from the process is landfilled. These are low performing options – both environmentally and socially. Option 1 is a cheap option in terms of costs, but when offset against the potential savings of reduced landfill it does not perform well, neither does Option 4.

Option 8 performs moderately well for the environmental criteria, and especially well in the reduction of energy consumption. It is one of the best performing options for waste recycling and composting, recovery and diversion of waste from landfill. It is a technology that is proven to be working in the region and therefore scores well on deliverability.

Appendix A to Annex C

Decision Criteria and Assessment Techniques

This section explains the methods used for the assessment of the Options against the decision criteria. The criteria were divided into four categories: environmental, financial, social and feasibility – most with several sub-categories. The criteria were assessed using desk-based methodologies and computer modelling. The list comprises all criteria that can be assessed by the model used by ERM, not all of these criteria were assessed in the study for the South Tyne and Wear Authorities

The criteria are as follows:

A2 Environmental Criteria
- *A2.1 Resource Depletion*
- *A2.2 Air Acidification*
- *A2.3 Greenhouse Gas Emissions*
- *A2.4 Landtake*
- *A2.5 Extent of Water Pollution*

A3 Financial Costs
- *A3.1 Financial Costs*

A4 Social Criteria
- *A4.1 Health Effects*
- *A4.2 Employment*
- *A4.3 Public Acceptability*
- *A4.4 Risk of Accidents*
- *A4.5 Producer Responsibility*
- *A4.6 Local Amenity*
- *A4.7 Social Equity*

A5 Feasibility Criteria
- *A5.1 Technical Feasibility*
- *A5.2 Practical Feasibility*
- *A5.3 Flexibility*
- *A5.4 Existing Facilities*
- *A5.5 Compliance with Policy*

A glossary of abbreviations is provided at the back of the annex.

A2 ENVIRONMENTAL CRITERIA

Four environmental criteria were assessed, covered resource depletion, air acidification, greenhouse house gas emissions, and extent of water pollution.

A2.1 RESOURCE DEPLETION

Resource depletion is an important concern because current levels of resource consumption associated with economic growth are unsustainable. Abiotic resources are natural, and essentially limited, resources, such as iron ore, crude oil and natural gas, as opposed to renewable, biotic sources such as biomass. Resource depletion is one the most frequently assessed impact categories in life cycle assessment (LCA) studies. The scope of this assessment includes the phenomena cited in *Box A2.1*.

Box A2.1 Scope of Assessment of Resource Depletion

Grid electricity	Resources were consumed in order to generate the grid electricity that powers the waste management facilities.
Coal electricity	Any electricity generated by the waste management facilities was assumed to offset coal-fired electricity generation, rather than default grid electricity.
Diesel generation	Some facilities use diesel-powered machinery to process the waste, so it is necessary to know what resources are used in generating diesel.
Steam generation	Autoclaving uses steam, whose generation requires resource consumption.
Material recycling	In recycling (for example) aluminium, there are significant energy savings by comparison with the extraction of aluminium from bauxite. The resource depletion burdens of recycling versus virgin production were ascertained, so that the difference could be credited to those processes that included material recycling.
Transportation	Significant amounts of fuel are used in moving the waste from facility to facility, and these must be included in the resource depletion calculations.

A2.1.1 Methods and Assumptions Used

WISARD (1) determines the abiotic depletion factor (ADF) for the extraction of individual minerals and fossil fuels, based on concentration reserves and rate of de-accumulation, and expresses the results in 'kg antimony equivalents/kg extraction'.

A2.1.2 Calculating Emission Factors

Figures for the three depleted materials (plus emissions data for sulphur dioxide, methane and carbon dioxide) were extracted from Life Cycle

(1) WISARD is the Environment Agency's life cycle assessment software for waste management.

Inventory LCI) databases (BUWAL 250, ETH and IDEMAT 2001). *CML 2000* provides resource depletion figures for the three species, in terms of kilograms of antimony. These were compared, as shown in *Table A2.1*, to generate a single figure representing the resource depletion of each of the options, in terms of *'tonnes of crude oil equivalents'*. These equivalents were applied to the LCI data, to generate the resource depletion emission factors in *Table A2.2* (see the following sections for explanations of the other data).

Table A2.1 Resource Depletion Equivalents (data from CML 2000)

Resource	1 kg antimony	1 kg crude oil	Units
Antimony	1	0.020	kg
Coal	74.627	1.500	kg
Natural gas	53.476	1.075	M^3
Crude oil	49.751	1	kg

Table A2.2 Emission Factors Used in Assessment

	Activity	Resource Depletion Crude oil eq / g	Acidification SO_2 / g	Global Warming CO_2 eq / g
Recycling of 1kg of…	Aggregate	3	0.02	9
	Aluminium	3177	54.76	9495
	Cotton	2045	7.73	1852
	Ferrous	735	3.32	1994
	Glass	263	2.42	481
	Paper	118	3.54	380
	Plastic	1734	6.12	1766
	Polyester	1871	25.00	2378
	Textiles	1958	16.37	2115
Generation or consumption of…	1kg of copper	1710	136.00	5424
	1kg of mixed salt	35	0.59	99
	1kg of oxygen	63	1.13	225
	1kg of sulphur	86	63.70	274
	1kg of zinc	1569	30.40	4899
	1MJ of steam	33	0.04	75
	1l of diesel	934	2.30	499
	1kg coal	1153	16.30	3085
	1kg crude oil	1216	52.03	3859
	1m3 natural gas	1065	1.29	2427
	1kWh grid electricity	234	1.62	634
	1kg natural gas	885	1.07	2017
	Transport in a 28 te truck (per te-km travelled)	75	0.49	214

A2.1.3 Calculation of the Impact Scores

The resource requirements (tonnes of diesel, kWh of electricity, tonne-kilometres waste transported, etc) were calculated for the various facilities and processes involved in each Option. It was then simply a case of applying the emission factors (which provide emissions per tonne of diesel, etc), in order to determine the resource depletion associated with the activities.

A2.2 AIR ACIDIFICATION (IMPACT ON AIR QUALITY FOR KEY POLLUTANTS)

Acidification is the process whereby air pollution (mainly ammonia, sulphur dioxide and nitrogen oxides) results in the deposition of acid substances. 'Acid rain' is best known for the damage it causes to forests and lakes. Less well known are the many ways it affects freshwater and coastal ecosystems, soils and even ancient historical monuments. Acid deposition can increase the environmental mobility of metals, resulting in the pollution of water sources and increased uptake of metals by biota.

Gases contributing to acidification are aggregated according to their acidification potential. These potentials have been developed for potentially acidifying gases such as SO_2, NO_x, HCl, HF and NH_3, on the basis of the number of hydrogen ions that can be produced per mole of a substance, using SO_2 as the reference substance.

As well as having resource depletion implications, all of the activities cited in *Box A2.1* are also associated with SO_2 emissions. There are two additional considerations, highlighted in *Box A2.2*.

Box A2.2 Additional Scope of Assessment of Acidification

Diesel Usage	In addition to the SO_2 emissions when diesel is generated, there are also emissions when it is consumed.
Plant Emissions	Some of the waste management options (notably thermal treatment) involve combustion, with the attendant SO_2 emissions.

A2.2.1 Method and Assumptions Used

For this study, SO_2 emissions were used as a proxy for all the acidifying gases. It was therefore assumed that SO_2 emissions alone are satisfactorily indicative of the overall acidification potential of the options.

A2.2.2 Calculation of the Impact Scores

Having calculated the resource requirements (tonnes of diesel, kWh of electricity, tonne-kilometres waste transported, etc) of the various facilities and processes, it was again simply a case of applying the emission factors tabulated in *Table A2.2* to determine the acidification impacts.

A2.3 GREENHOUSE GAS EMISSIONS

Human activities have altered the chemical composition of the atmosphere through the build-up of greenhouse gases, primarily carbon dioxide, methane, and nitrous oxide. The higher the concentration of these gases, the higher the heat-trapping capability of the earth's atmosphere. As a result, temperatures and sea levels are expected to rise.

A2.3.1 Method and Assumptions Used

Gases contributing to the greenhouse effect are aggregated according to their impact on radiative warming, compared to carbon dioxide as the reference gas. The characterisation model as developed by the Intergovernmental Panel on Climate Change (IPCC) was selected for development of characterisation factors, the figures being shown in *Table A2.3*.

Table A2.3 Greenhouse Gas Characterisation Factors (†)

Gas	Formula	Characterisation Factor	Units
Carbon Dioxide	CO_2	1	CO_2 equivalent
Methane	CH_4	21	CO_2 equivalent

(†) Factors are expressed as Global Warming Potential for time horizon 100 years (GWP100), in kg carbon dioxide/kg emission

For the carbon dioxide emissions, a firm distinction was made between renewable and non-renewable carbon dioxide, with only the latter, from the combustion of fuels and plastics, contributing to the greenhouse gas figures. Renewable carbon dioxide is the result of combusting carbon taken up by organisms which can be considered to be part of a closed loop due to the short time frames between take-up and release. The carbon dioxide released from burning paper is an example of this as paper in Europe is predominantly from sustainably managed forests.

A2.3.2 Calculation of the Impact Scores

The calculation of the impact scores followed the same pattern as for resource depletion and acidification. The emissions factors for the two gases were scaled according to the total amount of gases generated, and converted into CO_2 equivalents using the figures in *Table A2.3*, to generate the figures in *Table A2.2*). These were simply scaled by the amounts of waste handled.

A2.4 EXTENT OF WATER POLLUTION

For assessing the environmental risk to water for the Options, the Environment Agency's OPRA (Operator & Pollution Risk Appraisal) for Waste scoring methodology was used. The OPRA model is based on the consideration of the likelihood of problems arising and a measure of their consequences. Evaluation of risk involves, firstly, the probability of an occurrence of an undesirable event, and, secondly, the consequence of such an event. The OPRA system comprises of two elements:

- environmental appraisal; and
- operator performance appraisal

Since this risk assessment was for proposed waste management Options, the operator performance appraisal could not be carried out.

A2.4.1 Method and Assumptions Used

The various types of waste management operations were considered in terms of sources of pollution, inherent risks at these sites and the potential longer term impacts. Two main category bases and six sub-categories (see *Table A2.4*) were used for the environmental appraisal. The methodology allocated a score for each of the categories, where the higher the score, the higher the potential risk.

Table A2.4 OPRA Assessment Scores

Basis	Subcategory	Detail
Source	Type of facility	Assessment of the inherent risk to water arising from the type of facility, ranging from a borehole [5] to a hazardous waste landfill [60] (see *Table A2.5*)
	Throughput	The higher the throughput, the more risk there will be: less than 50 tpa scores [2] 50 to 5000 tpa scores [7] 5000 to 50 000 tpa scores [12] more than 50 000 tpa scores [20].
	Levels of control and containment	Cannot be assessed for an unbuilt plant, so a score of [5] was allocated, indicating a Quality Assurance system in place and two control mechanisms such as liners, gas controls, leachate containment etc.
Target	Proximity to: - human dwellings - groundwater - surface water	Without knowing the exact locations of the facilities, it is not possible to assess their proximity to potential water pollution receptors. Respective mid-range values of [15], [10] and [7] were assigned, given a consistent target-based score of [32] per facility.

Table A2.5 Types of Facility Assessed in this Study

Facility	OPRA	Description	Score
Materials Recycling Facility	A15	Material Recycling Facility	15
Windrow Composting	A22	Composting Facility	15
In-Vessel Composting	A23	Biological Treatment	15
Anaerobic Digestion	A23	Biological Treatment	15
MBT – Basic	A23	Biological Treatment	15
MBT – Autoclaving	A17	Physico-chemical Treatment	25
Thermal Treatment	A18	Incinerators	20
Gasification	A18	Incinerators	20
Coal Displacement	A18	Incinerators	20
Landfill	A4	HCI &/or household waste Landfill	40
Inert Landfill	A5/6	Large Non-biodegradable Landfill (†)	20
Land Application / Other Treatment	A6	Other waste Landfills	20
Simple Combustion	A18	Incinerators	20

(†) Including C&D waste

Number of Facilities

OPRA impact scores were allocated *per facility*, so multi-facility Options scored more poorly against this criterion. For example, two 75 000 tpa MRFs would

score [2 x (15 + 20 + 5 + 32) =] 144 points, whereas six 25 000 tpa MRFs would score [6 x (15 + 12 + 5 + 32) =] 384 points. Despite treating the same amount of waste using the same technology, the greater number of facilities increases the risk of water pollution.

Average score

All scores were worked out per year, because facilities would be added in certain years, rather than being present for the duration of the study. In order to facilitate comparison, the score for source and target OPRA impacts were totalled by year and then averaged across all the years assessed, to generate a single score for each Option.

A3 FINANCIAL COSTS

A3.1 FINANCIAL COSTS

It was outside the scope of this piece of work to develop a detailed and precise cost model with which to appraise the Options, and the level of data available would make such a task extremely difficult and costly. A problem commonly associated with waste cost data is the acquisition of detailed, reliable and up to date information, and the necessity to rely on small historical data sets to base future trends. In addition, some technologies are not as well established as others, resulting in additional difficulties in making accurate cost predictions. Another significant barrier is that this information is often commercially sensitive and so not readily available.

Despite these facts, it was necessary to include an assessment of financial costs in the study, since the solution must be practicable, and this requirement encompasses having a reasonable cost.

A3.1.1 Method and Assumptions Used

Four cost aspects were included in this assessment, covering gates fees, revenue streams and landfill tax; and Capital Expenditure costs. Costs were based on current costs as at 2007. The exception to this was landfill tax, which was assumed to increase at a rate of £8/te/annum until it reaches £42/te, in 2011.

Gate Fees

Treatment costs associated with each technology were assessed on a gate fee basis. A gate fee represents a unit payment per tonne made by a waste producer/carrier to the service provider. Gate fees were collected from a variety of sources in the waste industry, to generate typical figures, with some reliance on the size of the facility, acknowledging the associated economies of scale involved.

Revenue Streams and Landfill Tax

There are considerable uncertainties associated with the market value/cost of potential products from waste management processes, such as the RDF from MBT processes. For the purpose of this study, these revenues/costs were excluded from the analysis.

CAPEX

Each technology type was assessed by the cost it takes to build a new facility to the size required by STWWMP to provide enough capacity to meet LATS targets.

The results of looking at these areas allowed us to score the technologies out of 10 for their cost performance – 1 being the cheapest and 10 being the most expensive.

A4.1 HEALTH EFFECTS

A significant cause of public concern surrounding the construction of a new waste management facility is the perceived health effects that may result for the local community. There are numerous reports in the public domain, frequently presenting conflicting opinions on the relative merits of different technologies.

To try to address this situation, Defra recently published a Health Effects report (1) that aimed to bring together in one place information from all the studies conducted to date. Although there are a number of data gaps (notably on composting and emerging technologies such as autoclaving), this is the best reference information that is available and has been used as the basis for assessment in this study.

It should be noted that displaced health impacts have not been accounted for in this assessment. These include the benefits of recycling over the offset health impacts that would have occurred from manufacturing materials, and the offset impacts from energy production instead of burning coal. Although these offset impacts may be considerable, it was decided that the chief concern is in local health impacts near the facilities, so the assessment was kept within those limits.

A4.1.1 Method and Assumptions Used

The specific starting point was *Table 4.5* of the Defra report, on page 206, which is reproduced in *Table A4.2*. This quantifies, to the degree possible from the data sources, the various health impacts that might be expected to occur as a result of waste management operations.

As can be seen, the table presents impacts for six classes of process; composting, MBT, anaerobic digestion, pyrolysis/gasification, thermal treatment and landfill. Autoclaving is missing, and there are no impacts for composting. The approximations used in this study are presented in *Box A4.1*. These assumptions are used to generate the data in *Table A4.3*.

(1) *Review of Environmental and Health Effects of Waste Management: Municipal Solid Waste and Similar Wastes*, Enviros Consulting Ltd and University of Birmingham with Risk and Policy Analysts Ltd, Open University and Maggie Thurgood, 2004, available at http://www.defra.gov.uk/environment/waste/research/health/index.htm [03May05 @ 16:47]

Box A4.1 Health Impact Technology Assumptions

Composting:	Given that the release of bioaerosols from composting plants can be an issue, it has been decided to assign to composting the higher of the impacts in each category from the most similar processes – MBT and anaerobic digestion.
Landfill:	Data is given on six different landfill types, using flares or engines at small, medium and large sites. A typical value has been deduced by averaging the impacts from medium-sized flare and medium-sized engine landfill sites.
Cement Kiln:	One of the options sends residual waste to a cement kiln. This is outside the remit of the Defra study, so we have assumed that impacts from a kiln are similar to those from thermal treatment plant.

A4.1.2 Comparing the Impacts

Clearly, a 'death brought forward' is more serious than a 'respiratory admission', and some processes do not have estimated impacts for all four categories, so it is not appropriate simply to total the columns to generate overall impacts.

The World Health Organisation (WHO), as part of its Global Burden of Disease project, has developed a table of Disability Weights associated with various conditions (1). Illnesses, referred to in general as *sequelae*, are rated on a scale from 0.0 (perfect health) to 1.0 (death), and this dataset was used to determine scores for the four health effects listed, as explained in *Table A4.1*. These figures were used in *Table A4.4* to calculate the final scores for each waste management technology.

Table A4.1 Health Impact Disability Weighting Assumptions

Health Impact	Discussion	Disability Weighting
Deaths brought forward:	There is no analogous category in the WHO disability weights to 'deaths brought forward', so *terminal cancers* were selected as an equivalent malady.	0.809
Respiratory admissions:	Respiratory diseases are divided between lower and upper respiratory diseases, but since the Defra report mentions both types, an average has been taken of the three non-zero sequelae (*upper respiratory episodes*, *pharyngitis* and *chronic lower respiratory sequelae*).	0.149
Cardiovascular admissions:	The Defra report cites a large number of cardiovascular sequelae, and disability weightings for these, where available, have been averaged for this impact. The sequelae included are: *congestive heart failure, acute myocardial infarction, angina pectoris, first-ever stroke, myocarditis, pericarditis, endocarditis* and *cardiomyopathy.*	0.260
Additional cancer cases:	Similarly, the Defra report was scanned to determine which cancers were included in this category, resulting in the inclusion of *cancers of the stomach, colon, rectum, liver, pancreas, trachea, bronchus, lung, melanoma and other skin, breast, cervix uteri, corpus uteri, ovary, prostate gland and bladder, leukaemia, lymphomas and multiple myeloma* in the estimation.	0.165

(1) http://www3.who.int/whosis/burden/manual/other/GBD90 Disability Weights.zip [03May05 @ 16:49]

Table A4.2 Defra Report Estimated Health Impacts due to Emissions to Air (per Billion (10^9) Tonnes of Waste Processed) (†)

Health Effects	Composting	MBT	Anaerobic Digestion	Pyrolysis / Gasification	Thermal Treatment / Cement Kiln	Landfill – Medium + Flare (‡)	Landfill – Medium + Engine (‡)
Deaths brought forward	No Data	18.2	1.48	30.8	64	15	12
Respiratory admissions	No Data	49.5	72	293	1500	24	110
Cardiovascular admissions	No Data	No Data	No Data	5.45	0.41	1.3	1
Additional cancer cases	No Data	No Data	0.00108	0.019	0.02	0.048	0.05
Data quality	n/a	Poor (3)	Moderate (5)	Moderate (6)	Moderate (6)	Poor (4)	Poor (4)

(†) Figures multiplied by 10^9 versus the report, to show their relative values more clearly

(‡) Data is given in the report for small, medium and large landfill in these two categories – six in all.

Table A4.3 Processed Estimates of Health Impacts due to Emissions to Air (per Billion (10^9) Tonnes of Waste Processed) (†)

Health Effects	Composting	MBT	Anaerobic Digestion	Pyrolysis / Gasification	Thermal Treatment / Cement Kiln	Active Landfill – Medium
Deaths brought forward	18.2	18.2	1.48	30.8	64	13.5
Respiratory admissions	72	49.5	72	293	1500	67
Cardiovascular admissions	No Data	No Data	No Data	5.45	0.41	1.15
Additional cancer cases	0.00108	No Data	0.00108	0.019	0.02	0.049

(†) Figures multiplied by 10^9 versus the report, to show their relative values more clearly

Table A4.4 Health Impact Scores with Disability Weightings Factored into the Calculations

Health Effects	Composting	MBT	Anaerobic Digestion	Pyrolysis/ Gasification	Thermal Treatment / Cement Kiln	Landfill	Disability Weighting
Deaths brought forward	18.2	18.2	1.48	30.8	64	13.5	**0.809**
Respiratory admissions	72	49.5	72	293	1500	67	**0.149**
Cardiovascular admissions	No Data	No Data	No Data	5.45	0.41	1.15	**0.26**
Additional cancer cases	0.00108	No Data	0.00108	0.019	0.02	0.049	**0.165**
Final 'Score' (†)	**8.48**	**11.05**	**3.97**	**17.48**	**68.78**	**5.3**	

(†) The Final 'Score' represents a relative value that combines the number and the severity of incidents resulting from the handling of a given weight of waste by the stated waste management technique.

Applying the Impact Scores to the Options

In order to apply the calculated impact scores to the options, it was simply necessary to multiply the final health effect scores by the amount of waste being handled by that technique, and sum for each Option.

A4.2 EMPLOYMENT

Waste management systems have the potential to impact positively or negatively on employment, in terms of the number of jobs, their quality and distribution. Employment enables people to meet their needs and improve their living standards, and is the single most effective and sustainable way of tackling poverty and social exclusion for those who can work.

Development of new waste management facilities will create temporary construction employment, and their long-term operation will also create jobs, the nature and number of which will depend on the type of facility. Options involving labour-intensive technologies will offer additional employment opportunities. This will result in reducing unemployment and contribute to wider benefits for social inclusion. If these jobs are located in an area of high unemployment and high levels of out-migration caused by lack of jobs, their social benefit may be even greater.

The impact of each Option on employment was appraised by estimating the number of jobs required to support that Option, taking into account whether the jobs would be skilled or unskilled. The number of staff required to run the facilities was assessed using employment data from existing plants, and the number of shifts that would be required was also taken into account. The employment data is presented in *Table A4.5*.

Final numbers for the skilled and unskilled jobs associated with each Option were generated by determining the number and capacity of each type of facility required by the Option in each year, and using the table to generate the associated number of man-year jobs. These were totalled and then divided by the number of years of the study, to arrive at figures for the average number of skilled and unskilled jobs per year that each Option would support.

Table A4.5 Estimated Numbers of Skilled and Unskilled Jobs Required in Different Facilities as Throughput Changes (†)

Throughput	MRF		Windrow		IVC		AD		MBT*		Thermal		Gasification		Landfill	
/ tpa	S	U/S	S	U/S	S	U/S	S	U/S	S	U/S	S	U/S	S	U/S	S	U/S
0	3	13	2	4	3	3	2	5	4	14	4	14	4	17	3	4
15 000			2	4												
25 000	3	13			3	3										
30 000			2	6												
45 000			2	7												
50 000	3	20			3	5	2	5								
60 000			2	8												
75 000	3	24	2	9	3	6										
90 000			2	10												
100 000	6	27			3	6	2	8	4	14	4	14			3	4
105 000			3	10												
120 000			3	11									11	50		
125 000	6	30			3	7			4	21	4	21				
135 000			3	11												
150 000	6	32	3	12	6	7	4	9	4	26	4	26				
165 000			3	12												
175 000	6	34			6	8			4	29	4	29				
180 000			3	12												
195 000			3	13												
200 000	9	35			6	8	4	10	8	32	8	32	11	50	3	6
210 000			4	13												
225 000	9	37	4	13	6	8			8	34	8	34				
240 000			4	14												
250 000	9	38			6	9	4	11	8	36	8	36				
255 000			4	14												
275 000									8	38	8	38				
300 000							6	12	12	40	12	40			3	7
325 000									12	41	12	41				
350 000							6	13	12	42	12	42				
400 000															3	8
(†)	100 000				150 000		100 000		100 000		100 000					

S Skilled (site managers, assistant managers and foremen)

U/S Unskilled (operatives, weighbridge operators and machine operators)

(†) Assumed new shift required every (†) tpa [tonnes per annum]

*The aerobic treatment plant modelled in this assessment is assumed to be similar in employment to MBT

A4.3 PUBLIC ACCEPTABILITY

Public acceptability is a very important issue to consider when looking at waste management plans, and needs to be assessed on two levels.

Firstly, for a waste management option that requires the public to do things differently (eg involving increased participation on their part), it is critical that they find this acceptable, and are prepared to play the role required of them in order for the system to work.

Secondly, waste management options that require the development of new facilities may also encounter resistance from the public, owing to the perceived impacts on local amenity, environmental quality and health risks. As a result, planning permission for the development may be more difficult to obtain.

A4.4 LOCAL AMENITY

Local amenity was used to assess the impact that the waste management facilities are likely to have on the local area. This impact may take all sorts of forms, including noise, odour, dust, traffic levels and visual effects (positive and negative). Without knowing the specific location of the facilities, these assessments could only take a general form, based on relative impact versus one another.

A simplistic assessment was adopted for the onward transport of materials from waste management facilities. Facilities were rated from 0-2 for the amount of onward transport that would be required, with landfill scoring zero (no onward transport), the composting and AD technologies scoring one and all others scoring two. The total throughputs through each of the facility types were scaled by these scores, to arrive at a relative assessment of the onward transport required.

A4.5 COMPLIANCE WITH POLICY

It is important that the chosen waste management Option does not conflict with areas of local, national or EU policy, either on environmental issues or on other relevant areas. Examples of relevant environmental policy areas that are included in this assessment can be found in *Annex B.*

Appendix B to Annex C

Technology-Specific Calculation Assumptions

B1.1 INTRODUCTION

Modelling assumptions relating to the operating requirements and process outputs for each technology options are documented in this annex.

Data relating to the utility input requirements and output emissions assumed for each technology are presented in *Table CB1.1* for comparison. These inputs and outputs are assumed to be proportional to the weight of waste processed, so no economies of scale are factored into these calculations. Further information and assumptions regarding specific technology options are detailed in sections *B1.3* to *B1.8*.

The majority of technology data has been sourced from the Environment Agency's life cycle assessment software tool for waste management, WISARD. Further details of the WISARD software can be found in *Annex E*. The Environment Agency's Waste Technology Data Centre, has also been used as a key source of information. The Waste Technology Data Centre is a centre of waste treatment technology data, assessment and knowledge sited in the Environment Agency, providing impartial information on the regulation, authorisation, performance and costs of waste management technologies and their overall environmental value.

Table CB1.1 Summary of General Technology Data Assumptions

Technology	Input			Output		
	Electricity Demand (kWh/tonne)	Diesel Usage (litres/tonne)	Steam Usage (MJ/tonne)	Electricity (kWh/tonne)	SO_2 (g/tonne)	CH_4 (g/tonne)
MRF	25.0	0	0	0	0	0
Transfer Station	9.9	0	0	0	0	0
Windrow Composter	0	7.2	0	0	11.5*	17.8*
In-vessel Composter	0.1	7.4	0	0	11.5*	17.8*
AD	0	0.5**	0	232.0†	8.1	12.4
MBT (dry stabilisation)	50**	0.5**	0	0	7.5*	17.8*
MBT (aerobic composting)	50**	0.5**	0	0	11.5*	17.8*
Autoclave (‡)	23.9	0	510.7	0	0	0
EfW	0	1.2	0	532.5†	90.5	0
Gasification	0	1.2	0	611.0†	90.5	0
Landfill	0	1	0	see text	see text	see text
Hazardous Landfill	0	1	0	0	0	0

All data from ***WISARD***, apart from:

(†) Waste Technology Data Centre

(‡) *Mercia Waste Management*

(*) German research: Wallman, 1999 (1), Schwing, 2001 (2)

(1) Wallman (1999) Ökologische Bewertung der Mechanisch-biologischen Restabfallbehandlung und der Müllverbrennung auf Basis von Energie- und Schadgasbilanzen. Dissertation, ANS Arbeitskreis für die Nutzbarmachung von Siedlungsabfällen e.V. (Hrsg.), Herft 38, Mettmann (DE)

(2) Schwing (2001), E.: Bewertung der Emissionen der Kombination mechanisch-biologischer und thermischer Abfallbehandlungsverfahren in Südhessen, Dissertation, Verein zur Förderung des Instituts WAR (Hrsg.), Schriftenreihe WAR Bd. 111, Darmstadt (DE), ISBN 3-93

B1.2 IMPACT FACTORS

As discussed in the main report, emission factors were used to represent the impacts and emissions associated with various activities in the waste management chain, such as electricity generation or materials recycling. Figures for material depletion (coal, crude oil and natural gas) were used to quantify resource depletion and energy generation impacts/benefits. SO_2 emissions were used to assess acidification impacts and CO_2 and CH_4 emissions were used in the calculation of potential greenhouse gas impacts from these activities.

Table CB1.2 shows the emission factors used in the assessment and methods described in the main report further explain how these emission factors are utilised.

Table CB1.2 Impact Factors Used in Assessment

Activity	Coal Usage (kg)	Crude Oil Usage (kg)	Natural Gas Usage (m^3)	SO_2 Generation (g)	CO_2 Generation (g)	CH_4 Generation (g)	Basis	Source
Grid Electricity Generation	0.24	0.006	0.074	1.62	590.4	2.07	per kWh generated	BUWAL 250[1]
Diesel Generation	0.019	0.92	0.0026	2.30	421.68	3.70	per litre generated	ETH[4]
Diesel Combustion	-	-	-	0.76	2640	0.16	per litre combusted	WISARD
Transportation (28 tonne truck)	0.0012	0.055	0.0040	0.18	182	0.19	per tonne-km	Ecoinvent v1.2[2]
Transportation (RCV)	0.0094	0.37	0.019	1.67	1213	0.70	per tonne-km	Ecoinvent v1.2[2]
*Material Recycling**								
Plastic	0.011	-0.78	-1.032	-6.12	-1701	-3.09	per kg recycled	Idemat (2001)[3], BUWAL 250[1]
Glass	-0.091	-0.20	-0.0022	-2.42	-465	-0.78	per kg recycled	BUWAL 250[1]
Aluminium	-2.62	-1.25	-0.20	-54.76	-9070	20.25	per kg recycled	ETH[4]
Ferrous	-1.008	-0.063	-0.0	-3.32	-1810	-8.77	per kg recycled	BUWAL 250[1]
Aggregate	-0.0011	-0.0015	-0.00059	-0.021	-8.46	-0.011	per kg recycled	Idemat (2001)[3]
Paper	-0.04	-0.083	-0.0093	-3.54	-367	-0.629	per kg recycled	BUWAL 250[1]
Textiles	-0.28	-0.75	-1.1	-16.3	-2030	-4.05	per kg recycled	Idemat (2001)[3], BUWAL 250[1]
Garden Waste (fertiliser equivalent)	-0.0019	-0.0043	-0.011	-0.082	-37.1	-0.073	per kg composted	Ecoinvent v1.2[2]
Kitchen Waste (fertiliser equivalent)	-0.0025	-0.0057	-0.014	-0.11	-49.0	-0.097	per kg composted	Ecoinvent v1.2[2]
Wood	-0.021	-0.032	-0.010	-0.51	-179.4	-0.24	per kg recycled	Ecoinvent v1.2[2]

References:

1. BUWAL 250, 2nd edition. Fully documented and licensed database. (http://www.pre.nl/download/manuals/DatabaseManualBUWAL250.pdf)
2. Frischknecht R., Jungbluth N., Althaus H.-J., Doka G., Heck T., Hellweg S., Hischier R., Nemecek T., Rebitzer G., Spielmann M. (2004) Overview and Methodology. Ecoinvent report No. 1. Swiss Centre for Life Cycle Inventories, Dübendorf, 2004 (http://www.ecoinvent.ch/download/01_OverviewAndMethodology.pdf)
3. Data collection from various sources supervised by Dr. Han Remmerswaal, Faculty of Industrial Design Engineering, Delft Technical University, The Netherlands
4. ETH-ESU. Licensed database. (http://www.pre.nl/download/manuals/DatabaseManualETH-ESU96.pdf

**Benefits* per kg of material recycled

B1.3 ANAEROBIC DIGESTION (AD) FACILITIES

The AD technology option under consideration for the assessment was a process that would accept residual MSW for treatment, rather than solely organic waste. The WISARD software does not feature data for a process of this kind, and very little published data exists as such. The Waste Technology Data Centre presents mass balance data for the Oaktech Anaerobic digestion process and so modelling assumptions were based on this.

Key stages in the process include: MSW separation, bag splitting, wet separation of clean recyclables, hydrocrushing to separate fibres in the biodegradable material, followed by a two-stage anaerobic digestion.

The process suppliers report the following rate of separation of materials for recycling and these have been included in modelling calculations:

- ferrous metals – 95%
- non-ferrous metals – 90%
- plastics – 95% (1)
- glass/aggregate – 66%

The remainder of materials are assumed to contribute to the residue stream from the process.

The process suppliers further estimate a 56% loss of carbon during the process. It was therefore assumed that 56% of incoming biodegradable materials would be lost during the process, and the remainder would be left in the digestate product stream.

Net electricity output is reported as 232kWh per tonne of waste input. This was assumed to be attributable to the biodegradable fractions of incoming waste only, and so was apportioned accordingly.

No data regarding fuel consumption for plant machinery, or direct process emissions, are provided, but were assumed to be the same as for an MBT anaerobic digestion plant and based on figures from German research.

B1.4 MECHANICAL BIOLOGICAL TREATMENT (MBT) FACILITIES

Two alternative MBT technology options were under consideration for the assessment: a process configured to produce a refuse derived fuel (RDF) for burning; and a process configured to stabilise waste for landfill. Data regarding generic MBT configurations is very difficult to compile, as a wide variety of specific processing technologies exist. WISARD does not have any data for MBT plant and mass balance information in the Waste Technology Data Centre is limited (2).

(1) This material is assumed to be of poor quality and so is awarded only half of the offset benefit presented in *Table A1.2*
(2) As accessed on 1st March 2006.

Whilst in the process of developing generic data on MBT for the forthcoming update of their WISARD tool, the Environment Agency met with various industry contacts, ORA and Juniper Consultants to collate generic datasets, based on techno-economic status and technical feasibility in the UK of various process configurations. Data from German research were identified and hail from two predominant sources:

- *Wallman (1999)* Ökologische Bewertung der Mechanisch-biologischen Restabfallbehandlung und der Müllverbrennung auf Basis von Energie- und Schadgasbilanzen. Dissertation, ANS Arbeitskreis für die Nutzbarmachung von Siedlungsabfällen e.V. (Hrsg.), Herft 38, Mettmann (DE)
- *Schwing (2001),* E.: Bewertung der Emissionen der Kombination mechanisch-biologischer und thermischer Abfallbehandlungsverfahren in Südhessen, Dissertation, Verein zur Förderung des Instituts WAR (Hrsg.), Schriftenreihe WAR Bd. 111, Darmstadt (DE), ISBN 3-93

In order to model the waste composition and material flows through both processes, some assumptions were necessarily made and are detailed below. These are based on the German research, as noted, and on discussions with the Environment Agency.

MBT configured to produce RDF

- 84% of ferrous and 88% non-ferrous removal for recycling;
- materials extraction to the high calorific value fraction (RDF) is 5% for inert materials and 95% for all other materials. Remaining materials report to the residue product stream and are sent for landfill; and
- a biodrying process is used to reduce the mass of the high calorific value fraction to 50% of the input waste (1).

MBT configured to stabilise waste for landfill

- 95% of ferrous and non-ferrous removal for recycling;
- paper and card fractions degrade by approximately 50% and putrescible fractions (kitchen and garden waste) by 90%. Dependent on input waste composition, this is equivalent to approximately 60% loss of biodegradable content from incoming residual waste. The recent report on MBT technologies by Juniper (2) presents a range of 24-90% BMW diversion for processes stabilising output for landfill. The midpoint of this range is 57% and so the modelled degradation rate is considered reasonable.
- the remainder of materials remain in the residue product stream and will be sent to landfill.

(1) Reported in: Lechner *et al*. MBT - How can goals be reached. In: Papadimitriou, E. K.; Stentiford, E. I. (Ed.): Biodegradable and Residual Waste Management, Publisher: CalRecovery Europe Ltd., Leeds (UK) 2004, p. 31 -45, ISBN 0-9544708-1-8

(2) Juniper Consultancy Services Ltd (2005). *MBT: A Guide for Decision Makers. Processes, Policies and Markets.*

Fuel consumption and electricity requirements were assumed to be same for both plant and were based on figures from Wallman (1999). Process emissions data were further based on the German research earlier noted.

B1.4.2 Aerobic Digestion Process

ERM was asked to add an extra process, specifically aimed at modelling the a process used in the North East. ERM used separately acquired intelligence on this process to modify the *MBT configured to stabilise waste for landfill process*, as follows:

- 90% of plastics were removed for recycling; and
- the residue was split into a compost-like organic (CLO) material, which is used for landfill restoration, and a reduced residue that is landfilled.

B1.5 AUTOCLAVING FACILITIES

Autoclaving is another new process that is not modelled in WISARD. Information is rather limited in the public domain on autoclaving, so ERM was obliged to makes key assumptions, based on information provided by Mercia Waste Management:

- autoclaving does not destroy waste; 100% of input weight (plus additional water that is added during the process) is sent to one of three fates:
    1. recycled (1) ;
    2. converted to fibre for use as a refuse-derived fuel (with an assumed calorific value of 8MJ/kg) for combustion; and
    3. sent to inert landfill.
- it was assumed that the moisture content of the fibre is 50%. This is made up of a combination of moisture in the incoming waste and steam used in the process.

B1.6 ENERGY FROM WASTE (EFW) FACILITIES

ERM modelled EfW plant to be new facilities, with all the state-of-the-art emission controls that that entails. Information from the Waste Technology Data Centre was used to model energy generation from EfW, based on net yields as reported from the SITA plant in Cleveden (2).

Data relating to yields of bottom ash (27%) and fly ash (3.7%) were based on estimates from a similar EfW process in WISARD. It was assumed that all bottom ash will be recycled as aggregate and fly ash will be sent to hazardous landfill.

(1) The process assumes 95% recovery of metals and plastics, and 80% recovery of glass
(2) http://www.environment-agency.gov.uk/wtd/679004/679021/679059/976243/976284/?version=1&lang=_e

In addition to the emissions data provided in *Table CB1.1*, it was necessary to estimate the fossil CO_2 emissions from burning plastics. *SIMAPRO* was used to calculate that each tonne of plastic burnt would generate, on average, 2.283 tonnes of fossil CO_2.

B1.6.1 Combined Heat and Power

The possible benefits of combining energy generation from a thermal plant with heat recovery, in some form of Combined Heat and Power scenario, was modelled assuming an overall plant efficiency of 70%, and a 50:50 split of domestic heating between natural gas and oil. The thermal energy that would be generated by the CHP plant was used to offset the equivalent amounts of natural gas and oil that would have been used instead, and this weight savings were finally converted into environmental savings.

B1.7 GASIFICATION FACILITIES

Again, gasification does not appear in WISARD and information on the technologies is rather limited. In the absence of further data, ERM assumed the same operating requirement (fuel for machinery) as EfW and the same process emissions. Data from the Waste Technology Data Centre was used to model energy generation, based on net yields from the KBI plant in Arnstadt, Germany, as this was the only gasification plant for which comprehensive data were available (1). Data relating to yields of bottom ash (22%) and fly ash (4.3%) were also based on this plant.

It was assumed that all bottom ash will be recycled as aggregate and fly ash will be sent to hazardous landfill.

B1.8 LANDFILL

The active landfill model used was from WISARD, based on a large, wet, composite-lined landfill. A number of assumptions were made, in order to complete the modelling, based upon the rate of generation of gases and the fate of the landfill gas. Firstly, it is assumed that the gases generated are dependent on the incoming waste composition, as shown in *Table CB1.3*.

Table CB1.3 Landfill Gas Generation (kg Gas per tonne Waste Component)

Waste Component	Generation of CH_4	Generation of SO_2
Putrescibles	43.5	14.2
Paper/Card	97.8	31.8

Secondly, it is assumed that the landfill gas' fate is as given in *Table CB1.4*.

(1) As accessed on 1st March 2006.

Table CB1.4 Landfill Gas Fate

Fraction	Fate
23%	Discharged
37%	Flared
40%	To Gas Engine

Finally, the gas engines are assumed to have an efficiency of 32.5%, with methane having a CV of 50.0 MJ/kg. With this information, it is possible to calculate (for example) the electricity generation, as shown in *Box CB1.1*.

Box CB1.1 Formula for the Calculation of Landfill Engine Electricity Generation

$$\text{Electricity Generation} = \text{Waste Throughput} \times \left[(\text{CH}_4 \text{ per te} \times \%)_{\text{Paper}} + (\text{CH}_4 \text{ per te} \times \%)_{\text{Putrescibles}}\right] \times \text{\% to Gas Engine} \times \text{Engine Efficiency} \times \text{CV of Methane}$$

Hazardous landfills were assumed to have no direct emissions and generate no electricity as it was assumed that the wastes that they receive are inert. It was further assumed that hazardous landfills have the same operating requirements as active landfills.

Appendix C to Annex C

Detailed Results

C1 RESOURCE DEPLETION, GREENHOUSE GAS EMISSIONS (CO_2 EQUIVALENTS), ACIDIFICATION (SO_2 EQUIVALENTS) AND ENERGY CONSUMPTION (GJ)

Table C1.1 Option 1 – AD1

	Primary Recycling	Secondary Recycling	Residual Treatment	MRF, TS, Composting	Transport	Total	
Effect on resource depletion	-979,005	0	-65,720	13,628	0	**-1,031,097**	t crude oil eq
Emission to air of key pollutants	-9,758	0	-445	86	0	**-10,118**	t SO2
Emission of greenhouse gases	-1,761,539	0	-128,827	40,161	0	**-1,850,205**	t CO2 eq
Consumption and generation of energy	-38,601,335	0	-1,309,000	371,476	0	**-39,538,858**	GJ

Table C1.2 Option 2 – AD2

	Primary Recycling	Secondary Recycling	Residual Treatment	MRF, TS, Composting	Transport	Total	
Effect on resource depletion	-979,005	-372,969	-72,367	13,628	0	**-1,410,713**	t crude oil eq
Emission to air of key pollutants	-9,758	-2,055	-496	86	0	**-12,224**	t SO2
Emission of greenhouse gases	-1,761,539	-539,949	-146,696	40,161	0	**-2,408,023**	t CO2 eq
Consumption and generation of energy	-38,601,335	-16,924,494	-1,433,315	371,476	0	**-56,587,668**	GJ

Table C1.3 Option 3 – MBT1

	Primary Recycling	Secondary Recycling	Residual Treatment	MRF, TS, Composting	Transport	Total	
Effect on resource depletion	-979,005	-87,903	-644,668	13,628	0	**-1,697,948**	t crude oil eq
Emission to air of key pollutants	-9,758	-1,068	-9,170	86	0	**-19,911**	t SO2
Emission of greenhouse gases	-1,761,539	-253,007	-990,701	40,161	0	**-2,965,086**	t CO2 eq

	Primary Recycling	Secondary Recycling	Residual Treatment	MRF, TS, Composting	Transport	Total	
Consumption and generation of energy	-38,601,335	-1,200,979	-2,199,563	371,476	0	**-41,630,401**	GJ

Table C1.4 Option 4 – MBT2

	Primary Recycling	Secondary Recycling	Residual Treatment	MRF, TS, Composting	Transport	Total	
Effect on resource depletion	-979,005	-88,472	19,770	13,628	0	**-1,034,079**	t crude oil eq
Emission to air of key pollutants	-9,758	-1,088	159	86	0	**-10,602**	t SO2
Emission of greenhouse gases	-1,761,539	-254,919	103,925	40,161	0	**-1,872,372**	t CO2 eq
Consumption and generation of energy	-38,601,335	-1,225,155	423,529	371,476	0	**-39,031,485**	GJ

Table C1.5 Option 5 - Autoclave

	Primary Recycling	Secondary Recycling	Residual Treatment	MRF, TS, Composting	Transport	Total	
Effect on resource depletion	-979,005	-397,951	-378,964	13,628	0	**-1,742,292**	t crude oil eq
Emission to air of key pollutants	-9,758	-2,228	-5,775	86	0	**-17,676**	t SO2
Emission of greenhouse gases	-1,761,539	-579,964	-977,546	40,161	0	**-3,278,888**	t CO2 eq
Consumption and generation of energy	-38,601,335	-17,999,957	-1,501,577	371,476	0	**-57,731,393**	GJ

Table C1.6 Option 6 - EfW

	Primary Recycling	Secondary Recycling	Residual Treatment	MRF, TS, Composting	Transport	Total	
Effect on resource depletion	-979,005	0	-245,296	13,628	0	**-1,210,673**	t crude oil eq
Emission to air of key pollutants	-9,758	0	-1,530	86	0	**-11,203**	t SO2
Emission of greenhouse gases	-1,761,539	0	180,104	40,161	0	**-1,541,274**	t CO2 eq
Consumption and generation of energy	-38,601,335	0	-4,889,606	656,873	0	**-43,119,465**	GJ

Table C1.7 Option 7 - Gasification

	Primary Recycling	Secondary Recycling	Residual Treatment	MRF, TS, Composting	Transport	Total	
Effect on resource depletion	-979,005	-30,139	-281,180	13,628	0	**-1,276,696**	t crude oil eq
Emission to air of key pollutants	-9,758	-140	-1,779	86	0	**-11,592**	t SO2
Emission of greenhouse gases	-1,761,539	-82,260	82,709	40,161	0	**-1,720,928**	t CO2 eq
Consumption and generation of energy	-38,601,335	-147,819	-5,612,404	371,476	0	**-43,990,082**	GJ

Table C1.8 Option 8 – Aerobic Digestion

	Primary Recycling	Secondary Recycling	Residual Treatment	MRF, TS, Composting	Transport	Total	
Effect on resource depletion	-979,005	-646,041	-4,021	13,628	0	-1,615,439	t crude oil eq
Emission to air of key pollutants	-9,758	-3,075	-25	86	0	-12,773	t SO2
Emission of greenhouse gases	-1,761,539	-827,190	38,011	40,161	0	-2,510,556	t CO2 eq
Consumption and generation of energy	-38,601,335	-31,730,915	-75,901	371,476	0	70,036,675	GJ

Table C1.9 Option 9 - EfW, CHP

	Primary Recycling	Secondary Recycling	Residual Treatment	MRF, TS, Composting	Transport	Total	
Effect on resource depletion	-979,005	0	-504,181	13,628	0	-1,469,558	t crude oil eq
Emission to air of key pollutants	-9,758	0	-8,441	86	0	-18,113	t SO2
Emission of greenhouse gases	-1,761,539	0	-551,910	40,161	0	-2,273,288	t CO2 eq
Consumption and generation of energy	-38,601,335	0	-18,001,885	371,476	0	-56,231,744	GJ

Assessment of the options against some of the social criteria can only be qualitative and therefore no detailed results are shown here for those criteria.

C2.1 HEALTH EFFECTS

The following modelling results were calculated for health effects from the model described in *Appendix A*. The results were shown in the report as qualitative and not purely the quantative analysis shown below to avoid confusion with the meaning behind the numbers.

Table C2.1 Option 1 – AD1

	Recycling	Windrow Composting	AD	Transfer	Active Landfill
Total Throughput /te	1,335,365	667,122	1,278,646	592,953	4,529,125
Impact per billion tonnes of waste handled	0.0	8.5	4.0	0.0	5.3
Sub Total (Basic Impacts)	0.000	0.006	0.005	0.000	0.024

Table C2.2 Option 2 – AD2

	Recycling	Windrow Composting	AD	Transfer	Active Landfill
Total Throughput /te	1,335,365	667,122	1,958,491	592,953	3,849,281
Impact per billion tonnes of waste handled	0.0	8.5	4.0	0.0	5.3
Sub Total (Basic Impacts)	0.000	0.006	0.008	0.000	0.020

Table C2.3 Option 3 – MBT1

	Recycling	Windrow Composting	MBT	Transfer	Active Landfill
Total Throughput /te	1,335,365	667,122	2,160,723	592,953	3,988,132
Impact per billion tonnes of waste handled	0.0	8.5	11.0	0.0	5.3
Sub Total (Basic Impacts)	0.000	0.006	0.024	0.000	0.021

Table C2.4 Option 4 – MBT2

	Recycling	Windrow Composting	MBT	Transfer	Active Landfill
Total Throughput /te	1,335,365	667,122	1,958,491	592,953	3,849,281
Impact per billion tonnes of waste handled	0.0	8.5	11.0	0.0	5.3
Sub Total (Basic Impacts)	0.000	0.006	0.022	0.000	0.020

Table C2.5 Option 5 - Autoclave

	Recycling	Windrow Composting	Autoclaving	Transfer	Active Landfill
Total Throughput /te	1,335,365	667,122	2,170,025	592,953	3,954,614
Impact per billion tonnes of waste handled	0.0	8.5	4.0	0.0	5.3
Sub Total (Basic Impacts)	0.000	0.006	0.009	0.000	0.021

Table C2.6 Option 6 - EfW

	Recycling	Windrow Composting	Energy from Waste	Transfer	Active Landfill	Hazardous Landfill
Total Throughput /te	1,335,365	667,122	1,958,491	592,953	3,849,281	63,638
Impact per billion tonnes of waste handled	0.0	8.5	68.8	0.0	5.3	5.3
Sub Total (Basic Impacts)	0.000	0.006	0.135	0.000	0.020	0.000

Table C2.7 Option 7 - Gasification

	Recycling	Windrow Composting	Gasification	Transfer	Active Landfill	Hazardous Landfill
Total Throughput /te	1,335,365	667,122	1,958,491	592,953	3,849,281	81,792
Impact per billion tonnes of waste handled	0.0	8.5	17.5	0.0	5.3	5.3
Sub Total (Basic Impacts)	0.000	0.006	0.034	0.000	0.020	0.001

Table C2.8 Option 8 - Aerobic Digestion

	Recycling	Windrow Composting	Transfer	MBT	Active Landfill	Hazardous Landfill
Total Throughput /te	1,335,365	667,122	592,953	2,000,322	3,906,473	0
Impact per billion tonnes of waste handled	0.0	8.5	0.0	11.0	5.3	5.3
Sub Total (Basic Impacts)	0.000	0.006	0.000	0.022	0.021	0.000

Table C2.9 Option 9 - EfW - CHP

	Recycling	Windrow Composting	Energy from Waste	Transfer	Active Landfill	Hazardous Landfill
Total Throughput /te	1,335,365	667,122	1,958,491	592,953	3,849,281	63,638
Impact per billion tonnes of waste handled	0.0	8.5	68.8	0.0	5.3	5.3
Sub Total (Basic Impacts)	0.000	0.006	0.135	0.000	0.020	0.000

C2.2 EMPLOYMENT

Table C2.10 Option 1 – AD1

	Recycling MRF	Windrow Composting	Anaerobic Digestion	Transfer	Active Landfill
Total Throughput /te	1,335,365	667,122	1,278,646	592,953	4,529,125
Skilled Employment	6.0	6.0	2.8	3.0	7.2
Unskilled Employment	33.0	12.0	7.0	13.0	9.6
Ancillary Jobs	30.3	0.0	0.0	13.5	0.0
Construction Jobs	3.6	1.4	9.1	1.8	1.4
Total	**73.0**	**19.4**	**19.0**	**31.3**	**18.2**

Table 2.11 Option 2 – AD2

	Recycling MRF	Windrow Composting	Anaerobic Digestion	Transfer	Active Landfill
Total Throughput /te	1,335,365	667,122	1,958,491	592,953	3,849,281
Skilled Employment	6.0	6.0	2.8	3.0	7.0

	Recycling MRF	Windrow Composting	Anaerobic Digestion	Transfer	Active Landfill
Unskilled Employment	33.0	12.0	7.0	13.0	9.3
Ancillary Jobs	30.3	0.0	0.0	13.5	0.0
Construction Jobs	3.6	1.4	9.1	1.8	1.4
Total	**73.0**	**19.4**	**19.0**	**31.3**	**17.6**

Table C2.12 Option 3 – MBT1

	Recycling MRF	Windrow Composting	MBT	Transfer	Active Landfill
Total Throughput /te	1,335,365	667,122	2,160,723	592,953	3,988,132
Skilled Employment	6.0	6.0	5.6	3.0	7.1
Unskilled Employment	33.0	12.0	19.7	13.0	9.5
Ancillary Jobs	30.3	0.0	9.8	13.5	0.0
Construction Jobs	3.6	1.4	9.1	1.8	1.4
Total	**73.0**	**19.4**	**44.3**	**31.3**	**17.9**

Table C2.13 Option 4 – MBT2

	Recycling MRF	Windrow Composting	MBT	Transfer	Active Landfill
Total Throughput /te	1,335,365	667,122	1,958,491	592,953	3,849,281
Skilled Employment	6.0	6.0	5.6	3.0	7.0
Unskilled Employment	33.0	12.0	19.7	13.0	9.3
Ancillary Jobs	30.3	0.0	8.9	13.5	0.0
Construction Jobs	3.6	1.4	9.1	1.8	1.4
Total	**73.0**	**19.4**	**43.4**	**31.3**	**17.6**

Table C2.14 Option 5 – Autoclaving

	Recycling MRF	Windrow Composting	Autoclaving	Transfer	Active Landfill
Total Throughput /te	1,335,365	667,122	2,170,025	592,953	3,954,614
Skilled Employment	6.0	6.0	5.6	3.0	7.1
Unskilled Employment	33.0	12.0	22.5	13.0	9.5
Ancillary Jobs	30.3	0.0	9.9	13.5	0.0
Construction Jobs	3.6	1.4	9.1	1.8	1.4
Total	**73.0**	**19.4**	**47.1**	**31.3**	**17.9**

Table C2.15 Option 6 - EfW

	Recycling MRF	Windrow Composting	Energy from Waste	Transfer	Active Landfill	Hazardous Landfill
Total Throughput / te	1,335,365	667,122	1,958,491	592,953	3,849,281	63,638
Skilled Employment	6.0	6.0	3.1	3.0	7.0	2.3
Unskilled Employment	33.0	12.0	20.1	13.0	9.3	3.1
Ancillary Jobs	30.3	0.0	0.0	13.5	0.0	0.0
Construction Jobs	3.6	1.4	13.6	1.8	1.4	0.5
Total	**73.0**	**19.4**	**36.8**	**31.3**	**17.6**	**5.9**

C2.16 Option 7 - Gasification

	Recycling MRF	Windrow Composting	Gasification	Transfer	Active Landfill	Hazardous Landfill
Total Throughput / te	1,335,365	667,122	1,958,491	592,953	3,849,281	81,792
Skilled Employment	6.0	6.0	8.5	3.0	7.0	2.3
Unskilled Employment	33.0	12.0	38.6	13.0	9.3	3.1
Ancillary Jobs	30.3	0.0	0.0	13.5	0.0	0.0
Construction Jobs	3.6	1.4	13.6	1.8	1.4	0.5
Total	**73.0**	**19.4**	**60.8**	**31.3**	**17.6**	**5.9**

Table C2.17 Option 8 - Aerobic Digestion

	Recycling MRF	Windrow Composting	Transfer	MBT	Active Landfill	Hazardous Landfill
Total Throughput / te	1,335,365	667,122	592,953	2,000,322	3,906,473	0
Skilled Employment	6.0	6.0	3.0	5.6	7.0	0.0
Unskilled Employment	33.0	12.0	13.0	19.7	9.3	0.0
Ancillary Jobs	30.3	0.0	13.5	9.1	0.0	0.0
Construction Jobs	3.6	1.4	1.8	9.1	1.4	0.0
Total	73.0	19.4	31.3	43.5	17.6	0.0

Table C2.18 Option 9 - EfW, CHP

	Recycling MRF	Windrow Composting	Energy from Waste	Transfer	Active Landfill	Hazardous Landfill
Total Throughput / te	1,335,365	667,122	1,958,491	592,953	3,849,281	63,638
Skilled Employment	6.0	6.0	3.1	3.0	7.0	2.3
Unskilled Employment	33.0	12.0	20.1	13.0	9.3	3.1
Ancillary Jobs	30.3	0.0	0.0	13.5	0.0	0.0
Construction Jobs	3.6	1.4	13.6	1.8	1.4	0.5
Total	73.0	19.4	36.8	31.3	17.6	5.9

Annex D

Strategic Environmental Assessment

CONTENTS

1 NON-TECHNICAL SUMMARY

1.1 INTRODUCTION

The Department for Environment, Food and Rural Affairs (Defra) has commissioned Environmental Resources Management Limited (ERM) to undertake a Strategic Environmental Assessment (SEA) in relation to the development of a Joint Municipal Waste Management Strategy (JMWMS) for the South Tyne and Wear Waste Management Partnership. The JMWMS and SEA have been prepared through a process of joint working with the three unitary authorities in the Partnership: Gateshead Council, Sunderland City Council and South Tyneside Council.

The Partnership agreed in May 2006 that they should work together to procure new waste management services with private and voluntary sector partners. In order to meet this aim, it is recognised that the Partnership needs to develop a JMWMS.

As part of the process of developing the JMWMS, the strategy must be subject to a Strategic Environmental Assessment (SEA). This Environmental Report sets out the results of the SEA process, showing the likely significant impacts of the strategy and of the options which have been considered as part of developing the JMWMS. The Environmental Report forms part of the draft strategy to help inform consultation on the proposals made in the strategy document by showing the likely effects of implementing the JMWMS.

1.2 OUTLINE OF THE STRATEGY AND ITS RELATIONSHIP WITH OTHER PLANS AND PROGRAMMES

The JMWMS aims to:

- provide a route map to enable the authorities to meet statutory recycling and composting targets;
- guide the authorities in meeting targets for diverting biodegradable municipal waste from landfill;
- provide estimates of future municipal waste needing to be handled in future years;
- ensure the authorities are best placed to gain efficiencies through joint procurement;
- place plans for waste management on a consistent footing with guidance issued by Defra.

The JMWMS must be aligned with existing policy on waste management at national, regional and local level and it also aims to be in line with emerging legislation and guidance. The policy framework is summarised in *Section 2.3*.

The JMWMS will also guide the Partnership in procuring private and voluntary sector services to enable the delivery of waste management services and will set the policy framework to govern those future activities. Action Plans will also be produced to guide the Partnership in implementing the strategy and delivering services on the ground.

1.3 SUMMARY OF SIGNIFICANT ISSUES AND PROBLEMS IDENTIFIED

The significant issues which have been identified through the review of available baseline data are summarised in the following table.

Table 1.1 Significant Environmental, Social and Economic Issues for South Tyne and Wear

Category	Key Issues
Air quality	Three Air Quality Management Areas (AQMAs) have been designated across the study area, which represent urban areas suffering from congestion where a buildup of traffic-based NO_2 pollution may reach levels of concern. Most of the rest of South Tyne and Wear appears to have good air quality according to the models. Total per capita greenhouse gas emissions are below the UK average, and from waste treatment and disposal constitute approximately 0.1% of the total for South Tyne and Wear.
Water quality & availability	In 2004 84% of rivers in the North East region were of good or fair chemical water quality, above the England average of 70%, with biological water quality being 82%, again above the England average of 62%. Water resources in the North East are generally healthy. There are 33 designated bathing water sites in the North East, with all of the region's coastal bathing waters being above the required standard.
Waste	In 2005/06, the South Tyne and Wear area generated a total of 368,703 tonnes of municipal waste, of which 80% was landfilled. Commercial/industrial and construction/demolition waste are each larger waste streams than the municipal solid waste stream. 9%of C&D waste was landfilled in 2003, however, no data was available for C&I waste disposal routes.
Landscape	Currently 18% of land within the North East region is designated as Areas of Outstanding Natural Beauty but there are no AONBs within South Tyne and Wear. 14,580ha of land within South Tyne and Wear is designated as green belt, and the Great North Forest covers approximately 250km² of urban fringe countryside across Tyne and Wear and north-east Durham. The Durham Heritage Coast stretches into Sunderland.

Category	Key Issues
Land quality	In 2005, the North East was the region with the highest proportion of previously developed land at 7.4%, compared with the average for England of 5.5%. No data were available for Gateshead.
Biodiversity	The study area contains only one internationally designated site, the Northumbria Coast SPA and Ramsar site(1), although the North East region as a whole has a number of significant protected sites of international, national and local designation. South Tyne and Wear contains 44 Sites of Special Scientific Importance, 97% of which (by land area) are in favourable or unfavourable recovering condition, compared to a national target of 95%.
Transport	Car ownership in Tyne and Wear has been significantly below the national average therefore the potential for future growth in car ownership may be greater than the rest of the country. Between 1994 and 2004 the total distance travelled on the conurbations roads increased by 15%. Heavy goods vehicles comprise about 4% of total traffic.
Built, cultural and archaeological heritage	The North East has 1,380 Scheduled Ancient Monuments, 12,207 Listed Buildings, and 52 Historic Parks and Gardens and 6 Battlefields and 279 conservation areas. The North East has two World Heritage Sites – Hadrian's Wall and Durham Cathedral and Castle, and a prospective World Heritage Site - Jarrow/ Monkwearmouth.
Amenity	A circular area from Newcastle to Middlesbrough is marked as a 'hotspot' for fly-tipping by the Environment Agency. In 2005/06 over 82,000 fly tipping incidences were reported by local authorities in the North East, around 8% of the English average. There is significant night light pollution in populous areas and from 1993 to 2003, the region's night skies got 28% brighter. The North East has the largest areas of uninterrupted and tranquil space in England, although being urban, South Tyne and Wear has a reduced level of tranquillity compared to the rest of the region. No information was available on noise pollution.
Health	Census and data for 2001 from the Office of the Deputy Prime Minister indicates health is relatively even across the South Tyne and Wear area, although it is worse than the national average.
Material assets	There are areas of South Tyne and Wear that are subject to flood risk. These areas are defined by the Environment Agency (EA) and are used by the EA, local authority planners, the emergency services, insurance industry and the public to assist decision-making on control of development within the floodplain. Property prices in South Tyne and Wear are generally cheaper than the North East regional average.
Population	The total populations of each of the three authorities are quite varied, with Sunderland having the highest population and both Sunderland and South Tyneside having a very high population density.
Deprivation	South Tyne and Wear is relatively deprived in comparison to other areas, and all three authorities are of a similar level of deprivation.
Economy	Gross Value Added (GVA, a measure of economic output) and GVA per head generated in Tyne and Wear are increasing steadily, although per capita GVA is below the national average. The North East's growth rate in 2005 was equal highest of all the regions, jointly with London and the East Midlands.

(1) Ramsar sites are wetlands of international importance designated under the Ramsar Convention. In the UK, the first Ramsar sites were designated in 1976. Compared to many countries, the UK has a relatively large number of Ramsar sites, but they tend to be smaller in size than many countries. The initial emphasis was on selecting sites of importance to waterbirds within the UK, and consequently many Ramsar sites are also Special Protection Areas (SPAs) classified under the Birds Directive.

Category	Key Issues
Employment	From June-August 1999 to June-August 2004, the employment rate has increased in Gateshead and Sunderland, although has decreased slightly in South Tyneside. The employment rate is the number of people employed as a percentage of the work force. The largest sector for numbers in employment in South Tyne and Wear is in the distribution, hotels and catering and repairs industry. Manufacturing is also a significant sector in terms of employment. The area is below the English average in financial and business services.
Access to services	Each of the three councils provide fortnightly collections of mixed kerbside recyclables for paper, glass, cans covering over 95% of households. The councils also collect garden waste on a fortnightly basis (except during the winter months) covering between half and three quarters of households. There are also a large number of bring sites throughout South Tyne and Wear providing facilities for residents to recycle a range of materials.

1.3.1 Areas Likely to be Significantly Affected

The SEA has considered the areas likely to be significantly affected by implementation of the JMWMS, in order to identify the sustainability characteristics of those areas. In reality, the effects of implementation of the JMWMS can be considered on two levels.

First, the overall effects will be spread throughout South Tyne and Wear, because waste arises almost everywhere, waste transport will occur throughout the area and the some of the impacts of waste management activities will be widespread and borne by all. In this case, the relevant sustainability characteristics are those set out in the baseline above.

On another level, some of the effects of the management of waste will occur in the vicinity of waste management sites. The JMWMS does not address issues of site location, and therefore to a large extent it has not been possible in the assessment to deal with site-specific issues. The assessment has considered issues which may arise in the vicinity of sites in general, but consideration and control of issues at individual sites is the responsibility of the Local Development Frameworks and site licensing/permitting.

1.3.2 Internationally Designated Nature Conservation Sites

The North East region contains a large number of sites designated for their international nature conservation importance, however only one is within the Partnership area, the Northumbria Coast SPA and Ramsar site, and a further five within 20km of the Partnership area. Some of these are subject to pressures or have vulnerabilities although most are not connected with potential issues arising from waste management activities. However, at two sites there are pressures or vulnerabilities which are relevant to waste management activities or developments, and to which waste management could potentially contribute . These are:

- Acidic and nitrogen deposition at North Pennine Moors SPA;
- General disturbance and damage at Teesmouth & Cleveland Coast SPA

1.4 SUSTAINABLE DEVELOPMENT OBJECTIVES RELEVANT TO MWMS

The environmental objectives for the SEA were identified by reviewing relevant policy documents, both statutory and non-statutory, at the national, regional, sub-regional and local authority. The review identified and extracted any environmental policy objectives which are relevant to the JMWMS and which will set the environmental policy framework with which the strategy must conform. The review also included strategies and plans relevant to economic and social policy likely to be relevant to municipal waste management issues.

The list of policy objectives identified in the review was then used to derive a set of assessment criteria for the SEA. The proposed strategy and relevant options were assessed against these criteria to identify and evaluate the likely effects of the strategy and options. *Table 4.1* lists the criteria used to assess the different options.

1.5 LIKELY SIGNIFICANT EFFECTS OF THE JMWMS

The likely significant effects of the strategy were considered in two ways, the effects of the strategy itself, and the effects of different options for managing waste within the framework of the strategy.

1.5.1 Significant Effects of the Options

Three sets of options were developed in line with national guidance, with a number of options of each type:

- options for minimisation and reuse;
- options for recycling and composting; and
- options for residual treatment

Minimisation Options

Three minimisation options were developed and appraised:

Option 1: Do nothing
Option 2: Implement services that influence household behaviour:

- home composting;
- re-useable nappies;
- reuse;
- waste aware (SMART) shopping;
- unwanted mail; and

- product service businesses.

Option 3: Implement all programmes that are influenced by promotional and educational programmes:

- home composting;
- trade waste diversion;
- re-useable nappies;
- reuse;
- waste aware (SMART) shopping;
- unwanted mail; and
- product service businesses.

The results of the assessment show that options 2 and 3 both offer significant benefits over the status quo. However, there is little difference between options 2 and 3 in terms of their sustainability impacts. The differences are that option 3 delivers additional net savings in costs, and will also contribute to awareness raising amongst a slightly broader group of people, i.e. those disposing of trade waste in addition to the general public.

Recycling and Composting Options

Nine recycling and composting options were developed and appraised:

- Baseline: Accept the prevailing participation levels of natural participation (50%)

- Option 1: Encourage increased participation by a range of promotional and educational activities (70%)

- Option 2: Enforcement through EPA section 46 (90%)

- Option 3: Collect a wider range of materials from bring sites (plastic)

- Option 4: Introduction of non household (commercial) recycling

- Option 5: Collect wider range of materials at the kerbside (plastic)

- Option 6: Collect wider range of materials at the kerbside (textiles)

- Option 7: Collect wider range of materials at the kerbside (card)

- Option 8: Collect wider range of materials at the kerbside (kitchen waste)

- Option 9: Segregated weekly collections for waste and recyclable materials (paper, glass, cans, textiles and plastic bottles)

The results of the assessment show that the option that considers introducing segregated weekly collections clearly has the greatest potential benefit as it is one of the options with the highest recycling and composting level. On the other hand it is also potentially the most expensive to implement given the need for extensive public consultation and, potentially, the need for enforcement to ensure effective operation.

Option 2 is the other option with a potentially high performance as judged by the assessment criteria. The difference in performance of these two options, which otherwise have a similar levels of environmental benefit, is due to the level of composting. Option 2 incorporates an increase in participation in all recycling and composting collections. Option 9 sees an increase in dry recyclables above that of Option 2, but it has been assumed that it does not increase green waste collections. Were the increase in greenwaste collection to be included in a scheme like that in Option 9, then similar results to that of Option 2 may be found, however it is likely that any increase in green waste through segregated weekly collections would not be at the same level as Option 2. The associated environmental benefits of avoiding the use of virgin materials for the recyclables collected are therefore greater in Option 9. Both of these options however are controversial in their introduction as there may be opposition to them due to potential issues that may arise. They could increase incidents of fly tipping, thus also affecting costs. These options would also rely heavily on behavioural changes from residents for them to be implemented successfully.

The other options have relatively limited impacts; positive and negative. This is to be expected given that they do not involve large changes to the service. Although there is no clear 'third best' option, after Options 2 and 9, Option 1 scores highest for a number of criteria (eg levels of recycling/recovery, diversion of biodegradable waste from landfill).

Residual Treatment Options

The following residual options have been developed and appraised:

- Baseline – Accept the current landfilling levels and continue with no residual treatment (used as a comparator rather than a realistic option)
- Option 1 – Anaerobic digestion of putrescible wastes
- Option 2 – Anaerobic digestion of all wastes
- Option 3 – Mechanical Biological Treatment with output of RDF for use in off-site energy from waste (EfW) plant
- Option 4 – Mechanical Biological Treatment with output stabilised for use in landfill
- Option 5 – Autoclaving (output to EfW)

- Option 6 – Energy from Waste
- Option 7 – Advanced Thermal Treatment
- Option 8 – Aerobic digestion
- Option 9 – EfW with Combined Heat and Power (CHP)

The results of the assessment show that autoclaving scores highly on a number of criteria, including emissions of greenhouse gases and other emissions to air, overall energy balance, resource efficiency and minimisation of potential effects on amenity. It also performs well in terms of delivering the waste hierarchy, as it recycles/composts relatively high levels of waste, recovers high levels of value and landfills low tonnages. It is also relatively cost-effective and being non-thermal generates no additional hazardous waste. However, the technology it is not very reliable and it must be noted that it is not yet easily deliverable in this country. Coupled with the doubts over the destination of the residues, this results in a somewhat negative assessment in terms of its deliverability.

MBT with RDF sent to EfW also performs well against a number of criteria, specifically on lower acidifying emissions, reduction of waste to landfill, promoting resource efficiency and minimising potential effects on amenity. It is also relatively cost effective and is reasonably deliverable as a technology. However, it does not perform particularly well on other criteria, notably it does not allow a particularly high level of recycling/composting. MBT with RDF to landfill is also deliverable and relatively cost-effective, but it does not perform well against other criteria, and again does not achieve a particularly high level of recycling/composting.

Anaerobic digestion of putrescible wastes achieves relatively high levels of recycling and composting, and being non-thermal produces no additional hazardous waste, otherwise it does not perform particularly well or badly against any of the appraisal criteria. Anaerobic digestion of all wastes also achieves relatively high levels of recycling/composting and also generates no additional hazardous waste. It also results in a relatively high level of energy saving and is relatively cost-effective.

Energy from Waste (EfW) and Advanced Thermal Treatment (ATT) both rely on combustion of waste as the main treatment approach and so will generate additional hazardous waste. Additionally, neither EfW nor ATT compares particularly well in terms of cost-effectiveness or resource efficiency. Although both perform well in terms of levels of recovery, neither will add substantially to levels of recycling and composting. EfW would also result in a slight increase in greenhouse gas emissions. ATT is an emerging technology and, like autoclaving, is not yet proven in this country. It therefore scores relatively less well on deliverability, unlike EfW which is regarded as deliverable. EfW can also be thought more difficult to deliver in planning

terms than other options, although the difference between options is unlikely to be significant.

EfW with CHP performs similar to EfW without CHP, but with added benefits of reduction in depletion of resources, levels of energy generation, and reduction in greenhouse gases and other emissions. These benefits are related to the reduced need for power and heat generation. This option therefore performs much better in comparison to others in the matrix than EfW without CHP, although there are questions about the degree of deliverability related to the timing of construction of infrastructure to take the generated heat.

Aerobic digestion achieves relatively high levels of recycling and composting, and although it has a relatively high level of energy saving and contributes well to resource efficiency, it does not achieve as great a landfill reduction as autoclaving or MBT with RDF to EfW. However, it scores relatively well on cost-efficiency and is regarded as a deliverable technology.

Cost was seen as an important criterion by the Partnership and options 2 (AD of all wastes), 3 (MBT with RDF to EfW), 5 (autoclave) and 8 (aerobic digestion) perform best against this criterion. It must be remembered, however, that the costs provided are indicative and taken from average data for similar plant nationally and internationally - these are not exact costs that STWWMP should expect to pay.

1.5.2 Significant Effects of the Objectives and Policies

Objectives

There are no identified potential conflicts between the strategy's objectives and sustainable development objectives, although there are a number of areas where the effects of the strategy on sustainable development objectives is uncertain. One amendment to the objectives is recommended, to the objective on consideration of the most appropriate methods and technologies for dealing with waste. It is unclear what is meant by 'appropriate' and the implications could be different depending on how this is defined. It would be better to include the words 'and sustainable' as policy on what constitutes sustainable is more clearly defined and set out explicitly in this SEA.

Policies

The key significant impacts of the strategy are in moving waste management activities up the waste hierarchy, in other words the strategy will reduce the landfill of waste, including biodegradable waste, by, aiming to reduce the amount of waste generated and increasing reuse, recycling, composting and recovery of value.

Moving waste up the hierarchy will have a number of other benefits, including ensuring any risks to health, although small, are minimised and reducing the likelihood of adverse impacts on water quality. There is a clear

emphasis on taking account of climate change and reducing the emissions of greenhouse gases from waste-related activities.

The impacts on levels of waste transport are less clear. There is a clear commitment to minimising waste-related transport. However, increased recycling may result in more recyclables being transported out of the Partnership area if sufficient capacity is not available locally, which is likely to increase the amount of waste transport and any associated effects on congestion and amenity. However, the strategy contains a commitment to supporting the development of local capacity where practicable. The scale of effects on waste transport depends on where facilities are located in relation to the sources of waste and waste infrastructure, the transport network and the existing traffic levels, which is unknown and outside the scope of the strategy.

The strategy is likely to have a positive impact on air emissions. Reducing the quantity of waste requiring treatment and disposal will help to reduce emissions from treatment plant and landfill sites. The impacts of these emissions are unlikely to be significant for air quality overall in South Tyne and Wear. There may be issues of air quality for particular locations and this should be assessed in locational choices and be the subject of EIA for proposed facilities. Waste management activities also have the potential for biodiversity impacts. The significance of any impacts will vary with location and should be assessed in site selection and in EIAs for planning applications.

The effect on economic growth is somewhat uncertain. Moving the management of waste up the waste hierarchy will help to promote potentially innovative economic development, which could be within South Tyne and Wear which is supported by the strategy. Such a commitment would also help to avoid the potential adverse impacts on the capacity to achieve self-sufficiency from increased recycling, composting and treatment requirements. There are also opportunities to promote social enterprises in the delivery of waste services and this is positively promoted by the strategy. The effect on the costs of waste management is more uncertain and is examined in more detail in the options appraisal.

There may be impacts on local communities through the construction and operation of new waste facilities. However, there will also be benefits to communities near landfill sites which will see a reduction in quantities of waste being managed although this may also result in a longer time for completion and restoration of any individual landfill site. Improving accessibility of facilities and increased education and awareness will contribute to reducing the likelihood of fly-tipping which will have benefits for communities as well as the environment.

There are a number of potential effects which depend on implementation and therefore are not clear at this stage. These include the potential for generation of renewable energy and hazardous waste, which depend on the residual treatment technology used, and potential landscape and visual impacts which depend on the design and location of facilities.

Achievement of the strategy's targets is strongly dependent on improving the accessibility of recycling services to the public, on increased levels of public education and awareness to promote participation in waste-related activities, and on developing and supporting markets for recyclables, all of which are recognised and addressed by the strategy. Deliverability is also dependent on compatibility with the planning framework which is similarly recognised and addressed, and on the availability of outlets for treatment process outputs.

1.6 MITIGATION AND ENHANCEMENT

A number of recommendations have been made during the SEA process, most of which have been taken up and amendments made to the content of the strategy wherever relevant. These are listed in *Section 1.8* below. As a result, the remaining recommendations are for actions which are largely outside of the scope of the JMWMS but are more appropriately addressed within the planning framework. These are:

- Choices for location of facilities should take into account the potential impacts on waste transport distances, and of associated impacts on amenity and congestion, both locally and for ST&W as a whole. Waste transport should be minimised where practicable.

- Choice of location for facilities should pay particular attention to the impacts of development on biodiversity and air quality, from both facilities and transport. The same should apply to EIAs for planning applications.

- Ensure the impact on communities is considered in development control policy.

- LDFs should encourage opportunities for movement of waste by rail and water wherever possible.

- Potential geodiversity sensitivities should be taken into account in selection of suitable sites.

- Ensure protection of landscapes in LDFs

- Ensure LDFs take account of potential impacts of waste treatment facilities on amenity.

1.7 MONITORING RECOMMENDATIONS

The report sets out a series of recommendations for monitoring the effects of implementing the strategy, including suggesting a number of indicators for undertaking the monitoring. Monitoring of strategy implementation should focus on its effectiveness in several key areas:

- The achievement in managing waste at each level of the waste hierarchy, including in relation to past performance and targets: arisings, hazardous waste arisings, reuse, recycling, composting, residual treatment, energy recovery and landfill, including landfill of biodegradable municipal waste;
- The level of self-sufficiency in dealing with waste, by type of management method, and number of local enterprises;
- Levels of service accessibility;
- Reporting on the councils' waste-related schemes and initiatives, including costs and effectiveness;
- The cost of waste management services, including expenditure on particular types of schemes, services or activities;
- Operational issues: compliance with permit conditions; fly-tipping incidences; energy generation; vehicle movements.

1.8 THE DIFFERENCE THE SEA PROCESS HAS MADE TO DATE

The SEA has influenced the policy content of the JWMWS through making recommendations for mitigation. The following amendments have been made as a direct result of previous iterations of the appraisal process and recommendations arising.

To strengthen and clarify the commitment to the waste hierarchy:

- Policy has been added to recover energy from municipal waste wherever practicable and in line with the waste hierarchy.
- Policy has been added to treat residual waste to *recover both energy and materials*.
- Policy has been added to *maximise* reuse, recycling and composting before treatment.
- Policy has been reworded to *minimise* the landfill of biodegradable waste in order to reduce methane emissions, and policy added to require the capture of landfill gas from disposal and its use for energy recovery.

To promote the achievability of self-sufficiency in waste management capacity:

- The strategy now gives policy support to the development of new recycling, composting and residual treatment capacity within ST&W wherever practicable.

To strengthen commitment to sustainable development objectives to protect and enhance the environment:

- The words "serious or irreversible" have been deleted from policy 2 and from the strategy's overarching objectives.
- The words "and sustainable" have been added to policy 2 (second bullet point) and to the strategy objectives in point 2.

To address identified gaps in policy

- Policy has been included to support and promote the involvement of social enterprises in provision of waste management services.
- Policy has been added to ensure that capacity is available to deal appropriately with hazardous waste arisings, either directly from households or from treatment of municipal waste.
- Policy has been included to ensure that visual impacts are minimised in the provision of both services and facilities.

To ensure deliverability of the JMWMS

- The strategy contains a commitment to monitor progress in the development and adoption of LDFs and continued dialogue with the planning authorities, with the aim of ensuring that the strategy and emerging LDFs are mutually informed and support the delivery of appropriate facilities to ensure deliverability of the waste hierarchy.

- The strategy also recognises the need to ensure support within LDFs to minimise the generation of waste from new developments thereby ensuring their contribution to waste reduction.

To strengthen steps towards sustainable procurement:

- Policy has been clarified that commitments on procurement of goods and services extends to all council procurement, not just procurement of waste services.

The SEA has also assisted in the appraisal of options. The set of appraisal objectives and criteria was developed through the SEA and issued for consultation with stakeholders. As a result of the consultation the appraisal framework was refined. The options have been appraised against this framework.

Finally, the SEA has been the vehicle for raising wider stakeholder awareness of the strategy. Through consultation on the Scoping Report, stakeholders outside the partnership have been made aware that the strategy is in

development and were provided with the opportunity to influence its development. The stakeholders who were consulted are listed in *Box 2.1.*

2 INTRODUCTION

2.1 PURPOSE OF THE SEA

The Department for Environment, Food and Rural Affairs (Defra) has commissioned Environmental Resources Management Limited (ERM) to undertake a Strategic Environmental Assessment (SEA) in relation to the development of a Joint Municipal Waste Management Strategy (JMWMS) for the South Tyne and Wear Waste Management Partnership. The JMWMS and SEA have been prepared through a process of joint working with the three unitary authorities in the Partnership: : Gateshead Council, Sunderland City Council and South Tyneside Council.

The Partnership agreed in May 2006 that they should work together to procure new waste management services with private and voluntary sector partners. In order to meet this aim, it was recognised that the Partnership needed to develop a Joint Municipal Waste Management Strategy (JMWMS).

The JMWMS aims to:

- provide a route map to enable the authorities to meet statutory recycling and composting targets;
- guide the authorities in meeting targets for diverting biodegradable municipal waste from landfill;
- provide estimates of future municipal waste needing to be handled in future years;
- ensure the authorities are best placed to gain efficiencies through joint procurement;
- place plans for waste management on a consistent footing with guidance issued by Defra.

The JMWMS has been produced in line with Defra's Practice Guide for the Development of Municipal Waste Management Strategies.

As part of the process of developing the JMWMS, the strategy has been subject to a Strategic Environmental Assessment (SEA) under the provisions of the Environmental Assessment of Plans and Programmes Regulations 2004 (SI no 1633). These Regulations implement the European Union SEA Directive[1] in England and Wales, which requires a strategic assessment of the environmental impacts of a range of plans and programmes to be undertaken. This assessment is to be used as a tool for integrating environmental considerations into the preparation of a plan or strategy, in this case the JMWMS, by considering the effects of implementing the strategy during its preparation and before its adoption. The SEA is required systematically to

(1) [1] Directive 2001/42/EC of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment

assess the strategy against a list of environmental criteria. It should identify, describe and evaluate the likely significant environmental effects of implementing the strategy, and reasonable alternatives taking into account the objectives and the geographical scope. These issues must be taken into account in the preparation of the strategy.

This Environmental Report sets out the results of the assessment process, showing the likely significant impacts of the strategy and of the options which have been considered as part of developing the strategy. A number of recommendations are made for ways in which the likely adverse effects can be mitigated, and for monitoring the effects of implementing the strategy. The Environmental Report accompanies the draft strategy which has been put out for public consultation, with the purpose of informing that consultation so that the likely effects of the proposals can be understood more clearly.

2.2 PROCESS

The SEA of the proposed JMWMS has been undertaken by ERM to meet the requirements of the European Union's Directive on the environmental assessment of plans and programmes (Directive 2001/42/EC) which came into force in England & Wales in July 2004 through the Environmental Assessment of Plans and Programmes Regulations 2004 (Statutory Instrument 2004 No. 1633).

2.2.1 Scoping

Scoping work on the SEA was carried out in February and March 2007, which involved the collection of baseline data on environmental, economic and social conditions in South Tyne and Wear. It also included a review of all relevant plans, policies and programmes at national, regional, sub-regional and local authority level to set the policy context within which the JMWMS will sit and in particular to identify environmental, economic and social policy objectives with which it must comply or which it will contribute towards achieving.

Arising from the policy review and the analysis of baseline data, a number of appraisal objectives and criteria were drawn up against which the strategy was assessed in order to make a systematic assessment of the likely effects of the strategy in respect of the key issues for the area and the sustainable development policy framework governing the strategy.

A Scoping Report was produced and issued in April 2007 for consultation. This set out information on the baseline data collected, the policy review, the appraisal objectives and criteria and the approach to developing options. The organisations that were consulted are listed in the following box.

Box 2.1 Consultees on SEA Scoping Report

Statutory Consultees
Environment Agency, Natural England, English Heritage

Partnership Authorities
Gateshead Council, Sunderland City Council, South Tyneside Council

Neighbouring Authorities
North Tyneside Council, Newcastle City Council, Northumberland Council, Durham County Council

Regional Bodies
Government Office for the North East, One North East

Others
The Highways Agency

A number of comments were received and amendments were incorporated into the baseline and appraisal framework wherever relevant. The comments and response of the SEA are summarised in *Table 2.1* .

Table 2.1 ***Comments on Scoping Report and Response to Comments***

Respondent	Comment	Response
Highways Agency	All development proposals and proposed allocations should be positioned to reduce the need to travel. Where developments affect the trunk road network, appropriate mitigation will be necessary (Highways Agency)	The appraisal framework contains an objective to minimise waste transport. The strategy and options will be assessed for their effect on waste transport and mitigation recommended to minimise this where possible. Note that the JMWMS is not expected to identify locations for developments; this will fall within the remit of Local Development Frameworks.
English Heritage	Please find enclosed a set of notes in respect of the scoping stage of SEA-compliant sustainability appraisals of plans and programmes. (English Heritage)	The notes give extensive and detailed recommendations for scoping reports in general. No specific comments on the scoping report for the SEA of the JMWMS were made. The notes have been studied and it is considered that the scoping report has covered all relevant aspects to an appropriate level of detail and specificity.
Northumberland County Council	The baseline information reflects our understanding of the current situation and the significant environmental issues have been identified.	Noted
	The report covers all relevant objectives except Defra's criteria for Waste PFI Credit funding. This should be considered as it will impact upon the procurement options available to implement the strategy.	The relevant Defra PFI Credit criteria cover: recycling/composting performance standards; diversion of BMW from landfill; waste reduction; residual treatment only where recycling is not possible; compliance with SD principles including those of LA21 strategies; economic cost; and meeting national and EU targets. These criteria will be covered under the following appraisal objectives: To increase recycling and composting; To reduce landfill of biodegradable municipal waste; To reduce the amount of waste produced; To promote economic growth (costs of waste management); as well as the set of all objectives more generally which reflect SD principles including the three LA21 strategies. Particular note will be made of the Defra criteria to ensure that the SEA informs the appraisal of options from this perspective.

Respondent	Comment	Response
	The appraisal objectives are comprehensive but should also include 'Compliance with all Government recycling targets' and 'Compliance with EU Landfill Directive BMW diversion targets'. Some of the proposed appraisal criteria are also relatively subjective and further consideration should be given as to how they can be measured in a more quantitative way to make the appraisal more robust i.e. promotion of measures to reduce impacts of climate change could actually be revised to 'global warming potential of proposed option'	Performance against targets for recycling and landfill diversion targets will be assessed under the objectives to increase recycling and composting and to reduce landfill of biodegradable municipal waste. The Scoping Report notes that effects will be quantified wherever possible; this will help to ensure that the SEA is robust. It is considered that 'global warming potential of proposed option' risks being too specific to adequately cover what could be a range of possible sources of effects and mitigation responses, some of which may not be quantifiable in terms of GWP.
	It is noted that the work on developing the options for the JMWMS will take place during the next stage of the project, ideally the options should have been identified at a strategic level as part of this scoping report and this is considered to be a significant weakness. Clearly this lack of detail will need to be addressed before undertaking the SEA or it will have no real meaning or value.	Options were not developed at the time the Scoping Report was produced, but a discussion of the approach to options was included to inform consultees and give an opportunity to comment on that approach. Options will be developed before undertaking the SEA.
	It is stated that the location of new facilities is not within the remit of the JMWMS, however consideration should be given to the likely land use requirements of the options being considered, availability of suitable development sites and compatibility with the local planning framework to ensure that options being considered are capable of being delivered in practice.	We propose to include a new appraisal objective to address this issue: 'To ensure deliverability of waste management systems'. This will cover both technological and planning issues and potential constraints.
Durham County Council	Baseline is sound and informative. Scoping report has covered all relevant issues. All relevant objectives are covered. The approach for identifying alternatives is fine. We are happy with the approach to the Environmental Report. A good comparison is made with objectives for SAs of UDPs/LDFs.	Noted

Respondent	Comment	Response
One NorthEast	The criteria and baseline data are reasonable and appropriate The data is the latest which is available, although it is assumed that some will be disaggregation of national data. The scoping study has reviewed the most appropriate strategies with the exception of any relevant regional health strategies. The process for developing alternative options is appropriate	Noted. There is currently no Regional Health Strategy, although publication was expected in April 2007. The SEA contains an objective to protect human health.
Natural England	I attach Annex 1 which sets out generic information which Natural England expect to see included in the SEA process across North East. Please contact us if the area includes specific locations, geological or biodiversity issues where the SA/SEA process needs to consider information beyond that identified above. (Note that the respondent initially advised that the JWMWS should be subject to a Habitats Regulations Assessment, but subsequently advised that this was not required.)	The annex has been reviewed in detail. It is considered that the scoping report has covered all relevant aspects to an appropriate level of detail and specificity.

2.2.2 *Options Development*

In parallel with the consultation on the Scoping Report, work was undertaken to develop the options for the strategy. This was done by ERM in consultation with the Partnership authorities. A series of workshops were held to discuss and agree the options. Three sets of options were developed in line with national guidance, with a number of options of each type:

- options for minimisation and reuse
- options for recycling and composting
- options for residual treatment

Following the scoping stage, the three sets of options were then subject to a detailed appraisal of effects against the agreed criteria by ERM. Modelling was undertaken for each option to assess the expected impacts' quantitatively wherever possible. Where quantification was not possible, a qualitative assessment was made. The likely significant impacts arising under each option were thereby identified, and these are set out in this report in summary form. For a detailed description of the options modelled and how the modelling was undertaken, please refer to the *Options Assessment Report*.

In parallel with the discussion and assessment of options, proposals were drafted for the strategy's objectives and policies. These were also appraised against the agreed appraisal framework to determine the likely significant effects of the strategy. This report summarises the results of that assessment, along with recommendations for mitigation of potential adverse effects and for monitoring the implementation of the strategy.

2.3 *Relationship of JMWMS to Other Plans, Programmes and Policy Objectives*

The JMWMS sits within a framework of other policy documents which together influence both the content of the JMWMS and its implementation. The most important of these are described below:

- European Union legislation, most importantly the *Landfill Directive*, sets targets for reduction in the amount of biodegradable municipal waste sent to landfill. The Partnership authorities must meet the requirements imposed by the Directive.

- National legislation which is also binding on the Partnership authorities, principally the *Waste and Emissions Trading Act 2003* which implements the Landfill Directive in the UK and introduces a scheme of trading in landfill allowances in order to reduce disposal of biodegradable municipal waste to landfill.

- National waste policy, in particular that set out in *Waste Strategy 2000*[1], *Waste Not Want Not*[2] and most recently *Waste Strategy 2007*[3], sets the framework of overarching policy objectives for MWMSs. The JMWMS must be aligned with these broad policy objectives such as promoting waste minimisation and implementing the waste hierarchy.

- National guidance[4] which sets out government expectations of MWMSs, including key policy objectives for waste management, the role of the JMWMS in meeting those objectives and requirements for the process which should be followed in developing the JMWMS. It lists a set of principles to be used in decision-making in regard to waste, including the requirement for undertaking an SEA as well as an evaluation of economic and social factors.

- The Regional Spatial Strategy[5], sets out aims, objectives and targets for dealing with waste arising in the North East region. While being aligned with national waste policy objectives, the strategy has a focus on policy to deal with the specific circumstances and challenges of the region. Local authorities, including those in South Tyne and Wear, should take the strategy into consideration in developing MWMSs, and should seek to align their strategies with the regional strategy.

- Unitary Development Plans (UDPs) for the three Partnership authorities[6] set the planning framework for the management of waste, including municipal waste, within each authority area. These plans set out the spatial and land use policies which will be used to govern the management of waste in the area and more specifically to control waste-related development. It therefore provides the planning framework by which the facilities to manage waste, including municipal waste, will be delivered, and as such it is important that there is consistency between the planning framework and the Joint MWMS where relevant. The UDPs are due to be replaced by Local Development Frameworks (LDFs) in each of the authorities. These are currently under development. The only DPD to be adopted to date is the Core Strategy for South Tyneside. All other DPDs are in various stages of development.

- Non-statutory strategies and plans of the three Partnership authorities, such as Community Strategies and Local Agenda 21 Strategies, guide the policy approach at local authority level on specific issues relating to the environment and sustainable development, but are not binding.

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(1) [1] *Waste Strategy 2000 for England and Wales*, Department of the Environment, Transport and the Regions, May 2000

(2) [2] *Waste Not Want Not: A Strategy for Tackling the Waste Problem in England*, Cabinet Office Strategy Unit, November 2002

(3) [3] *Waste Strategy for England 2007*, Defra, May 2007

(4) [4] *Guidance on Municipal Waste Management Strategies*, Defra, July 2005

(5) [5] *Regional Spatial Strategy for the North East, Submission Draft*, North East Regional Assembly, June 2005

(6) [6] ***Gateshead Unitary Development Plan,*** Gateshead Council, November 1998***; Unitary Development Plan,*** Sunderland City Council***; Unitary Development Plan,*** South Tyneside Council***, October 1999***

A detailed list of all relevant strategies, plans and programmes was set out in the SEA Scoping Report (*Section 3*).

3 BASELINE DATA REVIEW

3.1 INTRODUCTION

This section describes the significant features and conditions within South Tyne and Wear relevant to sustainable development policy and objectives. It provides an overview of the state of the environment, society and the economy in the Partnership area in the period preceding the adoption and implementation of the JMWMS. The full baseline information which was used to compile this summary was given in *Section 2* of the SEA Scoping Report.

The aim of this section of the report is to highlight any significant issues or problems that are affecting the Partnership's economy, its people or its environment and to outline the way in which the state of the environment, society and the economy might change in the future. The purpose is to set the context within which waste management activities arising out of the JMWMS will take place so that the significant sustainability issues and the way that municipal waste management activities might interact with those issues can be better understood. It also enables the SEA and the process of selecting the preferred options to identify and focus on those issues which are significant.

This section of the report incorporates the environmental baseline information requirements that are specified in Schedule 2(6) of the Environmental Assessment of Plans & Programmes Regulations 2004.

3.1.1 *Difficulties in Collecting Data*

There are substantial amounts of data available to populate a sustainability baseline for South Tyne and Wear. However, in a small number of instances data was not available. Where possible, data for the North East region as a whole has been used to indicate the likely situation in South Tyne and Wear. In some cases, no data could be found to describe the baseline situation. In particular, there is little data on likely future trends for many issues.

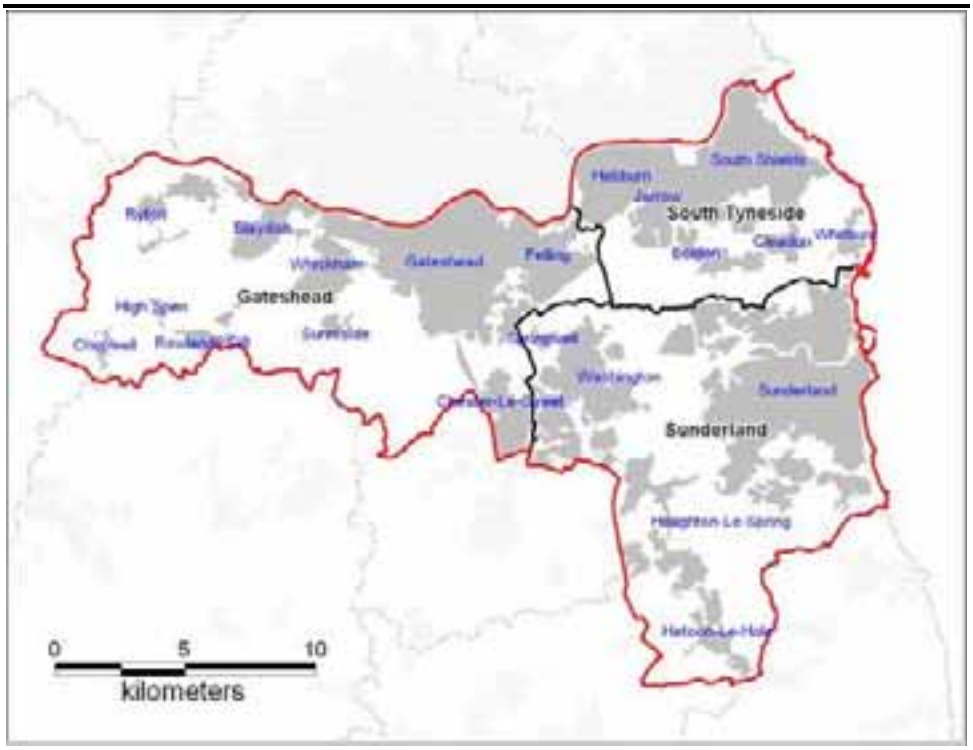
The detailed baseline description in the SEA Scoping Report highlights where there were deficiencies in available data or where data for the North East region has been used as a substitute. Wherever trend data was available this has been included.

3.1.2 *Study Area*

The area of study for the baseline review is South Tyne and Wear, including the metropolitan authorities of Gateshead, South Tyneside and Sunderland. Where useful for illustration, we have also made comparisons to the North East region as a whole or sometimes to the rest of the country.

Figure 3.1 below sets out the study area, including the boundaries of the three authority areas within the North East of England.

Figure 3.1 South Tyne and Wear Administrative Area



3.2 SUMMARY OF SIGNIFICANT ISSUES AND PROBLEMS IDENTIFIED

The significant issues that were identified by the baseline are summarised in the following table. The summary includes key economic and social issues.

Table 3.1 Significant Environmental, Social and Economic Issues for South Tyne and Wear

Category	Key Issues
Air quality	Three Air Quality Management Areas (AQMAs) have been designated across the study area, which represent urban areas suffering from congestion where a buildup of traffic-based NO_2 pollution may reach levels of concern. Most of the rest of South Tyne and Wear appears to have good air quality according to the models. Total per capita greenhouse gas emissions are below the UK average, and from waste treatment and disposal constitute approximately 0.1% of the total for South Tyne and Wear.
Water quality & availability	In 2004 84% of rivers in the North East region were of good or fair chemical water quality, above the England average of 70%, with biological water quality being 82%, again above the England average of 62%. Water resources in the North East are generally healthy. There are 33 designated bathing water sites in the North East, with all of the region's coastal bathing waters being above the required standard.

Category	Key Issues
Waste	In 2005/06, the South Tyne and Wear area generated a total of 368,703 tonnes of municipal waste, of which 80% was landfilled. Commercial/industrial and construction/demolition waste are each larger waste streams than the municipal solid waste stream. 9%of C&D waste was landfilled in 2003, however, no data was available for C&I waste disposal routes.
Landscape	Currently 18% of land within the North East region is designated as Areas of Outstanding Natural Beauty but there are no AONBs within South Tyne and Wear. 14,580ha of land within South Tyne and Wear is designated as green belt, and the Great North Forest covers approximately 250km^2 of urban fringe countryside across Tyne and Wear and north-east Durham. The Durham Heritage Coast stretches into Sunderland.
Land quality	In 2005, the North East was the region with the highest proportion of previously developed land at 7.4%, compared with the average for England of 5.5%. No data were available for Gateshead.
Biodiversity	The study area contains only one internationally designated site, the Northumbria Coast SPA and Ramsar site(1), although the North East region as a whole has a number of significant protected sites of international, national and local designation. South Tyne and Wear contains 44 Sites of Special Scientific Importance, 97% of which (by land area) are in favourable or unfavourable recovering condition, compared to a national target of 95%.
Transport	Car ownership in Tyne and Wear has been significantly below the national average therefore the potential for future growth in car ownership may be greater than the rest of the country. Between 1994 and 2004 the total distance travelled on the conurbations roads increased by 15%. Heavy goods vehicles comprise about 4% of total traffic.
Built, cultural and archaeological heritage	The North East has 1,380 Scheduled Ancient Monuments, 12,207 Listed Buildings, and 52 Historic Parks and Gardens and 6 Battlefields and 279 conservation areas. The North East has two World Heritage Sites – Hadrian's Wall and Durham Cathedral and Castle, and a prospective World Heritage Site - Jarrow/ Monkwearmouth.
Amenity	A circular area from Newcastle to Middlesbrough is marked as a 'hotspot' for fly-tipping by the Environment Agency. In 2005/06 over 82,000 fly tipping incidences were reported by local authorities in the North East, around 8% of the English average. There is significant night light pollution in populous areas and from 1993 to 2003, the region's night skies got 28% brighter. The North East has the largest areas of uninterrupted and tranquil space in England, although being urban, South Tyne and Wear has a reduced level of tranquillity compared to the rest of the region. No information was available on noise pollution.
Health	Census and data for 2001 from the Office of the Deputy Prime Minister indicates health is relatively even across the South Tyne and Wear area, although it is worse than the national average.
Material assets	There are areas of South Tyne and Wear that are subject to flood risk. These areas are defined by the Environment Agency (EA) and are used by the EA, local authority planners, the emergency services, insurance industry and the public to assist decision-making on control of development within the floodplain. Property prices in South Tyne and Wear are generally cheaper than the North East regional average.

(1) Ramsar sites are wetlands of international importance designated under the Ramsar Convention. In the UK, the first Ramsar sites were designated in 1976. Compared to many countries, the UK has a relatively large number of Ramsar sites, but they tend to be smaller in size than many countries. The initial emphasis was on selecting sites of importance to waterbirds within the UK, and consequently many Ramsar sites are also Special Protection Areas (SPAs) classified under the Birds Directive.

Category	Key Issues
Population	The total populations of each of the three authorities are quite varied, with Sunderland having the highest population and both Sunderland and South Tyneside having a very high population density.
Deprivation	South Tyne and Wear is relatively deprived in comparison to other areas, and all three authorities are of a similar level of deprivation.
Economy	Gross Value Added (GVA, a measure of economic output) and GVA per head generated in Tyne and Wear are increasing steadily, although per capita GVA is below the national average. The North East's growth rate in 2005 was equal highest of all the regions, jointly with London and the East Midlands.
Employment	From June-August 1999 to June-August 2004, the employment rate has increased in Gateshead and Sunderland, although has decreased slightly in South Tyneside. The employment rate is the number of people employed as a percentage of the work force. The largest sector for numbers in employment in South Tyne and Wear is in the distribution, hotels and catering and repairs industry. Manufacturing is also a significant sector in terms of employment. The area is below the English average in financial and business services.
Access to services	Each of the three councils provide fortnightly collections of mixed kerbside recyclables for paper, glass, cans covering over 95% of households. The councils also collect garden waste on a fortnightly basis (except during the winter months) covering between half and three quarters of households. There are also a large number of bring sites throughout South Tyne and Wear providing facilities for residents to recycle a range of materials.

3.2.1 Areas Likely to be Significantly Affected

The SEA has considered the areas likely to be significantly affected by implementation of the JMWMS, in order to identify the sustainability characteristics of those areas. In reality, the effects of implementation of the JMWMS can be considered on two levels.

First, the overall effects will be spread throughout the Partnership area because waste arises almost everywhere. Waste transport will therefore also occur throughout the Partnership area and the some of the impacts of waste management activities will be widespread and borne by all. In this case, the relevant sustainability characteristics are those set out in the baseline above.

On another level, some of the effects of the management of waste will occur in the vicinity of waste management sites. The JMWMS does not address issues of site location, and therefore to a large extent it has not been possible in the assessment to deal with site-specific issues. The assessment has considered issues which may arise in the vicinity of sites in general, but consideration and control of issues at individual sites is the responsibility of the planning framework (UDPs/LDFs) and site licensing/permitting.

3.2.2 Internationally Designated Sites

The North East region contains a large number of sites designated for their international nature conservation importance, however only one is within the

Partnership area, the Northumbria Coast SPA and Ramsar site, and a further five within 20km of the Partnership area:

- North Pennine Moors SPA;
- Teesmouth and Cleveland Coast SPA and Ramsar site;
- Durham Coast SAC;
- Castle Eden Dene SAC; and
- Thrislington SAC

Some of these are subject to pressures or have vulnerabilities although most are not connected with potential issues arising from waste management activities. The sites and a description of the pressures and vulnerabilities are given in *Box 3.1*.

However, it should be noted that at several sites there are pressures or vulnerabilities which are relevant to waste management activities or developments, and to which waste management could potentially contribute . These are:

- Acidic and nitrogen deposition at North Pennine Moors SPA; and
- General disturbance and damage at Teesmouth & Cleveland Coast SPA

Box 3.1 Pressures on Internationally Designated Nature Conservation Sites within 20km of the Partnership Area

Northumbria Coast SPA
Little terns, the purple sandpiper and turnstone are all vulnerable to disturbance by tourists in the summer causing reduced breeding success.

Teesmouth & Cleveland Coast SPA
An extensive long-term monitoring programme is investigating the effects of the Tees Barrage, while nutrient enrichment from sewage discharges should be ameliorated by the introduction of improved treatment facilities and designation of Seal Sands as an area sensitive to eutrophication. Aside from the eutrophication issue, water quality has shown considerable and sustained improvement. The future development of port facilities in areas adjacent to the site, and in particular of deep water frontages with associated capital dredging, has the potential to cause adverse effect, as do incompatible coastal defence schemes. Other issues include scrub encroachment on dunes and recreational, bait-gathering and other disturbance/damage to habitats/species.

North Pennine Moors SPA
The habitats and bird populations are mostly dependant upon stock grazing and burning at sympathetic levels. Over-grazing, over-burning and other forms of intensive agricultural or sporting management (e.g. drainage) may be damaging. Recreational activity may be problematic but is addressed through Site Management Statements and through continuing working with Local Authorities to manage access. There is evidence that acidic and nitrogen deposition are having damaging effects on the vegetation and hence on the bird populations.

Thrislington SAC
These grasslands are dependent upon continuous management by seasonally-adjusted grazing and no fertiliser input. The site is now a National Nature Reserve and management on these traditional lines has been reintroduced.

Durham Coast SAC
Vegetated sea cliffs range from vertical cliffs in the north with scattered vegetated ledges, to the Magnesian limestone grassland slopes of the south. Parts of the site are managed as National Nature Reserve, and plans provide for the non-interventionist management of the vegetated cliffs.

Castle Eden Dene SAC
None identified.

4 SUSTAINABLE DEVELOPMENT OBJECTIVES AND ASSESSMENT CRITERIA

4.1 SUSTAINABLE DEVELOPMENT OBJECTIVES RELEVANT TO MWMS

The environmental objectives for the SEA were identified by reviewing relevant policy documents, both statutory and non-statutory, at the national, regional, sub-regional and local authority level.[1] The review identified and extracted any environmental policy objectives which are relevant to the JMWMS and which will set the environmental policy framework with which the strategy must conform. The review also included strategies and plans relevant to economic and social policy likely to be relevant to municipal waste management issues.

The list of policy objectives identified in the review was then used to derive a set of appraisal objectives and criteria for the SEA. The criteria were agreed by the Partnership authorities and then subject to wider consultation through the SEA Scoping Report.

As a result of the consultation comments received, two additional objectives were added to the list contained in the Scoping Report:

- To ensure flexibility to meet future waste management needs; and
- To ensure deliverability of waste management systems

The proposed strategy and relevant options were assessed against these criteria to identify and evaluate the likely effects of the strategy. *Table 4.1* lists the criteria used to assess the strategy and options. Note that not all of these criteria are relevant to an appraisal of all levels of option. The subset of criteria which were used to appraise each level of option are noted in *Section 5*.

Table 4.1 Summary of SEA Objectives and Criteria

Appraisal objectives	Appraisal criteria
1. To provide new jobs	Number of jobs created
2. To promote social enterprise	Inclusion of social enterprise promotion
3. To promote economic growth	Creation of new waste-related businesses Costs of waste management
4. To promote innovation	Promotion of innovation
5. To promote awareness and information on waste issues	Promotion and implementation of information and awareness-raising activities
6. To improve air quality	Emissions to air of key pollutants
7. To promote sustainable use of water resources	Consumption of water resources

(7) [1] The list of documents included in the review was given in the Scoping Report but is not repeated in this report..

Appraisal objectives	Appraisal criteria
8. To protect and improve water quality	Impact on water quality
9. To reduce greenhouse gas emissions	Emissions of greenhouse gases
10. To increase energy efficiency	Consumption and generation of energy
11. To increase the generation of renewable energy	Renewable energy generation
12. To reduce the impacts of climate change	Promotion of measures to reduce impacts of climate change
13. To protect and improve biodiversity	Impact on biodiversity
14. To protect and improve geodiversity	Impact on geodiversity
15. To implement the waste hierarchy	Effect on waste hierarchy
16. To reduce the amount of waste produced	Amount of waste produced
17. To increase recycling and composting	Levels of recycling and composting
18. To increase recovery of value from waste	Level of recovery
19. To reduce landfill of biodegradable municipal waste	Amount of biodegradable municipal waste landfilled
20. To reduce landfill of waste	Amount of waste landfilled
21. To reduce hazardous waste	Amount of hazardous waste generated
22. To achieve self-sufficiency	Effect on ability to achieve self-sufficiency
23. To promote resource efficiency	Effect on depletion of resources
24. To protect and enhance urban and rural landscapes	Impact on urban and rural landscapes
25. To protect and enhance cultural heritage and historic assets	Impact on cultural heritage and historic assets
26. To reduce crime	Impact on fly-tipping
27. To protect human health	Impact on human health
28. To improve access to services and facilities	Effect on access to services
29. To promote public and community involvement	Effect on public participation
30. To encourage sustainable procurement	Promotion of sustainable procurement
31. To minimise adverse impacts on amenity	Effect on amenity
32. To take account of the impact on communities	Effect on communities
33. To minimise waste transport	Effect on waste transport
34. To promote alternatives to road transport	Promotion of alternatives to road transport
35. To reduce car use	Impact on car use
36. To ensure flexibility to meet future waste management needs	Impact on flexibility
37. To ensure deliverability of waste management systems	Impact on deliverability

5 OPTIONS APPRAISAL

5.1 INTRODUCTION

A number of different options are possible for approaches to implementing the JMWMS. Three sets of options were developed in line with national guidance, with a number of options of each type:

- options for minimisation and reuse;
- options for recycling and composting; and
- options for residual treatment

The options were developed by ERM in consultation with the Partnership authorities, and a series of workshops were held to discuss and agree the options to be assessed.

The options were assessed against the agreed criteria, using a mix of quantitative and qualitative methods. Quantification was used wherever possible, and this was supplemented with qualitative assessments only where quantitative methods were not available. Details of the assessment methodology including the modelling used are given in the *Options Assessment Report*.

5.2 MINIMISATION OPTIONS

For the minimisation options, a series of possible approaches targeting specific waste streams that contribute to municipal solid waste (MSW) arisings were developed, as follows:

- promotion of home composting;
- diversion of trade waste;
- promotion of reusable nappies;
- support for re-use of items, local waste exchanges and charity stores.
- promotion of waste-aware shopping;
- reduction of junk mail through the mailing preference scheme;
- promotion of business services that encourage the loaning, hiring and leasing of products; and

Based on these considerations, a set of three options has been drawn up:

Option 1: Do nothing
Option 2: Implement services that influence household behaviour:

- home composting;
- re-useable nappies;
- reuse;

- waste aware (SMART) shopping;
- unwanted mail; and
- product service businesses.

Option 3: Implement all programmes that are influenced by promotional and educational programmes:

- home composting;
- trade waste diversion;
- re-useable nappies;
- reuse;
- waste aware (SMART) shopping;
- unwanted mail; and
- product service businesses.

More detail on how each of these options is assumed to operate is given in the *Options Assessment Report*.

Each of the options was assessed against the following appraisal criteria.

Box 5.1 Criteria Used to Assess Minimisation Options

Number of jobs created
Inclusion of social enterprise promotion
Creation of new waste-related businesses
Costs of waste management
Promotion and implementation of information and awareness-raising activities
Emissions to air of key pollutants
Emissions of greenhouse gases
Consumption and generation of energy
Impact on biodiversity
Compliance with waste hierarchy
Amount of waste produced
Levels of recycling and composting
Amount of biodegradable municipal waste landfilled
Amount of waste landfilled
Effect on ability to achieve self-sufficiency
Effect on depletion of resources
Effect on access to services
Effect on public participation
Effect on waste transport

The results of the assessment are set out in *Table 5.1*. These show that options 2 and 3 both offer significant benefits over the status quo. However, there is little difference between options 2 and 3 in terms of their sustainability impacts. The differences are that option 3 delivers additional net savings in costs, and will also contribute to awareness raising amongst a slightly broader group of people, i.e. those disposing of trade waste in addition to the general public.

Table 5.1 Minimisation Options Assessment Matrix

Criteria	Option 1 – Status quo	Option 2 – Householder behavioural change	Option 3 – All schemes with education campaign	Comments
Number of Jobs Created	0	+	+	A very small number of new jobs will be created both for the operation of reuse schemes and for support and promotion within the local authorities. No additional jobs are likely to be created with option 3.
Inclusion of social enterprise promotion	0	+	+	Reuse schemes can help to support new social enterprises.
Creation of new waste-related businesses	0	+	+	A small number of new waste-related businesses may be created in reuse schemes (including nappies)
Costs of waste management	0	- -	- -	The reduction of waste transport and treatment costs through waste minimisation schemes will have a negative impact on the economy. A net cost of £1.5m pa by 2020/21 is predicted for option 3 even when scheme costs are taken into account. Option 2 has an estimated net cost of £1.7m pa by 2020/21.
Promotion and implementation of information and awareness-raising activities	0	+	++	Promoting schemes that include educational campaigns will have a positive impact through raising awareness. Options 2 and 3 both involve schemes that have the potential to result in behavioural change and increased education. The greater amount of awareness raising activities, the better informed the general public are and therefore the greater the impact on waste reduction.
Emissions to air of key pollutants	- -	-	-	Pollutants are emitted from both waste treatment/disposal operations and from waste transport. Reducing the amount of waste requiring treatment and disposal by an estimated 7% will reduce the level of emissions correspondingly. Option 3 will not affect the amount of waste to be transported and treated compared to option 2.

Criteria	Option 1 – Status quo	Option 2 – Householder behavioural change	Option 3 – All schemes with education campaign	Comments
Emissions of greenhouse gases	+	++	++	Reducing MSW by up to 7% will reduce emissions of greenhouse gases from facilities and transport. The requirement for new resources, particularly metals, also has a negative impact through the generation of greenhouse gases. Therefore, the greater amount of reuse, the greater the reduction in greenhouse gas emissions. Home composting will reduce likelihood of methane emissions from landfill, although landfill gas capture is now standard practice at most landfill sites. Poorly managed compost heaps can be a source of methane. Trade waste diversion will not affect the quantity of waste to be managed and therefore will not affect greenhouse gas emissions.
Consumption and generation of energy	+	++	++	Reducing MSW by up to 7% will reduce energy consumption required for waste collection and disposal. The requirement for new resources, particularly metals, also has a negative impact due to the requirement of energy consumption for extraction and processing. Therefore, the greater amount of reuse, the lower the energy requirements. The reuse and shopping/mail schemes will also reduce energy consumption for the manufacture of new goods and materials. Note that nappy schemes have a neutral effect on energy consumption, and that the home composting may reduce the generation potential from landfill gas.
Impact on biodiversity	+	++	++	Home composting could significantly reduce the consumption of peat-based composts in ST&W if 50% of households with a garden participate. This is likely to have biodiversity benefits by avoiding damage to peat habitats.
Compliance with Waste Hierarchy	+	++	++	Being top of the waste hierarchy, a 7% reduction in waste arisings is positive.
Amount of waste produced	+	++	++	Option 2 will reduce waste arisings by 7% by 2020/21. Option 3 will not affect the amount of waste produced compared to option 2.

Criteria	Option 1 – Status quo	Option 2 – Householder behavioural change	Option 3 – All schemes with education campaign	Comments
Levels of recycling and composting	0	0	0	Several schemes will promote the reuse of household goods and home composting, but there will be no effect on BVPI performance.
Amount of biodegradable municipal waste landfilled	+	++	++	The decrease in the level of waste produced, particularly green waste will have a positive impact on the amount of BMW sent to landfill. Landfilled biodegradable waste will be reduced by up to 8,800 tpa by 2020/21.
Amount of waste landfilled	+	++	++	Reduction in waste production should lead to reduction in waste sent to landfill, by an estimated 26,100 tpa by 2020/21.
Effect on ability to achieve self-sufficiency	0	0	0	Reducing the amount of waste generated can assist an area to deal with its own waste, as there is less requirement for treatment and disposal capacity. However, the amount of waste reduction (26,100 tpa by 2020/21) is not large enough to significantly affect the ability to achieve net self-sufficiency.
Effect on depletion of resources	+	++	++	All schemes will help to reduce resource depletion by avoiding consumption of new resources, either through reuse of goods and materials or by reducing consumption. Trade waste diversion will not affect levels of resource depletion.
Effect on access to services	0	+	+	Access to services will increase by offering new schemes/services to householders. The reuse schemes will support the creation of new services and can supply low-cost goods to disadvantaged individuals, groups, charities and schools.
Effect on public participation	0	+	+	All schemes are reliant on public participation. The public will be made more aware of services and have more chance to take part in schemes that have an effect on them. A minimum of 1 in 5 households may be participating in schemes in 2010/11, although this is expected to rise to over 50% of households by 2020/21.

Criteria	Option 1 – Status quo	Option 2 – Householder behavioural change	Option 3 – All schemes with education campaign	Comments
Effect on waste transport	+	++	++	Removing an estimated 26,100 tpa from the waste stream by 2020/21 will reduce the requirement for waste transport for collection and disposal. This is equivalent to the capacity of 2175 collection vehicles and 1186 waste transport vehicles.

++	excellent		+	good		x	unknown
0	no change		-	poor		- -	detrimental

5.3 *RECYCLING AND COMPOSTING OPTIONS*

The recycling and composting options examine the impacts of making similar changes such as adding new materials, increasing the number of households served by a collection and increasing participation. Nine options were developed, as follows:

- Baseline: Accept the prevailing participation levels of natural participation (50%)
- Option 1: Encourage increased participation by a range of promotional and educational activities (70%)
- Option 2: Enforcement through EPA section 46 (90%)
- Option 3: Collect a wider range of materials from bring sites (plastic)
- Option 4: Introduction of non household (commercial) recycling
- Option 5: Collect wider range of materials at the kerbside (plastic)
- Option 6: Collect wider range of materials at the kerbside (textiles)
- Option 7: Collect wider range of materials at the kerbside (card)
- Option 8: Collect wider range of materials at the kerbside (kitchen waste)
- Option 9: Segregated weekly collections for waste and recyclable materials (paper, glass, cans, textiles and plastic bottles)

More detail on how each of these options is assumed to operate is given in the *Options Assessment Report*.

The options examined could be introduced individually or in combination in order to meet targets.

Each of the options was assessed against the following appraisal criteria.

Box 5.2 Criteria Used to Assess Recycling and Composting Options

Number of jobs created
Inclusion of social enterprise promotion
Costs of waste management
Emissions to air of key pollutants
Emissions of greenhouse gases
Consumption and generation of energy
Renewable energy generation
Promotion of measures to reduce impacts of climate change
Effect on waste hierarchy
Levels of recycling and composting
Level of recovery
Amount of biodegradable municipal waste landfilled
Amount of waste landfilled
Effect on ability to achieve self-sufficiency
Effect on depletion of resources
Impact on fly-tipping
Impact on human health
Effect on access to services
Effect on public participation
Effect on amenity
Effect on communities
Effect on waste transport
Impact on car use
Deliverability

The results of the assessment are set out in *Table 5.2*. These show that the option that considers introducing segregated weekly collections clearly has the greatest potential benefit as it is one of the options with the highest recycling and composting level. On the other hand it is also potentially the most expensive to implement given the need for extensive public consultation and, potentially, the need for enforcement to ensure effective operation.

Option 2 is the other option with a potentially high performance as judged by the assessment criteria. The difference in performance of these two options, which otherwise have a similar levels of environmental benefit, is due to the level of composting. Option 2 incorporates an increase in participation in all recycling and composting collections. Option 9 sees an increase in dry recyclables above that of Option 2 but it has been assumed that it does not increase green waste collections. The associated environmental benefits of avoiding the use of virgin materials for the recyclables collected are therefore greater in Option 9. Were the increase in green waste collection to be included in a scheme like that in Option 9, then similar results to that of Option 2 may be found, however it is likely that any increase in green waste through segregated weekly collections would not be at the same level as Option 2.

Both of these options however are controversial in their introduction as there may be opposition to them due to potential issues that may arise. They could increase incidents of fly tipping, thus also affecting costs. These options would also rely heavily on behavioural changes from residents for them to be implemented successfully.

The other options have relatively limited impacts; positive and negative. This is to be expected given that they do not involve large changes to the service.

Although there is no clear 'third best' option, after Options 2 and 9, Option 1 scores highest for a number of criteria (eg levels of recycling/recovery, diversion of biodegradable waste from landfill).

Table 5.2 Recycling and Composting Options Assessment Matrix

Criteria	Option 1 Education	Option 2 Enforcement	Option 3 Plastics at bring sites	Option 4 Commercial recycling	Option 5 Plastics at kerbside	Option 6 Textiles at kerbside	Option 7 Card at kerbside	Option 8 Kitchen waste at kerbside	Option 9 Segregated kerbside	Comments
Number of jobs created (full time equivalent posts)	(3) 0	(14) 0	(0) 0	(1) 0	(1) 0	(0) 0	(3) 0	(1) 0	(28) 0	All options will create similar numbers of jobs. These jobs are not collection jobs but are at the processing end of the recycling process. The total is not significant for the Partnership overall although it may be locally important. Option 9 would create the most jobs.
Costs of waste management	See table below for details of each scheme. All options will incur some initial costs for advertising the new service. Options 2, 8 and 9 have the potential to be the most expensive options to implement. Option 2 is likely to be expensive due to the costs relating to employing new enforcement staff and the introduction of measures to regulate and monitor household performance. Option 8 will incur high capital costs as In Vessel Composting will be required to deal with the collected material. Option 9 will incur costs associated with the education of the public, the enforcement of the new scheme and dealing with any increase in fly tipping etc. All of these three options do have the potential to collect large amounts of materials for recycling, however, and therefore to generate revenue through this, whilst avoiding landfill costs.									
Emissions to air of key pollutants (tonnes of SO_2 equivalents)	(-650) +	(-1,300) +	(-51) 0	(-212) +	(-447) +	(-351) +	(-616) +	(-9) 0	(-7,116) ++	All options reduce the level of key pollutants being emitted to air. Option 9 reduces the level by the most, with option 3 and 8 having very little effect.
Emissions of greenhouse gases (tonnes of CO_2 equivalents)	(-103,353) +	(-206,706) +	(-14,796) 0	(-33,897) +	(-128,673) +	(-45,112) +	(-64,137) +	(-3,143) 0	(-1,239,602) ++	All options reduce the level of greenhouse gases emitted to air. Option 9 reduces the level by the most, with option 8 having very little effect.
Consumption and generation of energy (Gj)	(-1,838,933) +	(-3,677,865) +	(-796,105) 0	(-711,450) 0	(-6,948,077) +	(-2,278,258) +	(-876,037) 0	(-110,017) 0	(-39,783,887) ++	All options will result in a net saving in energy because of the avoidance of consumption through recycling of materials which reduces the need for the extraction and processing of raw and intermediate materials. Option 9 reduces the level by the most as this increases recycling, and especially dry recyclables, by the most.

Criteria	Option 1 Education	Option 2 Enforcement	Option 3 Plastics at bring sites	Option 4 Commercial recycling	Option 5 Plastics at kerbside	Option 6 Textiles at kerbside	Option 7 Card at kerbside	Option 8 Kitchen waste at kerbside	Option 9 Segregated kerbside	Comments
Renewable energy generation	0	0	0	0	0	0	0	0	0	No effects found on renewable energy from any options. Reducing the amount of waste sent to landfill reduces the amount of landfill gas created and therefore also the amount that can be used to generate energy.
Promotion of measures to reduce impacts of climate change	+	+	0	+	+	+	+	0	++	All options will reduce the impacts on climate change through reducing greenhouse gas emissions by increased recycling of resources and by reducing the landfill of biodegradable waste which will help to reduce the risk of fugitive emissions of methane from landfill, a potent greenhouse gas. However, the significance of this effect also depends on the form of residual treatment.
Compliance with waste hierarchy	+	++	0	+	+	+	+	+	++	All options will increase recycling, and hence move the way that waste is managed up the waste hierarchy from disposal to recycling. The options that recycle the most are therefore more in line with the waste hierarchy.
Levels of recycling and composting (tonnes of extra material recycled and composted over the strategy period)	(396,752) additional 5.5% +	(793,504) additional 11% ++	(8,408) additional 0.1% 0	(76,568) No additional h'hold recycling. Non- h'hold up by 1.9% +	(73,525) additional 1% +	(21,490) additional 0.3% +	(176,017) additional 1.4% +	(149,616) additional 1.1% +	(779,905) additional 10.9% ++	All options increase recycling and composting. Option 2 has the greatest effect on this, with Option 9 having a similarly large effect. The percentage increases shown relate to increases in BVPI 82 a&b.
Level of recovery (tonnes of extra r&c over strategy period)	(396,752) +	(793,504) ++	(8,408) 0	(76,568) +	(73,525) +	(21,490) +	(176,017) +	(149,616) +	(779,905) ++	As no other recovery occurs in these options bar recycling and composting, these results are the same as those above.

Criteria	Option 1 Education	Option 2 Enforcement	Option 3 Plastics at bring sites	Option 4 Commercial recycling	Option 5 Plastics at kerbside	Option 6 Textiles at kerbside	Option 7 Card at kerbside	Option 8 Kitchen waste at kerbside	Option 9 Segregated kerbside	Comments
Amount of biodegradable municipal waste landfilled (tonnes of avoided BMW landfilled over strategy period)	(-329,927) +	(-659,853) ++	(0) 0	(-24,576) +	(0) 0	(-10,745) +	(-176,017) +	(-149,616) +	(-313,681) +	Options 3 and 5 do not have a positive impact on this criterion, where all other options do. Option 2 has the most positive impact, followed by option 1 and 9. Options 4 and 6 have minimal impact.
Amount of waste landfilled (tonnes of avoided total waste landfilled over strategy period)	(-396,752) +	(-793,504) ++	(-8,408) 0	(-76,568) +	(-73,525) +	(-21,490) +	(-176,017) +	(-149,616) +	(-779,905) ++	Assessment against this criterion is similar to the recycling and composting criterion as the amount of waste recycled and composted is the same as that diverted from landfill. Options 2 and 9 therefore come out the best as they divert the most waste from landfill.
Effect on ability to achieve self-sufficiency	- -	- -	-	-	-	-	-	-	-	By increasing the level of recycling the options are increasing the dependence on other regions for the reprocessing capacity for certain recyclables. As landfill is predominantly sourced in the region demand for this remains unaffected, although decreased.
Effect on depletion of resources (tonnes of crude oil equivalents)	(-40,589) +	(-81,179) +	(-14,560) 0	(-16,403) 0	(-127,055) +	(-41,953) +	(-19,766) 0	(-1,663) 0	(-774,444) ++	Option 9 has by far the greatest effect judged against this criterion. Options 3, 4, 7 and 8 will have minimal effects.
Effect on access to services	0	0	0	0	0	0	0	0	-	Adding materials has a marginal benefit in terms of 'access to services' and increasing participation has no effect. The introduction of a SWC may be seen as having a negative impact by householders however householders will still receive a collection service for the same materials and it is proven to increase recycling rates to 30% and above.
Effect on public participation	+	++	0	+	+	0	+	+	++	Options 2 and 9 perform the best against this criterion. This is due to the significant increase in public participation estimated under these schemes.

Criteria	Option 1 Education	Option 2 Enforcement	Option 3 Plastics at bring sites	Option 4 Commercial recycling	Option 5 Plastics at kerbside	Option 6 Textiles at kerbside	Option 7 Card at kerbside	Option 8 Kitchen waste at kerbside	Option 9 Segregated kerbside	Comments
Effect on amenity	+	++	0	+	+	0	+	+	++	Amenity has been assessed by comparing factors including levels of noise, dust and sight pollution. Options 2 and 9 would reduce the effect on the amenity of the local area by the most. This is because they reduce the amount sent to landfill by the most and landfill scores worst in this assessment.
Effect on communities	0	0	0	0	0	0	0	0	0	All options will have a marginal positive affect on the community in terms of provision of services and creation of jobs.
Effect on waste transport (tonne/km)	(3,011,174) -	(5,665,960) - -	(21,039) 0	(1,022,601) -	(62,517) 0	(41,006) 0	(2,589,408) -	(256,673) -	(6,306,307) - -	The amount of waste transported increases in relation to the level of recycling that is achieved for each option. Option 9 and option 2 therefore perform worst, transporting the most waste to reprocessors rather than more local landfills. To give some point of reference the baseline level of tonne kilometres is 8.5 million.
Inclusion of social enterprise promotion	x	x	x	x	x	x	x	x	x	All options could incorporate some form of social enterprise involvement. In certain circumstance this may be harder than others, however it is not beyond the realms of possibility.
Impact on fly tipping	+	- -	0	0	0	0	0	0	- -	The introduction of enforcement schemes for recycling may have the effect of antagonising some residents. This may lead to an increase in fly tipping. Equally option 9 may have effect of people opposing the new scheme by fly tipping. The education of the public in waste issues and recycling could feasibly have a positive impact and reduce fly tipping.
Impact on human health	0	0	0	0	0	0	0	0	0	All options have a minimal positive impact on human health. It is noted that option 9 has the highest positive impact, however none of the impacts are deemed significant.

Criteria	Option 1 Education	Option 2 Enforcement	Option 3 Plastics at bring sites	Option 4 Commercial recycling	Option 5 Plastics at kerbside	Option 6 Textiles at kerbside	Option 7 Card at kerbside	Option 8 Kitchen waste at kerbside	Option 9 Segregated kerbside	Comments
Impact on car use	0	0	-	0	+	+	+	0	+	The introduction of new bring banks could increase car use, as people travel to recycle their plastics. The introduction of new kerbside recycling services however could have the opposite effect, reducing the need for people to travel to bring sites and CA sites as they recycle from home. The exception is kitchen waste as people would not have been transporting this anyway. Card may have been taken to CA sites, as may plastic, whilst textiles may have been taken to charity shops or CA sites.
Deliverability	0	-	0	0	+	0	+	-	+	The introduction of additional materials to the kerbside collection will have minimal impact on deliverability of the service. Option 2 will require training and additional officers for enforcement. SWC will require less vehicle operations.

	++	excellent		+	good		x	unknown
	0	no change		-	poor		- -	detrimental

Table 5.3 Impacts of Recycling Options

Option	Explanation
Option 1 – Increase in participation and capture rates following education scheme introduction	• There will be costs associated with publicising the scheme, and incentivising people to use the new scheme. It is suggested that typically, ballpark estimates of the need for education tend to be around £1 per household per annum. Evidently, this cost will be borne collectively by the entire scheme and will not be for each additional recyclable collected. Source: Costs for Municipal Waste Management in the EU, 2001. • Potential for a small increase in collection costs as additional materials will exert a new pressure on the existing collection. • At the point where there is no further capacity on the vehicles or time for the crews there would be a step-wise cost increase for a new vehicle and crew. • Potential for increase in revenue from the sale of additional recyclables. This revenue is dependent upon the value of recyclables collected. • Potential for off-setting of costs through the LATS regulations if biodegradable waste is diverted away from landfill. • For those authorities not fully utilising their existing infrastructure the cost of investment in education is more likely to be offset by net gains.
Option 2 – Increase in participation and capture rates due to enforcement measures	• There will be costs associated with publicising the new scheme and explaining enforcement measures. These publicity costs may be higher than other schemes as the public may not find it easy to accept enforcement measures. • Increased administrative costs due to requirement of Street Enforcement Officers and operational changes to recycling crews. • Increased administrative costs related to processing and logging any enforcement measures taken. • The direct incentive for increased participation in recycling should generate extra income through the additional materials collected, and this may cover the administrative costs. However, this is dependent upon the recyclables collected as income generated varies between materials. • Potential for off-setting of costs through the LATS regulations if biodegradable waste is diverted away from landfill.
Option 3 – Introduction of plastics at bring site	• There will be costs associated with publicising changes in the scheme and promoting recycling. • A bring site is less expensive to operate than a collection service. However there are additional costs associated with cleaning and maintaining the bring sites (http://www.wasteonline.org.uk/resources/WasteWatch/BeyondTheBin_files/page3.html .

Option	Explanation
Option 4 – Introduction of non household recycling	• There will be costs associated with publicising the introduction of the new service and ensuring that the non-household groups are fully engaged with the scheme. • The additional collection of recyclables is likely to require a greater number of vehicles and drivers. • There is likely to be financial gain through the sale of additional recyclables. Again, this is dependent upon the nature of the material collected. Cardboard can generate up to £60 per tonne and glass can generate between £11-30 per tonne, depending upon the type of glass collected. • Through diverting non-household waste from the MSW stream, landfill costs can be avoided for the authorities.
Option 5 – Introduction of plastics at kerbside	• There will be costs associated with publicising the new scheme. It is suggested that typically, ballpark estimates of the need for education tend to be around £1 per household per annum. Evidently, this cost will be borne collectively by the entire scheme, and will not be for each additional recyclable collected. Source: Costs for Municipal Waste Management in the EU, 2001. • There are higher collection costs associated with collecting plastics due to the relatively low bulk density of plastics, the higher contamination rates, the diversity of plastics and the possibility that existing infrastructure systems are unsuitable. • Collection costs will also change according to how the plastic will be collected. If the plastic is collected as part of the existing collection, waste will need to be sorted at a MRF prior to sale and therefore consideration of transportation and processing costs will be necessary. Alternatively if the plastic is collected separately, there will be costs associated with containers and possible modifications required to the collection vehicles. If additional vehicles are required, costs will increase further. • Potential for increase in revenue from sale of additional recyclables. Recent market values show that the revenue is highly variable depending upon the type of plastic that is collected. For example, mixed plastic bottles can generate up to £180 per tonne whilst PVC may only generate £10-25 per tonne.

Option	Explanation
Option 6 – Introduction of card at kerbside	• There will be costs associated with publicising the new scheme. It is suggested that typically, ballpark estimates of the need for education tend to be around £1 per household per annum. Evidently, this cost will be borne collectively by the entire scheme, and will not be for each additional recyclable collected. Source: Costs for Municipal Waste Management in the EU, 2001. • The disadvantage of card is that it is low weight and very bulky. Collection of cardboard would involve either re-designing the use of space on current collection vehicles or using a separate vehicle, and this may exert a pressure on the existing system. Also, mixing paper and card reduces the value of the collected material. There is potential for a small increase in collection costs as the collection of card at the kerbside may result in an increase in the number of staff carrying out collections. (http://www.bathnes.gov.uk/committee_papers/WasteManagement/wm000912/10CARDREC.htm). • Potential for small increases in revenues from sale of additional recyclables. Recent market values indicate that cardboard can generate up to £60 per tonne. • There may be the potential for reducing some of the cost through collecting cardboard with organic waste. However, this is dependent upon whether the processing facility will accept cardboard.
Option 7 – Introduction of textiles at kerbside	• There will be costs associated with publicising the new scheme and promoting textile recycling. It is suggested that typically, ballpark estimates of the need for education tend to be around £1 per household per annum. Evidently, this cost will be borne collectively by the entire scheme, and will not be for each additional recyclable collected. Source: Costs for Municipal Waste Management in the EU, 2001. • Collection of textiles would involve re-designing the current collection vehicles and a bespoke collection box may be required. There are consequently financial costs involved. (http://www.guildford.gov.uk/NR/rdonlyres/7C55782C-CD19-4619-ADCA-D28F83517D65/0/Item10TextilesRecycling.pdf) • Additional revenue may be generated.

Option	Explanation
Option 8 – Introduction of kitchen waste at kerbside	• There will be costs associated with publicising the new scheme. It is suggested that typically, ballpark estimates of the need for education tend to be around £1 per household per annum. Evidently, this cost will be borne collectively by the entire scheme, and will not be for each additional recyclable collected. Source: Costs for Municipal Waste Management in the EU, 2001. • The partnership is considering collecting kitchen waste separately and from previous research according to the Kerbside Analysis Tool (KAT) modelling having a separate collection will be marginally cheaper than a combined food and green waste collection (eg £19 food only vs. £22 combined food and garden and 15kT vs. 22kT collected tonnes).. • Kitchen waste added to green waste increases the treatment costs considerably as in-vessel composting is required to ensure that the waste is compliant with ABPR regulations. Windrow composting likely to cost between £15 – 25 per tonne while in-vessel composting is likely to cost between £35 – 50 per tonne. • Additional vehicles and crew will be required on implementation of this scheme. • Costs of any additional collecting receptacles will also need to be considered. • Significant potential for off-setting of costs through the LATS regulations through the diversion of biodegradable waste away from landfill.
Option 9 – Introduction of Segregated Weekly Collection	• There will be high costs associated with public consultation and promotion of the scheme in order to ensure that the scheme is fully accepted and utilised. • Waste minimisation officers may be required to visit households that feel that a SWC is not sufficient. There may be costs associated with enforcing the scheme, for example refuse may become mixed with recyclables if the public perceive that the SWC scheme is not sufficient. • There is the potential for greater fly-tipping which would increase costs in street cleaning / collecting waste. • If there is a significant increase in recycling, it is possible that a greater number of vehicles and crew will be required. • A greater number of materials will be segregated and there is potential for revenue from sale of recyclables. • There is potential for greater diversion of waste from landfill, and therefore avoidance of LATS penalties.

5.4 *RESIDUAL OPTIONS*

The residual options are designed to ensure that the Partnership as a whole meets the Government's requirements to reduce the amount of biodegradable waste that is landfilled. The options are also based on the assumption that the Partnership will achieve a 30% recycling level in 2010 and that this recycling rate will be maintained throughout the strategy period. This is in line with meeting the 2010 recycling and composting targets however further recycling and composting will be required to meet 2015 and 2020 targets and this may need to be achieved by the use of appropriate treatment technologies.

The following residual options have been developed:

- Baseline – Accept the current landfilling levels and continue with no residual treatment (used as a comparator rather than a realistic option)
- Option 1 – Anaerobic digestion of putrescible wastes
- Option 2 – Anaerobic digestion of all wastes
- Option 3 – Mechanical Biological Treatment with output of RDF for use in off-site Energy from Waste (EfW) plant
- Option 4 – Mechanical Biological Treatment with output stabilised for use in landfill
- Option 5 – Autoclaving (output to EfW)
- Option 6 – Energy from Waste
- Option 7 – Advanced Thermal Treatment
- Option 8 – Aerobic digestion
- Option 9 – EfW with Combined Heat and Power (CHP)

More detail on how each of these options is assumed to operate is given in the *Options Assessment Report*.

Each of the options was assessed against the following appraisal criteria.

Box 5.1 Criteria Used for Appraisal of Options for Residual Waste

Number of jobs created
Costs of waste management
Promotion and implementation of information and awareness-raising activities
Emissions to air of key pollutants
Consumption of water resources
Impact on water quality
Emissions of greenhouse gases
Consumption and generation of energy
Renewable energy generation
Promotion of measures to reduce impacts of climate change
Effect on waste hierarchy
Levels of recycling and composting
Level of recovery
Amount of biodegradable municipal waste landfilled
Amount of waste landfilled
Amount of hazardous waste generated
Effect on ability to achieve self-sufficiency
Effect on depletion of resources
Impact on human health
Effect on amenity
Effect on communities
Effect on waste transport
Promotion of alternatives to road transport

Each of the options was assessed against the appraisal criteria, through a mix of quantitative modelling of impacts where possible and qualitative assessments where quantitative data was not available. The results of the appraisal are set out in *Table 5.4* and summarised below.

Option 5, Autoclaving, scores highly on a number of criteria, including emissions of greenhouse gases and other emissions to air, overall energy balance, resource efficiency and minimisation of potential effects on amenity. It also performs well in terms of delivering the waste hierarchy, as it recycles/composts relatively high levels of waste, recovers high levels of value and landfills low tonnages. It is also relatively cost-effective and being non-thermal generates no additional hazardous waste. However, the technology it is not very reliable and it must be noted that it is not yet easily deliverable in this country. Coupled with the doubts over the destination of the residues, this results in a somewhat negative assessment in terms of its deliverability.

Option 3, MBT with RDF sent to EfW, also performs well against a number of criteria, specifically on lower acidifying emissions, reduction of waste to landfill, promoting resource efficiency and minimising potential effects on amenity. It is also relatively cost effective and is reasonably deliverable as a technology. However, it does not perform particularly well on other criteria, notably it does not allow a particularly high level of recycling/composting.

Option 1 (AD of putrescible wastes) achieves relatively high levels of recycling and composting, and being non-thermal produces no additional hazardous waste, otherwise it does not perform particularly well or badly against any of the appraisal criteria.

Option 2 (AD of all wastes) achieves relatively high levels of recycling/composting and also results in a relatively high level of energy saving and is relatively cost-effective. Being non-thermal, it generates no additional hazardous waste.

While option 4 (MBT with RDF to landfill) is deliverable and relatively cost-effective, it does not perform well against other criteria, notably it does not achieve a particularly high level of recycling/composting.

Option 6, Energy from Waste (EfW), and Option 7, Advanced Thermal Treatment (ATT), both rely on combustion of waste as the main treatment approach. ATT is an emerging technology and, like Option 5, not yet proven in this country. It therefore scores badly on deliverability, unlike EfW. Additionally, both EfW and ATT will generate additional hazardous waste. Although both perform well in terms of levels of recovery, neither will add substantially to levels of recycling and composting and neither compares particularly well in terms of cost-effectiveness or resource efficiency. EfW would also result in a slight increase in greenhouse gas emissions. EfW can also be thought more difficult to deliver in planning terms than other options, although the difference between options is unlikely to be significant.

Option 9 (EfW with CHP) performs similar to option 6 (EfW), but with added benefits of reduction in depletion of resources, levels of energy generation, and reduction in greenhouse gases and other emissions. These benefits are related to the reduced need for power and heat generation. This option therefore performs much better in comparison to others in the matrix than EfW without CHP, although there are questions about the degree of deliverability related to the timing of construction of infrastructure to take the generated heat.

Option 8 (Aerobic Digestion) achieves relatively high levels of recycling and composting, and although it has a high level of energy saving and contributes well to resource efficiency, it does not achieve as great a landfill reduction as options 3 and 5. However, it scores well on cost-efficiency and is regarded as a deliverable technology.

Cost was seen as an important criterion by the Partnership and options 2 (AD of all wastes), 3 (MBT with RDF to EfW), 5 (autoclave) and 8 (aerobic digestion) perform best against this criterion. .

Table 5.4 Residual Options Assessment Matrix

Criteria	Option 1 AD putresc	Option 2 AD all	Option 3 MBT/RDF	Option 4 MBT/landfill	Option 5 Autoclave	Option 6 EfW	Option 7 ATT	Option 8 Aerobic Dig	Option 9 EfW - CHP	Comments
Number of jobs created	(15) +	(14) +	(40) +	(39) +	(43) +	(38) +	(62) +	(39) +	(38) +	All scenarios create a small number of additional jobs. The total is not significant for the region overall although it may be important locally. Scenarios 5 and 7 perform best in this respect.
Costs of waste management (Rated 1-10, 1 being the chepest)	4 -	3 +	3 +	3 +	1 +	7 -	8 --	3 +	10 --	Option 5 is the cheapest option both in terms of capital expenditure and operational costs. It must be noted, however, that due to the limited number of plants to base these costs on, the costs may only be regards as broad estimates and they may be underestimates. The reliability of the technology and the market for the outputs can not be disregarded either. Options 2, 3, 4 and 8 are also good performers in terms of lower CAPEX and higher savings in OPEX. Option 9 performs poorly in this option as it is potentially very costly to install.
Promotion and implementation of information and awareness-raising activities	0	0	0		0	0	0	0	0	None of the options perform significantly differently from the baseline level against this criterion.
Emissions to air of key pollutants	(-419) +	(-2,526) +	(-10,213) ++	(-904) +	(-7,978) ++	(-1,505) +	(-1,894) +	(-3,075) +	(-8,415) ++	SO_2 is modelled as being an indicator of key air pollutants. Options 3, 5 and 9 perform the best in terms of reducing the amount of SO2 produced.
Consumption of water resources	Some types of AD process require significant quantities of water as inputs.	Some types of AD process require significant quantities of water as inputs.	Unlikely to consume significant quantities of water other than for wash-down.	Unlikely to consume significant quantities of water other than for wash-down.	Requires water to steam treat the waste, although likely to be re-circulated within the process.	Requires process water for washing flue gases.	Steam may be used to heat the waste.	Unlikely to consume significant quantities of water other than for wash-down.	Requires process water for washing flue gases.	Some of the technologies proposed require water as part of the process. The amounts needed vary with the technology but no precise figures are known. Potential resource consumption should be taken into account in decisions on locating facilities.

Criteria	Option 1 AD putresc	Option 2 AD all	Option 3 MBT/RDF	Option 4 MBT/landfill	Option 5 Autoclave	Option 6 EfW	Option 7 ATT	Option 8 Aerobic Dig	Option 9 EfW - CHP	Comments
Impact on water quality	Process water will need to be managed to control any effluent.	Process water will need to be managed to control any effluent.	Pollution from process water is unlikely, although any wash-down water will require drainage management on-site	Pollution from process water is unlikely, although any wash-down water will require drainage management on-site	Process water will need to be managed to control any effluent.	Produces effluent which will require management.	Is likely to produce effluent which will require management.	Pollution from process water is unlikely, although any wash-down water will require drainage management on-site	Produces effluent which will require management.	Significant pollution is unlikely from any of the technologies as long as the facilities are managed in line with good practice. The significance of any potential impacts depends on the sensitivity of the receiving waters and should be assessed and controlled through the permitting processes.
Emissions of greenhouse gases	(-166,838) +	(-724,656) +	(-1,281,719) ++	(-189,005) +	(-1,595,522) ++	(142,093) -	(-37,562) +	(-827,190) +	(-589,922) +	Option 5 produces the least greenhouse gases, reducing the level by over 1.5 million tonne equivalents below the baseline position. Option 6 is the worst performing as it increases the level of greenhouse gases emitted.
Consumption and generation of energy	(-1,233,898) +	(-18,281,908) ++	(-3,324,641) +	(-725,725) +	(-19,425,633) ++	(-4,813,705) +	(-5,684,322) +	(-31,730,915) ++	(-17,925,984) ++	Options 2, 5, 8 and 9 have the greatest effects in terms of reducing consumption of energy. Over 15 million tonnes of crude oil equivalents are saved by each of these options.
Renewable energy generation	0	0	+	0	+	++	++	0	++	Options that use combustion to produce heat and power, or that produce a material which is used in a plant that will produce heat and power, perform highest in this case. Options 6, 7 and 9 therefore score the highest.
Promotion of measures to reduce impacts of climate change	+	+	++	+	++	-	+	+	+	This criterion is linked to the environmental impacts criteria. The production of CO_2 will lead to climate change as will the production of Methane. Options 3 and 5 perform best as they result in the least amount of CO_2 and methane being released to the atmosphere.
Compliance with waste hierarchy	++	++	+	+	++	+	+	++	+	This criterion reflects the amount of recycling/composting and recovery that is carried out by each option. The options that perform best in this respect are options 1, 2, 5 and 8. The amount of recovery is high and the proportion of that which is recycling/composting is highest in these options, therefore putting them higher up the waste hierarchy.

Criteria	Option 1 AD putresc	Option 2 AD all	Option 3 MBT/RDF	Option 4 MBT/landfill	Option 5 Autoclave	Option 6 EfW	Option 7 ATT	Option 8 Aerobic Dig	Option 9 EfW - CHP	Comments
Levels of recycling and composting	(511,549) ++	(545,272) ++	(64,388) +	(63,778) +	(507,633) ++	(0) 0	(0) 0	(536,452) ++	(0) 0	Options 6, 7 & 9 involve combustion of wastes and therefore can not include any recycling against recycling and composting targets, therefore there is no difference to the baseline for these options. In reality these operations do carry out recycling of metals and often the bottom ash from the processis recycled, a 0 is recorded though as these do not count against r&c targets. The best performing options are 2 and 8 closely followed by 1 and 5.
Level of recovery	(765,909) +	(1,226,630) +	(1,161,369) +	(63,778) +	(1,903,998) ++	(1,388,076) ++	(1,405,679) ++	(1,396,428) ++	(1,388,076) ++	Options 5 and 7 perform the best against this criterion. Combustion options do not perform well for recycling/ composting. However when it comes to recovery they are very effective.
Amount of biodegradable municipal waste landfilled.	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	(-1,278,646) +	The amount of biodegradable municipal waste landfilled does not vary across the options according to the modelling. In practice, if the residues from any treatment process are to be landfilled the impact on landfill diversion would need to be confirmed by analysis of the BMW content of the residues and agreement with the EA.
Amount of waste landfilled	(-1,278,646) +	(-1,958,491) ++	(-2,160,723) ++	(-1,958,491) ++	(-2,119,185) ++	(-1,958,491) ++	(-1,958,491) ++	(-2,000,322) ++	(-1,958,491) ++	Options 3 and 5 are the best performing options, diverting over 3 million tonnes of waste from landfill. Options 2, 4, 6, 7, 8 and 9 all divert slightly less waste from landfill.
Amount of hazardous waste generated	(0) 0	(0) 0	(0) 0	(0) 0	(0) 0	(63,638) -	(81,792) -	(0) 0	(63,638) -	Only combustion options produce hazardous waste in the form of fly ash. All other options are no different to the baseline in producing no hazardous waste.
Effect on ability to achieve self-sufficiency	0	0	0	0	0	0	0	0	0	All facilities could be located within South Tyne and Wear. Movement of products (refuse derived fuel, compost, recyclables) outside the authority would present the main method of differentiation between options.
Effect on depletion of resources	(-61,699) +	(-441,316) ++	(-728,551) ++	(-64,682) +	(-772,895) ++	(-241,276) ++	(-307,298) ++	(-646,041) ++	(-500,161) ++	All options have a positive effect on the level of resources depletion (they all decrease depletion). Options 3, 5 and 8 are the best performing however options 2, 6, 7 and 9 all reduce resource depletion significantly.

Criteria	Option 1 AD putresc	Option 2 AD all	Option 3 MBT/RDF	Option 4 MBT/landfill	Option 5 Autoclave	Option 6 EfW	Option 7 ATT	Option 8 Aerobic Dig	Option 9 EfW - CHP	Comments
Impact on human health	(-0.0017) +	(-0.0026) +	(0.0498) -	(0.0113) -	(0.0695) -	(0.1247) -	(0.0243) -	(-0.0120) +	(0.1247) -	Options 1, 2 and 8 all have slightly positive impactss on health, whilst the others all have slightly negative impacts. However, all the overall impacts, positive and negative, are very small. Options 6 and 9 have the largest detrimental effects, however this is still not very significant.
Effect on amenity	(-7.67) - -	(-11.75) - -	(5.12) +	(0.00) 0	(4.75) +	(-4.92) -	(-4.65) -	(1.92) +	(-4.92) -	Amenity scores show Options 3 and 5 to be the best options, with Options 1 and 2 scoring the worst. Options 6, 7 and 9 also had negative impacts.
Effect on communities	See comments	See comments	See comments	See comments	See comments	See comments	See comments	See comments	See comments	New waste facilities will all have impacts on the communities within which they are located, both positive (in terms of jobs) and negative (in terms of amenity). Impacts will be similar for all options.
Effect on waste transport	See comments	See comments	See comments	See comments	See comments	See comments	See comments	See comments	See comments	For this criterion, the impacts are related to the quantity of outputs from each of the processes requiring onward transport and the distance to markets or disposal. However, locations, and hence distances, are not known at this stage. Impacts in the vicinity of facilities will be assessed and mitigated through development control.
Promotion of alternatives to road transport	See comments	See comments	See comments	See comments	See comments	See comments	See comments	See comments	See comments	Construction of new facilities gives an opportunity to consider potential for alternatives to road transport in decisions on location. In reality, options will be constrained also by the source of inputs and destination of outputs and are likely to be limited.
Deliverability	+	-	++	++	- -	++	- -	++	-	Options 3, 4 and 6 are all technologies that are currently in use. Options 5 and 7 are seen as emerging technologies. They are not yet established in the UK and as such a certain risk would be associated with them. Also option 5 relies on an output for it's residues that is undetermined at this time. Options 1 and 2 involve a treatment technology that has a limited usage. Option 2 is not seen as being particularly reliable for treating total residual wastes. Option 9 includes an existing technology, but incorporating CHP into current infrastructure can be problematic. To include CHP in infrastructure built at the same time is much easier. This criteria does not take into account issues with planning.

		++	excellent	+	good	x	unknown	
		0	no change	-	poor	- -	detrimental	

6 POLICIES AND OBJECTIVES OF THE MWMS

6.1 INTRODUCTION

The objectives and policies of the JMWMS were appraised against the framework of SEA objectives and criteria. For the appraisal of JMWMS objectives, the purpose is to identify where there are potential incompatibilities between any of these objectives and sustainable development policy objectives as framed by the SEA appraisal objectives. For the policies of the JMWMS, the purpose of the appraisal is to identify the likely significant effects of the policies on the achievement of sustainable development objectives and to recommend ways of mitigating any adverse effects and enhancing opportunities for positive effects. The results of the appraisal and the recommendations arising are set out in this section.

6.2 COMPATIBILITY OF JMWMS OBJECTIVES AND SEA OBJECTIVES

The strategic objectives were assessed against the SEA objectives to show where there are expected to be relevant links between them. *Table 6.1* sets out where the links are predicted to be positive compatible (✓), neutral (Ø), uncertain (?) or possible conflict (x).

There are no identified potential conflicts between the MWMS objectives and sustainable development objectives, although there are a number of areas where the effects of the MWMS on sustainable development objectives is uncertain. In each case, a commentary is given to explain the potential effects and the issues are examined in more detail in the policy appraisal to understand more clearly the impact of the MWMS against each of the relevant criteria.

In all other cases, the MWMS objectives are either positive compatible or neutral.

Table 6.1 JMWMS Objectives

1	**The Partnership has set the following objectives for prioritising waste management:**	
	1a	Reduce the amount of waste that is generated;
	1b	Reuse waste;
	1c	Recycle and / or compost waste as far as this is practicable within economic and environmental constraints; and
	1d	Recover energy from the remaining waste and finally dispose of residual waste safely

2 In making decisions about how waste is managed, the objectives of the Partnership will be to:

- 2a Reduce as far as practicable the amount of waste that is generated;
- 2b Consider the most appropriate and sustainable methods and technologies for dealing with waste;
- 2c Deliver waste services that offer value for money;
- 2d Manage waste at the nearest possible waste management facility to reduce the carbon footprint of waste transport;
- 2e Manage and dispose of waste generated within the 'Partnership area';
- 2f Maximise opportunities to turn one person's waste into another's resources;
- 2g Maximise opportunities to create jobs in the waste sector;
- 2h Ensure all is done to provide waste management facilities in the most user friendly and environmentally friendly manner;
- 2i Make services accessible to all people who live in, work in or visit the area, reducing the need to travel to dispose of waste;
- 2j Manage waste in a way that takes account of the potential needs of future generations, avoiding environmental damage and without endangering human health, taking into account climate change in its decisions; and
- 2k Take accounts of life cycle impacts when dealing with waste and procuring goods and services.

3 The following objectives are those set out by the Partnership that are linked to waste reduction:

- 3a To educate the public on waste reduction matters raising awareness and responsibilities.
- 3b To work with others in the Region to urge the Government to introduce measures, and will also work with industry, to reduce packaging.
- 3c To 'lead by example' in the introduction of best practice in minimising waste from their own operations, including council contracts and purchasing practices.
- 3d To minimise waste generation both in the construction phase of new developments and redevelopments, whether domestic, commercial or industrial, and throughout the operational/useful lifetime of the properties.

4 The Partnership has set the following objectives with respect to recycling and composting for the Strategy:

- 4a To achieve the targets set out in this Strategy for recycling and / or composting and, in the longer term, to exceed the statutory targets set by Government where this is practicable.
- 4b Ensure that viable recycling facilities are available to all residents, including those living in flats and in rural areas.
- 4c To ensure that all new developments include facilities for recycling and composting of waste wherever practicable.
- 4d To increase awareness of waste management issues at home, at school, at work and to our visitors to encourage behavioural changes that maximise participation in recycling schemes.
- 4e Work with industry and organisations such as WRAP to find and develop markets for recyclables and recycled products**.**
- 4f Assist in building capacity in the voluntary sector to promote/support reuse and recycling of materials.

5 The Partnership has set the following objectives regarding the disposal/treatment of waste:

- 5a To meet or exceed national waste recovery targets and to exceed these in the longer term where this is practicable.
- 5b Reduce the amount of biodegradable municipal waste landfilled in line with government allowances allocated to the councils and reduce the reliance on landfill.

6	**The Partnership has set the following objectives regarding the provision of services and monitoring and review of the Strategy:**
	6a To work together to source funding for making the necessary changes and we will share in the costs and benefits of delivering the Strategy.
	6b To prepare communication strategies to promote reduction, reuse and recycling within the community and ensure that education and information relating to waste and environmental services is available for all.
	6c To ensure that accurate, regular ongoing monitoring is carried out so that future performance (such as reductions in the amount of waste generated) can be measured and reported.
	6d To keep the policies included in this Strategy under review and update action plans as necessary (reviewing them at least every year) and revise the headline Strategy before 2013. New versions will be posted on the councils' websites.

Table 6.2 Appraisal of JMWMS Objectives (Objectives 1 & 2)

JMWMS Objective	1a	1b	1c	1d	2a	2b	2c	2d	2e	2f	2g	2h	2i	2j	2k	Comments on uncertainties
SEA Objective																
1. To provide new jobs	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	
2. To promote social enterprise	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	
3. To promote economic growth	Ø	Ø	?	Ø	Ø	✓	?	Ø	Ø	✓	✓	Ø	Ø	Ø	Ø	Objective states that recycling will be practicable within economic constraints, implying that economic growth will not be adversely affected, although it is unlikely to promote economic growth to a significant degree. Providing value for money implies that costs will be acceptable, although this is unlikely to promote economic growth to a significant degree.
4. To promote innovation	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
5. To promote awareness and information on waste issues	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
6. To improve air quality	Ø	Ø	Ø	?	Ø	✓	Ø	Ø	Ø	Ø	Ø	?	Ø	✓	?	There is potential for air emissions from energy recovery. This is examined in more detail in the policy and options appraisals.
7. To promote sustainable use of water resources	Ø	Ø	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	?	Ø	✓	?	
8. To protect and improve water quality	Ø	Ø	Ø	✓	Ø	✓	Ø	Ø	Ø	Ø	Ø	?	Ø	✓	?	
9. To reduce greenhouse gas emissions	Ø	Ø	Ø	✓	Ø	✓	Ø	✓	?	Ø	Ø	?	✓	✓	?	Disposing of waste within the partnership area should help to reduce greenhouse gas emissions but the overall balance of effects is not clear and will be tested in the options appraisal.

JMWMS Objective	1a	1b	1c	1d	2a	2b	2c	2d	2e	2f	2g	2h	2i	2j	2k	Comments on uncertainties
10. To increase energy efficiency	Ø	Ø	Ø	✓	Ø	✓	Ø	✓	?	Ø	Ø	?	Ø	?	?	Disposing of waste within the partnership area should help to reduce energy use for waste transport but the overall balance of effects is not clear and will be tested in the options appraisal. Taking account of climate change could contribute to increased energy efficiency, although this is not explicit. This is examined in more detail in the policy appraisal.
11. To increase the generation of renewable energy	Ø	Ø	Ø	?	Ø	✓	Ø	Ø	Ø	Ø	Ø	?	Ø	?	Ø	Extent to which energy recovery will be renewable is not clear and dependent on choice of residual treatment technology. Taking account of climate change could contribute to increased renewable energy generation, although this is not explicit.
12. To reduce the impacts of climate change	Ø	Ø	Ø	✓	Ø	✓	Ø	✓	?	Ø	Ø	?	✓	✓	?	Disposing of waste within the partnership area should help to reduce greenhouse gas emissions but the overall balance of effects is not clear and will be examined in more detail in the policy appraisal.
13. To protect and improve biodiversity	Ø	Ø	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	?	Ø	✓	Ø	
14. To protect and improve geodiversity	Ø	Ø	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	?	Ø	✓	Ø	
15. To implement the waste hierarchy	✓	✓	✓	✓	✓	✓	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	
16. To reduce the amount of waste produced	✓	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
17. To increase recycling and composting	Ø	Ø	✓	?	Ø	✓	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	There are opportunities for residual treatment to contribute to recycling levels, although it is not clear that

JMWMS Objective	1a	1b	1c	1d	2a	2b	2c	2d	2e	2f	2g	2h	2i	2j	2k	Comments on uncertainties
																this will be sought. This issue is examined in more detail in the policy appraisal.
18. To increase recovery of value from waste	Ø	✓	✓	✓	Ø	✓	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	
19. To reduce landfill of biodegradable municipal waste	✓	Ø	✓	✓	✓	✓	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	
20. To reduce landfill of waste	✓	✓	✓	✓	✓	✓	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	
21. To reduce hazardous waste	?	Ø	Ø	?	?	✓	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Energy recovery may increase hazardous waste generation. This is examined in more detail in the policy and options appraisals.
22. To achieve self-sufficiency	✓	Ø	?	?	✓	✓	Ø	?	✓	Ø	Ø	Ø	Ø	Ø	Ø	Increased recycling/composting may adversely affect self sufficiency. See policy appraisal for more detailed assessment.
23. To promote resource efficiency	✓	✓	✓	✓	✓	✓	Ø	✓	Ø	✓	Ø	Ø	Ø	Ø	?	
24. To protect and enhance urban and rural landscapes	?	?	?	Ø	Ø	✓	Ø	Ø	?	Ø	Ø	?	Ø	✓	Ø	Reducing the amount of waste disposed to landfill is likely to delay the closure and restoration of individual landfill sites, although will also delay the need for new sites. Disposing of waste within the partnership area could have adverse effects on landscapes if sites suitable in landscape terms are not available. See policy appraisal for more detailed assessment.
25. To protect and enhance cultural heritage and historic assets	Ø	Ø	Ø	Ø	Ø	✓	Ø	Ø	?	Ø	Ø	?	Ø	✓	Ø	Disposing of waste within the partnership area could have adverse effects on historic assets, although this is dependent on location-specific effects and on development control policy and conditions.
26. To reduce crime	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	

JMWMS Objective	1a	1b	1c	1d	2a	2b	2c	2d	2e	2f	2g	2h	2i	2j	2k	Comments on uncertainties
27. To protect human health	Ø	Ø	Ø	✓	Ø	✓	Ø	Ø	Ø	Ø	Ø	?	Ø	✓	?	
28. To improve access to services and facilities	Ø	Ø	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	?	✓	Ø	Ø	
29. To promote public and community involvement	✓	✓	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	Ø	✓	✓	Ø	Ø	
30. To encourage sustainable procurement	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	?	
31. To minimise adverse impacts on amenity	✓	Ø	Ø	?	✓	✓	Ø	Ø	Ø	Ø	Ø	?	Ø	✓	?	Safe disposal should minimise adverse impacts on amenity although residual treatment may increase amenity impacts. This is examined in more detail in the policy appraisal.
32. To take account of the impact on communities	Ø	Ø	Ø	?	Ø	✓	Ø	Ø	Ø	Ø	Ø	✓	✓	✓	?	As above for amenity impacts.
33. To minimise waste transport	✓	?	?	Ø	✓	✓	Ø	✓	✓	Ø	Ø	?	✓	✓	Ø	Increased reuse and recycling may increase the amount of waste transport required.
34. To promote alternatives to road transport	Ø	Ø	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	?	Ø	?	?	Taking account of the impacts of climate change could promote alternatives to road transport although this is not explicit. This is examined in more detail in the policy appraisal.
35. To reduce car use	Ø	Ø	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	?	?	Ø	?	Making facilities accessible may help to reduce car use but this is not explicit. This is examined in more detail in the policy appraisal.
36. To ensure flexibility to meet future waste management needs	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
37. To ensure deliverability of waste management systems	?	?	?	?	?	✓	✓	✓	?	✓	✓	✓	✓	✓	✓	Several objectives in relation to managing waste according to the waste hierarchy and achieving targets are

JMWMS Objective	1a	1b	1c	1d	2a	2b	2c	2d	2e	2f	2g	2h	2i	2j	2k	Comments on uncertainties
																dependent on other factors to ensure their deliverability. All of these factors are addressed in other objectives. Deliverability is examined in more detail in the policy and options appraisals.

Table 6.3 Appraisal of MWMS Objectives (Objectives 3 – 6)

JMWMS Objective	3a	3b	3c	3d	4a	4b	4c	4d	4e	4f	5a	5b	6a	6b	6c	6d	Uncertainties
SEA Objective																	
1. To provide new jobs	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
2. To promote social enterprise	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
3. To promote economic growth	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
4. To promote innovation	Ø	✓	✓	Ø	Ø	Ø	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
5. To promote awareness and information on waste issues	✓	Ø	✓	Ø	Ø	Ø	Ø	✓	✓	✓	Ø	Ø	Ø	✓	✓	✓	
6. To improve air quality	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
7. To promote sustainable use of water resources	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
8. To protect and improve water quality	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	?	Ø	Ø	Ø	Ø	Reducing landfill should help to protect and improve water quality although significance of impacts is dependent on operational standards at individual facilities.
9. To reduce greenhouse gas	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	?	✓	Ø	Ø	Ø	Ø	Recovery is likely to include energy recovery, which

JMWMS Objective	3a	3b	3c	3d	4a	4b	4c	4d	4e	4f	5a	5b	6a	6b	6c	6d	Uncertainties
emissions																	should contribute to reducing greenhouse gas emissions, although the balance of impacts is unclear and dependent on technology choices. This is examined in more detail in the options appraisal.
10. To increase energy efficiency	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	✓	?	Ø	Ø	Ø	Ø	The impacts on energy efficiency of reduced landfill is dependent on technologies chosen. This is examined in more detail in the options appraisal.
11. To increase the generation of renewable energy	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	?	Ø	Ø	Ø	Ø	The impacts on renewable energy generation of reduced landfill is dependent on technologies chosen. This is examined in more detail in the options appraisal.
12. To reduce the impacts of climate change	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	?	✓	Ø	Ø	Ø	Ø	Recovery is likely to include energy recovery, which should contribute to reducing greenhouse gas emissions and therefore the impacts of climate change, although the balance of impacts is unclear and dependent on technology choices. This is examined in more detail in the options appraisal.
13. To protect and improve biodiversity	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
14. To protect and improve geodiversity	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
15. To implement the waste hierarchy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Ø	✓	Ø	Ø	
16. To reduce the amount of waste produced	✓	✓	✓	✓	Ø	Ø	Ø	Ø	Ø	✓	Ø	Ø	Ø	✓	Ø	Ø	
17. To increase recycling and composting	Ø	Ø	✓	Ø	✓	✓	✓	✓	✓	✓	✓	Ø	Ø	✓	Ø	Ø	
18. To increase recovery of	Ø	Ø	Ø	Ø	✓	✓	✓	✓	✓	✓	✓	✓	Ø	✓	Ø	Ø	

JMWMS Objective	3a	3b	3c	3d	4a	4b	4c	4d	4e	4f	5a	5b	6a	6b	6c	6d	Uncertainties
value from waste																	
19. To reduce landfill of biodegradable municipal waste	Ø	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Ø	✓	Ø	Ø	
20. To reduce landfill of waste	Ø	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Ø	✓	Ø	Ø	
21. To reduce hazardous waste	Ø	Ø	✓	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
22. To achieve self-sufficiency	Ø	Ø	Ø	Ø	?	?	?	?	?	?	✓	✓	Ø	Ø	Ø	Ø	Increasing recycling and composting may decrease the level of self-sufficiency by requiring recyclables to be transported out of the area for processing. This is examined in more detail in the policy and options appraisals.
23. To promote resource efficiency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Ø	✓	Ø	Ø	
24. To protect and enhance urban and rural landscapes	Ø	Ø	Ø	Ø	Ø	?	?	Ø	Ø	Ø	Ø	?	Ø	Ø	Ø	Ø	Facilities may affect townscapes if additional bins are required at every property. This is examined in more detail in the policy appraisal. Requiring all developments to have recycling/composting facilities may also affect the urban landscape, however this is an issue for development control. The effect of reduced landfill on landscapes is unclear, and could be positive through reducing the demand for new landfill sites but negative through the requirement for new treatment facilities. This is examined in more detail in the policy appraisal.
25. To protect and enhance cultural heritage and historic	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	

JMWMS Objective	3a	3b	3c	3d	4a	4b	4c	4d	4e	4f	5a	5b	6a	6b	6c	6d	Uncertainties
assets																	
26. To reduce crime	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
27. To protect human health	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	?	Ø	Ø	Ø	Ø	Effects on health are potentially positive through reduced landfill of waste but negative through increased waste treatment. The effects are examined in more detail in the options appraisal.
28. To improve access to services and facilities	Ø	Ø	Ø	Ø	Ø	✓	✓	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
29. To promote public and community involvement	✓	Ø	Ø	Ø	Ø	✓	✓	✓	Ø	✓	Ø	Ø	Ø	✓	Ø	Ø	
30. To encourage sustainable procurement	Ø	Ø	✓	✓	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
31. To minimise adverse impacts on amenity	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	?	Ø	Ø	Ø	Ø	Effects on amenity are potentially positive through reduced landfill of waste but negative through increased waste treatment. The effects are examined in more detail in the options appraisal.
32. To take account of the impact on communities	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	?	?	Ø	Ø	Ø	Ø	Meeting recovery targets and diverting waste from landfill will require residual waste treatment facilities which may have adverse impacts on communities and which should be taken into account. This is examined in more detail in the policy appraisal.
33. To minimise waste transport	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	?	Ø	Ø	Ø	Ø	Diverting waste from landfill could potentially increase the amount of waste transport. This is examined in the policy and options appraisals.
34. To promote alternatives to road transport	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	
35. To reduce car use	Ø	Ø	Ø	Ø	Ø	?	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Facilities may or may not require car access, depending on

JMWMS Objective	3a	3b	3c	3d	4a	4b	4c	4d	4e	4f	5a	5b	6a	6b	6c	6d	Uncertainties
																	whether kerbside or bring and how accessible on foot. This is examined in more detail in the policy appraisal.
36. To ensure flexibility to meet future waste management needs	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	✓	✓	
37. To ensure deliverability of waste management systems	✓	✓	✓	✓	?	✓	✓	✓	✓	✓	?	?	✓	✓	✓	✓	Several objectives in relation to managing waste according to the waste hierarchy and achieving targets are dependent on other factors to ensure their deliverability. All of these factors are addressed in other objectives. Deliverability is examined in more detail in the policy and options appraisals.

6.3 SIGNIFICANT EFFECTS OF THE POLICIES

The policies of the JMWMS were appraised against the framework of SEA objectives and criteria. The purpose of the appraisal is to identify the likely significant effects of the policies on the achievement of sustainable development objectives and to recommend ways of mitigating any adverse effects and enhancing opportunities for positive effects. The results of the appraisal and the recommendations arising are set out in this section.

A summary of the assessment of the policies against each of the criteria is set out in *Table 6.4*. The following symbols are used:

+	impact likely to be positive
-	impact likely to be negative
0	no impact
?	impact unknown

A number of factors were considered in assessing the significance of the predicted effects:

- *Nature.* The nature of each predicted effect was assessed, with a narrative description of the effect and an assessment of whether it is positive, negative, neutral or uncertain.

- *Scale.* An assessment was made of the scale of the predicted effect in relation to the existing baseline and expected trends, where known.

- *Probability.* A rating was given for the level of certainty that an individual policy would lead to the predicted effect, either low, medium or high. There are a number of possible reasons for uncertainty, including the lack of a direct link between the aim of the policy and the appraisal objective, the dependence of the effect also on other policies and plans or other issues, and the dependence on location for some effects.

- *Timescales.* The assessment considered how the predicted effects might be expected to vary over time. Three timescales were used: short, in other words during the expected period of the Strategy (5 years); medium, or during the following 10-15 years; and long, or beyond a 15-20 time horizon and in other words a more lasting effect.

- *Direct or indirect.* The assessment rated the effects according to whether they are likely to arise as a direct aim of the policy, or whether they will arise indirectly, in other words not as a direct aim of the policy but nevertheless as a consequence of it, for example occurring as a secondary effect of a more direct outcome.

- *Significance.* The effects were then rated for their significance in terms of the importance for achieving each appraisal objective. Effects were rated

either high, medium or low, taking account of a number of factors. The factors taken into consideration in determining significance were:

- the expected scale of the effect or the degree to which the effects are likely to contribute to the achievement of the appraisal objective in the Partnership area overall;
- the certainty or probability that the effect is likely to occur as a consequence of the policy;
- the timeframe of the effects;
- whether the effects would be permanent or reversible;
- whether the effect is a direct aim of the policy or not, in other words whether the policy is a key mechanism for achieving or controlling effects;
- whether the effect is more strongly dependent on other policies, other plans or other factors.

The detailed assessment of the policies against all of the above criteria is not included within this Environmental Report because of the large size of the document, but it is available on request.

The tables include colour to indicate the relative significance of the impacts:

	Low significance
	Medium significance
	High significance

An assessment of the cumulative impacts of the strategy, summarising all the previous assessments is given in *Table 6.5*.

6.3.1 Conclusions

The following conclusions have been drawn from the policy appraisal.

The key significant impacts of the strategy are in moving waste management activities up the waste hierarchy, in other words the strategy will reduce the landfill of waste, including biodegradable waste, by aiming to reduce the amount of waste generated and increasing reuse, recycling, composting and recovery of value, both in terms of material resources and energy. This will contribute to reducing the consumption of resources for the production of goods from new raw materials, supporting increased resource efficiency. The Councils seek to lead by example, including through the adoption of sustainable approaches to procurement and to managing their own waste.

Moving waste up the hierarchy will have a number of other benefits, including ensuring any risks to health, although small, are minimised and reducing the likelihood of adverse impacts on water quality. There is a clear emphasis on taking account of climate change and reducing the emissions of greenhouse gases from waste-related activities, through the avoidance of resource consumption and minimising the landfill of biodegradable waste. There is also potential for greenhouse gas reductions through the generation of energy, both from residual treatment and landfill gas capture.

The impacts on levels of waste transport are less clear. There is a clear commitment to minimising waste-related transport. However, increased recycling may result in more recyclables being transported out of the Partnership area if sufficient capacity is not available locally, which is likely to increase the amount of waste transport and any associated effects on congestion and amenity. However, the strategy gives a clear commitment to promoting local recycling and composting capacity where practicable. The scale of effects on waste transport depends on where facilities are located in relation to the sources of waste and waste infrastructure, the transport network and the existing traffic levels, which is unknown and outside the scope of the strategy.

The strategy is likely to have a positive impact on air emissions. Reducing the quantity of waste requiring treatment and disposal will help to reduce emissions from treatment plant and landfill sites. The impacts of these emissions are unlikely to be significant for air quality overall in South Tyne and Wear. There may be issues of air quality for particular locations and this should be assessed in locational choices and be the subject of EIA for proposed facilities. Waste management activities also have the potential for biodiversity impacts, through land take and physical disturbance and from emissions, both from facilities and transport. The significance of any impacts will vary with location and should be assessed in site selection and in EIAs for planning applications.

The effect on economic growth is somewhat uncertain. Moving the management of waste up the waste hierarchy will help to promote potentially innovative economic development, which could be within South Tyne and Wear which is supported by the strategy. Such a commitment would also help to avoid the potential adverse impacts on the capacity to achieve self-sufficiency from increased recycling, composting and treatment requirements. There are also opportunities to promote social enterprises in the delivery of waste services and this is positively promoted by the strategy. The effect on the costs of waste management are more uncertain. Promoting the diversion of waste from landfill will avoid the need to purchase LATS allowances and will also avoid incurring landfill costs including landfill tax. However, it may also increase other waste management costs for example for recycling and treatment, although there may also be economic benefits from the sale of energy from residual treatment if the chosen technology generates it. The impact on the costs of waste management is examined in more detail in the options appraisal.

There may be impacts on local communities through the construction and operation of new waste facilities, in particular increased levels of recovery will require new waste treatment facilities which could have impacts on the communities where facilities are located. By maximising job creation, the strategy will help to ensure some positive impacts for communities. There will also be benefits to communities near landfill sites which will see a reduction in quantities of waste being managed. Improving accessibility of facilities and increased education and awareness will contribute to reducing the likelihood of fly-tipping which will have benefits for communities as well as the environment.

There are a number of potential effects which depend on implementation and therefore are not clear at this stage. These include the potential for generation of renewable energy and hazardous waste, which depend on the residual treatment technology used, and potential landscape and visual impacts which depend on the design and location of facilities.

Achievement of the strategy's targets is strongly dependent on improving the accessibility of recycling services to the public, on increased levels of public education and awareness to promote participation in waste-related activities, and on developing and supporting markets for recyclables, all of which are recognised and addressed by the strategy. It is also dependent on the existence of outlets for treatment process outputs. Deliverability is further dependent on compatibility with the planning framework which is similarly recognised and addressed. Current planning documents support implementation of the waste hierarchy and impose no clear or specific constraints on the management of waste at higher levels than landfill. This situation may change with the adoption of emerging LDFs by the three authorities. The strategy builds in commitments to cooperation, monitoring, review and dialogue with the planning authorities which will help to ensure the strategy remains deliverable in changing circumstances.

Table 6.4 Significant Effects of JMWMS Policies

	1 Waste hierarchy	2 Decision aims	3 Education on waste reduction	4 Packaging	5 Council min and reuse	6 Waste from developments	7 Recycling targets	8 Recycling facilities	9 Awareness campaigns	10 Recyclable markets	11 Council use of recycled products	12 Recovery and LATS targets	13 Self-sufficiency	14 Working together	15 Communication	16 Monitoring	17 Review	18 Links with Planning
1. To provide new jobs	+	+	0	0	0	0	0	0	0	+	+	+	+	0	0	0	0	0
2. To promote social enterprise	0	+	0	0	+	0	+	0	0	0	0	0	+	0	0	0	0	0
3. To promote economic growth	+	0	0	0	0	+	+	0	0	+	+	?	+	0	0	0	0	0
4. To promote innovation	+	0	0	+	0	0	0	0	0	+	+	0	+	0	0	0	0	0
5. To promote awareness and information on waste issues	0	0	+	0	+	+	0	0	+	0	+	0	0	0	+	0	0	0
6. To improve air quality	?	0/?	+	+	+	0	+	+	+	0	0	?	?	0	+	0	0	0
7. To promote sustainable use of water resources	0	0	0	0	0	0	0	0	0	0	0	?	?	0	0	0	0	0
8. To protect and improve water quality	+	0	0	0	0	0	0	0	0	0	0	+	+	0	0	0	0	0
9. To reduce greenhouse gas emissions	+	+	+	+	+	+	+	+	+	+	+	+	+	0	+	0	0	0
10. To increase energy efficiency	+	+	0	0	0	0	0	0	0	0	0	+	+	0	0	0	0	0
11. To increase the generation of renewable energy	?	0	0	0	0	0	0	0	0	0	0	?	0	0	0	0	0	0
12. To reduce the impacts of climate change	+	+	+	+	+	+	+	+	+	+	+	+	+	0	+	0	0	0
13. To protect and improve biodiversity	+/?	0	0	0	0	0	+	+	+	?	?	+/?	?	0	+	0	0	0

	1 Waste hierarchy	2 Decision aims	3 Education on waste reduction	4 Packaging	5 Council min and reuse	6 Waste from developments	7 Recycling targets	8 Recycling facilities	9 Awareness campaigns	10 Recyclable markets	11 Council use of recycled products	12 Recovery and LATS targets	13 Self-sufficiency	14 Working together	15 Communication	16 Monitoring	17 Review	18 Links with Planning
14. To protect and improve geodiversity	0	0	0	0	0	0	0	0	0	0	0	?	?	0	0	0	0	0
15. To implement the waste hierarchy	+	+	+	+	+	+	+	+	+	+	+	+	0	0	+	0	0	+
16. To reduce the amount of waste produced	+	0	+	+	+	+	0	0	0	0	0	0	0	0	+	0	0	+
17. To increase recycling and composting	+	+	0	0	0	0	+	+	+	+	+	+	0	0	+	0	0	+
18. To increase recovery of value from waste	+	+	0	0	+	0	+	+	+	+	+	+	0	0	+	0	0	+
19. To reduce landfill of biodegradable municipal waste	+	+	+	+	+	+	+	+	+	+	+	+	0	0	+	0	0	+
20. To reduce landfill of waste	+	+	+	+	+	+	+	+	+	+	+	+	0	0	+	0	0	+
21. To reduce hazardous waste	?	0	0	0	+	+	0	0	0	0	0	?	0	0	0	0	0	0
22. To achieve self-sufficiency	?	+	+	+	+	+	?	?	?	?	?	?	+	0	?	0	0	+
23. To promote resource efficiency	+	+	+	+	+	+	+	+	+	+	+	+	0	0	+	0	0	0
24. To protect and enhance urban and rural landscapes	+	+/?	0	0	0	0	0	+	0	0	0	?	?	0	0	0	0	0
25. To protect and enhance cultural heritage and historic assets	0	+	0	0	0	0	0	+	0	0	0	0	0	0	0	0	0	0
26. To reduce crime	0	+	0	0	0	0	0	+	+	0	0	0	+	0	0	0	0	0

	1 Waste hierarchy	2 Decision aims	3 Education on waste reduction	4 Packaging	5 Council min and reuse	6 Waste from developments	7 Recycling targets	8 Recycling facilities	9 Awareness campaigns	10 Recyclable markets	11 Council use of recycled products	12 Recovery and LATS targets	13 Self-sufficiency	14 Working together	15 Communication	16 Monitoring	17 Review	18 Links with Planning
27. To protect human health	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28. To improve access to services and facilities	+	+	0	0	0	0	0	+	0	0	0	0	0	0	0	0	0	0
29. To promote public and community involvement	+	0	0	0	+	0	0	+	+	+	+	0	0	0	+	0	0	0
30. To encourage sustainable procurement	0	+	0	0	+	0	0	0	0	0	+	0	0	0	0	0	0	0
31. To minimise adverse impacts on amenity	+/?	+	0	0	0	0	?	0	0	0	0	?	?	0	0	0	0	0
32. To take account of the impact on communities	+/-	+/0	+	0	+	0	0	+	+	0	+	-/+	?	0	+	0	0	0
33. To minimise waste transport	?	+	+	+	+	+	?	?	?	?	?	?	?	0	?	0	0	+
34. To promote alternatives to road transport	?	0	0	0	0	0	0	0	0	0	0	?	?	0	0	0	0	0
35. To reduce car use	?	+	0	0	0	0	0	+	?	0	0	0	0	0	?	0	0	0
36. To ensure flexibility to meet future waste management needs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	0
37. To ensure deliverability of waste management systems	+	+	0	0	+	-	?	+	+	+	+	+	+	+	+	+	+	+

Table 6.5 Cumulative assessment of effects of strategy

SEA criteria	Cumulative assessment	
1. To provide new jobs	+	Implementing the strategy will create new economic enterprises in waste reuse, recycling and treatment, creating jobs in both construction and operation of facilities and services, which may be locally important although are unlikely to be significant for the Partnership area as a whole. A small number of posts will also be required to implement reduction, reuse and recycling services and awareness campaigns.
2. To promote social enterprise	+	Moving the management of waste up the waste hierarchy will increase the opportunities for the involvement of social enterprises in the provision of collection, reuse and recycling services, and the strategy includes policy to support and promote their involvement.
3. To promote economic growth	+/?	Moving the management of waste up the waste hierarchy is likely to require new economic enterprises in waste recycling, composting and treatment and may help to promote new capacity within South Tyne and Wear. This could help to promote local and potentially innovative economic development. The effect on the costs of waste management are uncertain. Promoting the diversion of waste from landfill will avoid the need to purchase LATS allowances and will also avoid incurring landfill costs including landfill tax. However, it may also increase other waste management costs for example for recycling and treatment, although there may also be economic benefits from the sale of energy from residual treatment if the chosen technology generates it. The impact on the costs of waste management is examined in more detail in the options appraisal.
4. To promote innovation	+	Moving the management of waste up the waste hierarchy is likely to require new economic enterprises in waste recycling and treatment which may help to encourage business innovation. In particular, working with others to reduce packaging and to develop new markets for recyclables will promote innovative approaches to dealing with materials and products.
5. To promote awareness and information on waste issues	+	Promotion of awareness and information on waste issues is a clear and direct aim of the strategy. Furthermore, commitments to lead by example on minimisation, reuse and use of recycled products will also help to promote awareness and information about waste issues.
6. To improve air quality	0/+/?	Implementing the waste hierarchy is likely to have a positive impact on emissions, mainly through increased recycling which avoids consumption of energy and reduces the need for residual treatment and disposal, but also through efforts to reduce the overall quantity of waste generated which will also help to reduce emissions from treatment and disposal. Impacts are unlikely to be significant for air quality in ST&W overall as air quality is expected to be within the air quality standards across the whole of the area. However, there may be impacts on air quality locally particularly in relation to AQMAs and therefore should be the subject of EIA for proposed facilities.

SEA criteria	Cumulative assessment	
		The strategy seeks to avoid environmental damage which should ensure no significant adverse impacts on air quality. It also seeks to minimise emissions from transport although the amount of waste transport nevertheless may increase. Locations of facilities will also affect the quantity of emissions from waste transport but the locations and consequent effects of transport are unknown.
7. To promote sustainable use of water resources	?	The strategy is unlikely to significantly affect the use of water resources. Waste management facilities will require water for processing, although quantities are unlikely to be great and the significance for available supply depends on the particular location.
8. To protect and improve water quality	0/+	Diverting waste from landfill, particularly biodegradable waste, will help to reduce the risk of water pollution incidents from landfill. However, the risks are mainly dependent on operational standards at landfill sites. Pollution incidents, although possible, are less likely from other waste management facilities. The strategy seeks to avoid environmental damage which should ensure no significant adverse impacts on water quality.
9. To reduce greenhouse gas emissions	+	The strategy explicitly seeks to take account of climate change and minimise the carbon footprint of waste transport. Moving waste up the waste hierarchy by decreasing the amount of waste to be managed overall, and by reducing landfill and increasing recycling and recovery of resources, will contribute to a probable reduction in greenhouse gas emissions. Emissions of methane from landfill will be reduced and energy consumption will be avoided for the extraction and processing of raw and intermediate materials. The strategy seeks to minimise waste transport, but it is possible that the amount of waste transport will nevertheless increase, although the effect on greenhouse gas emissions from waste transport is likely to be less than from reduced landfill and increased recovery. This could include energy recovery which will help to reduce emissions of greenhouse gases by offsetting the need to generate energy elsewhere. The strategy has an objective to recover energy but this is not explicit within the policies.
10. To increase energy efficiency	+	Diverting waste from landfill will increase the capacity for energy recovery from waste treatment, although this is not explicitly promoted within the policies. It will also reduce the capacity for energy generation from landfill gas although this is unlikely to be as much as the energy potentially gained from residual treatment.
11. To increase the generation of renewable energy	?	Reducing the landfill of biodegradable waste will reduce the capacity for renewable energy generation from landfill gas, although the strategy also contains policy to require the capture and use of landfill gas for energy generation which will promote an increase in the amount of renewable energy generated from any landfill gas which is created. The strategy will also increase the capacity for energy recovery from residual treatment, although the extent to which this will qualify as renewable is unknown, and depends in part on the choice of residual treatment technology.

SEA criteria	Cumulative assessment	
12. To reduce the impacts of climate change	+	The strategy explicitly seeks to take account of climate change which should help to reduce the potential impacts. The ways in which that will be done is not specified. Policies to reduce the amount of waste generated will help to reduce the potential greenhouse gas emissions from the management and disposal of waste and so help to reduce the potential impacts of climate change. Increasing recycling and composting will contribute to a reduction in greenhouse gas emissions by increasing resource recovery and reducing the landfill of biodegradable waste, thereby helping to reduce the potential impacts of climate change. Requiring landfill gas capture will also contribute to reducing the potential for climate change impacts. Recovery of energy will help to reduce emissions of greenhouse gases by offsetting the need to generate energy elsewhere. It is possible that the amount of waste transport will increase, although the effect on climate change is likely to be less than from reduced landfill and increased recovery of resources, particularly with the commitment in other policies to minimise waste transport.
13. To protect and improve biodiversity	0/+/?	The strategy seeks to avoid environmental damage which should ensure no significant adverse impacts on biodiversity. However, the significance of impacts will depend to a large extent on the sensitivities at specific locations which is outside the scope of the strategy. Reducing the need for landfill by implementing the waste hierarchy will help to reduce the risk of water pollution which may have local benefits for aquatic biodiversity, although this is also dependent on operational standards. Developing new recycling and residual treatment capacity may have adverse impacts in terms of increased air emissions, landtake and disturbance, although the significance of effects is unknown. Higher tonnages sent for recycling and treatment is likely to increase waste transport, although this is unlikely to be significant in terms of transport overall in ST&W. The effects of disturbance are dependent on conditions at specific sites, which are outside the scope of the strategy. Air quality in ST&W is generally good therefore the effects from emissions are only likely in site-specific circumstances. Developing markets for reuse of compost may help to reduce the consumption of peat-based composts, which would help to conserve peatlands. However, it is not clear what markets/materials may be developed and so the effects are uncertain at this stage.
14. To protect and improve geodiversity	0/?	The strategy seeks to avoid environmental damage which should ensure no significant adverse impacts on geodiversity. However, the significance of impacts will depend to a large extent on the sensitivities at specific locations which is outside the scope of the strategy. Reducing landfill will help to reduce future needs for new landfill capacity, which may help to avoid loss of geodiversity. However, the significance of impacts is dependent on future site-specific sensitivities which are unknown.

SEA criteria	Cumulative assessment	
15. To implement the waste hierarchy	+	The strategy has a clear commitment to implement the waste hierarchy. It achieves this through most of the policies within the strategy. These include several measures to reduce the amount of waste generated, including working in partnership with other relevant organisations and waste minimisation and reuse from the councils' own activities. The strategy also seeks to increase levels of recycling and composting to achieve and where possible exceed targets. This is supported by increasing the availability of recycling facilities, implementing measures to improve education and understanding of the need to reduce, reuse and recycle waste, and working to develop and support markets for recyclables. Finally the strategy seeks to minimise the landfill of waste, promoting landfill diversion and increasing treatment and recovery.
16. To reduce the amount of waste produced	+	The strategy includes a range of measures to reduce the amount of waste generated, including working in partnership with other relevant organisations to reduce packaging, to require waste reduction in new developments and introducing waste minimisation and reuse from the councils' own activities. These measures will be supported by increased awareness and understanding of waste reduction.
17. To increase recycling and composting	+	The strategy has a strong emphasis on increasing levels of recycling and composting, seeking to achieve and where possible exceed targets. This is supported by commitments to increase the availability of recycling facilities, to implement measures to improve education and understanding of the need to reduce, reuse and recycle waste, and working to develop markets for recyclables, including support for recycled products through the Councils' own purchasing activities. The strategy also aims to recover recyclable materials from residual treatment processes.
18. To increase recovery of value from waste	+	Implementation of the waste hierarchy includes a clear commitment to recover value from waste. The strategy aims to maximising the opportunities to convert waste into resources, so increasing the recovery of value. This will be achieved through any measures which achieve landfill diversion, whether by introducing reuse schemes for the councils' own waste and using this to highlight best practice, increasing recycling and composting, or the commitment to increasing levels of recovery. Measures to encourage reuse and recycling will also contribute to the increased recovery of value from waste, such as education and awareness-raising initiatives, increasing the availability of facilities and working to develop and support markets for recyclables.
19. To reduce landfill of biodegradable municipal waste	+	The strategy has a clear commitment to minimise the landfill of waste, which will include minimising the landfill of biodegradable waste as made clear in the policies. This will be achieved in a number of ways, firstly by measures to reduce the amount of waste generated which could include elements of biodegradable waste, including packaging waste and waste from developments, then by adopting targets for increased levels of recycling and composting, supported by increased education and awareness, greater access to facilities to recycle and compost and work to develop markets for recyclables which will include biodegradable materials. Finally, the strategy commits to achieving LATS targets by diverting biodegradable waste from landfill rather than by

SEA criteria	Cumulative assessment	
		purchasing allowances
20. To reduce landfill of waste	+	The strategy has a clear commitment to minimise the landfill of waste. This will be achieved by implementation of the waste hierarchy. Measures will be implemented to reduce the amount of waste generated, including by minimisation of waste arising from council activities and highlighting this as best practice, working in partnership to reduce packaging, and implementing measures to minimise the generation of waste from developments. The commitment to achieving increased levels of recycling and composting will also reduce the landfill of waste, and this will be supported by measures to increase education and awareness of the need to reduce, reuse and recycle, increasing the availability of facilities to recycle and compost and developing markets for recyclables. The clear commitment to increasing levels of recovery will also help to minimise the landfill of waste.
21. To reduce hazardous waste	+/?	It is possible that the commitment to increase levels of recovery could create additional hazardous waste through waste treatment by thermal methods. However, this will depend on the choice of treatment technology which is not known at this stage. The impacts are examined in more detail in the options appraisal. Certain measures to minimise waste generation could make a contribution to reducing the amount of hazardous waste generated, particularly the minimisation of waste arising from council activities and from new developments. The strategy makes a clear commitment to dealing with hazardous waste arisings, including household hazardous waste.
22. To achieve self-sufficiency	+/?	The policy explicitly seeks to achieve self-sufficiency where feasible. Measures to reduce the amount of waste generated will contribute towards the achievement of self-sufficiency in waste management capacity, including working to reduce packaging, the introduction of minimisation and reuse schemes in council operations, influencing the minimisation of waste from developments and through increased education and understanding on waste reduction. However, other measures to move waste up the hierarchy may have effects on the ability of ST&W to achieve self sufficiency, particularly in recycling facilities. Increasing recycling will require outlets to be found for recyclable waste, which is likely to result in increasing volumes of waste being exported out of the area for processing. Promoting landfill diversion will help to conserve landfill capacity within ST&W, although it will also require new recycling and treatment capacity to maintain self-sufficiency. However, the strategy makes a clear commitment to supporting the development of recycling and composting capacity within the Partnership area, which will support the achievement of self-sufficiency wherever this is practicable.
23. To promote resource efficiency	+	The strategy explicitly seeks to maximise the opportunities to convert waste into resources, thereby promoting greater resource efficiency. The strategy has a strong emphasis on measures to increase the recovery of resources from waste instead of disposing to landfill. This will help to minimise consumption of new resources and to improve resource efficiency. In particular, minimisation measures will help to support increased resource efficiency by minimising the consumption of resources in the first place, whether in packaging, construction of developments or the councils' own activities. Resource use will also be taken into account in procurement of all

SEA criteria	Cumulative assessment	
		council goods and services, not just procurement of waste services. Measures to increase levels of recycling and composting will also contribute to increased resource efficiency by reusing material resources and replacing the need for extraction and production of new materials. Increasing levels of recovery will also help to reduce the use of material and energy resources elsewhere.
24. To protect and enhance urban and rural landscapes	+/?	The strategy seeks to avoid environmental damage and to provide facilities and services in an environmentally sound manner taking account of visual impacts. This should ensure that urban and rural landscapes are protected. . The significance of landscape impacts from new residual treatment facilities depends primarily on the location of facilities and is therefore highly dependent on site selection and development control in LDFs. Decreasing the amount of waste landfilled will delay the closure and restoration of individual landfill sites and the landscape benefits that will result, although it will also delay the need for new landfill sites and so delay future potential impacts on landscape.
25. To protect and enhance cultural heritage and historic assets	+	The strategy seeks to avoid environmental damage and to provide facilities and services in an environmentally sound manner taking account of visual impacts, including through appropriate use of the planning system. This should ensure that cultural heritage and historic assets are protected.
26. To reduce crime	+	The strategy will contribute to reducing the incentives to fly-tip by providing readily accessible waste services to all members of the public. Raising awareness and understanding of waste issues will also contribute to this objective. By supporting the development of waste facilities within the Partnership area where practicable, the strategy may also help to reduce fly-tipping by commercial operators by increasing the availability of convenient outlets for waste.
27. To protect human health	+	The strategy explicitly seeks to avoid danger to human health. By aiming to move waste management up the hierarchy, the strategy is likely to ensure any risks to human health are minimised, by reducing the quantity of waste requiring treatment and disposal. Current exposure to risks is nevertheless unlikely to be significant and it is primarily dependent on operational standards at individual facilities. Current pollution control techniques and standards should ensure that developments pose a very small or no risk to human health.
28. To improve access to services and facilities	+	The strategy specifically aims to provide access to recycling facilities for all residents and clearly commits to making waste services readily accessible to all people in ST&W.
29. To promote public and community involvement	+	Implementing the waste hierarchy by reducing and recycling waste will require the provision of greater opportunities for public participation in initiatives. This will be achieved through providing improved access to recycling facilities for all residents and by measures to increase public awareness of waste management issue, including through the Councils aiming to lead by example. Developing the capacity of the voluntary sector to

SEA criteria	Cumulative assessment	
		promote reuse and recycling will also directly help to promote community involvement in waste activities.
30. To encourage sustainable procurement	+	The policy seeks to ensure that procurement of all goods and services takes account of resource use and lifecycle impacts. This will help to promote more sustainable procurement by the ST&W authorities. Some of the supporting text to policy indicates that Partnership will provide for reduction, reuse and recycling measures in procuring services, thereby supporting more sustainable procurement.
31. To minimise adverse impacts on amenity	+/?	The strategy seeks to avoid environmental damage and to provide facilities in an environmentally sound manner through appropriate use of the planning system. This should ensure that significant adverse impacts on amenity are avoided. Reducing landfill through implementation of the hierarchy will reduce the potential for amenity effects from landfill sites. However, there is also the potential for increased local amenity impacts from new residual treatment facilities. The overall balance is unknown but dependent principally on site-specific sensitivities and sufficient avoidance and mitigation through development control policy. The increasing need for waste transport particularly from higher recycling levels could have adverse effects on congestion and amenity depending on where facilities are located in relation to the sources of waste, the transport network and the existing traffic levels, all of which are unknown at this stage.
32. To take account of the impact on communities	+/-/?	The strategy has an explicit commitment to avoid danger to human health and environmental damage, which will help to ensure that account is taken of significant impacts on communities. The commitment to appropriate use of the planning system should further ensure that account is taken of the impacts on communities as is required by PPS1. The commitment to the waste hierarchy is likely to send a strong message that communities must take responsibility for their waste rather than landfilling it, as will the implementation of measures to increase education and understanding on reduction, reuse and recycling and the aim of the Councils to lead by example to the wider community. However, there are likely to be impacts on local communities through the construction and operation of new waste facilities, in particular increased levels of recovery will require new waste treatment facilities which could have impacts on the communities where facilities are located. By maximising job creation, the policy will help to ensure some positive impacts for communities. However, there will also be benefits to communities near landfill sites which will see a reduction in quantities of waste being managed.
33. To minimise waste transport	+/?	The strategy contains several commitments which will support the minimisation of waste transport. These include: managing waste at the nearest appropriate facility with the clear aim of reducing waste transport; managing waste within ST&W wherever feasible; reducing the need for people to travel to use waste facilities. Through measures to support and promote waste reduction, the strategy will help to reduce the amount of waste produced and this will also make an indirect contribution to reducing waste transport requirements, although the overall effect is more strongly dependent on more specific policies and actions. However, increased recycling and treatment may mean an increasing need for waste transport, which could have adverse effects on congestion

SEA criteria	Cumulative assessment	
		depending on where facilities are located in relation to the sources of waste, the transport network and the existing traffic levels. The potential locations are unknown and outside the scope of the strategy.
34. To promote alternatives to road transport	?	Reducing landfill and requiring new residual treatment capacity may create opportunities for promoting the transport of waste by rail or water. However, this is reliant on policy within the Local Development Frameworks to promote these opportunities.
35. To reduce car use	+/?	Achieving higher recycling targets may increase car use if people are encouraged to make increased use of bring sites and HWRCs to recycle their waste. However, the strategy makes a clear commitment to reducing the need for people to travel to use waste facilities. This will promote the reduction in car use to the extent that this is within the scope of the strategy. The effect is unlikely to be significant in relation to levels of car use overall in the Partnership area. Requiring recycling facilities to be provided in new developments will help to reduce the need for some householders to use their cars to access bring sites and HWRCs, although this will constitute only a small proportion of residents.
36. To ensure flexibility to meet future waste management needs	+	The strategy adopts a programme of annual review for action plans and a quinquennial review for the strategy. However, it also builds in additional flexibility to adapt to changing circumstances by allowing for more frequent strategy reviews if necessary.
37. To ensure deliverability of waste management systems	+/-	Deliverability of the strategy is affected by a wide range of issues, and the strategy gives consideration to all key aspects. Deliverability of the waste hierarchy will depend in part on the technologies chosen to achieve waste management by alternative means to landfill and on the constraints imposed by the planning system such as the availability of suitable sites and the existence of positive policies to facilitate development. The strategy seeks to provide waste facilities within ST&W where practicable, through appropriate use of the planning system. This will help to ensure that waste services are deliverable in planning terms. The current planning system supports implementation of the waste hierarchy and imposes no clear or specific constraints on the management of waste at higher levels than landfill. This situation may change with the adoption of emerging LDFs by the three authorities. The strategy also seeks to use planning and permitting procedures to deliver reduced waste generation from developments. The deliverability of this rests on the inclusion of policies within the emerging LDFs. It is not clear that this is explicitly covered in South Tyneside's Core Strategy, the only DPD yet to be adopted, therefore there is a potential risk to the deliverability of this measure. The deliverability of recycling and composting targets depends on the accessibility of collection systems, public education and participation and the existence of markets for recyclate. These aspects are all addressed by the strategy.

SEA criteria	Cumulative assessment	
		More general measures to ensure deliverability are the commitment to cooperation between the councils in order to ensure that the necessary changes to services are deliverable, plans for monitoring and review of the strategy, and continuing dialogue with the planning authorities which will help to ensure the strategy remains deliverable in changing circumstances.

7 MITIGATION AND MONITORING

7.1 PROPOSED MITIGATION MEASURES

Table 7.1 makes recommendations in order to address the potential remaining significant impacts of the JMWMS. These recommendations relate to actions which are largely outside of the scope of the JMWMS but are more appropriately addressed within the planning framework.

In summary, the recommendations are as follows:

- Choices for location of facilities should take into account the potential impacts on waste transport distances, and of associated impacts on amenity and congestion, both locally and for ST&W as a whole. Waste transport should be minimised where practicable.
- Choice of location for facilities should pay particular attention to the impacts of development on biodiversity and air quality, from both facilities and transport. The same should apply to EIAs for planning applications.
- Ensure the impact on communities is considered in development control policy.
- LDFs should encourage opportunities for movement of waste by rail and water wherever possible.
- Potential geodiversity sensitivities should be taken into account in selection of suitable sites.
- Ensure protection of landscapes in LDFs
- Ensure LDFs take account of potential impacts of waste treatment facilities on amenity.

7.2 PROPOSALS FOR MONITORING AND INDICATORS

Table 7.1 contains recommendations for monitoring the significant effects of implementation of the JMWMS. These indicators should be included within a programme of annual monitoring to allow the Partnership authorities to identify the impact of implementing the strategy and to respond if necessary to any adverse impacts.

Monitoring of strategy implementation should focus on its effectiveness in several key areas:

- The achievement in managing waste at each level of the waste hierarchy, including in relation to past performance and targets: arisings, hazardous waste arisings, reuse, recycling, composting, residual treatment, energy recovery and landfill, including landfill of biodegradable municipal waste;

- The level of self-sufficiency in dealing with waste, by type of management method, and number of local enterprises;

- Levels of service accessibility;

- Reporting on the councils' waste-related schemes and initiatives, including costs and effectiveness;

- The cost of waste management services, including expenditure on particular types of schemes, services or activities;

- Operational issues: compliance with permit conditions; fly-tipping incidences; energy generation; vehicle movements.

These monitoring recommendations should be incorporated into the wider monitoring of strategy implementation envisaged in the policy framework. It could also be used to underpin annual Action Plan Progress Reports and strategy reviews.

Table 7.1 Recommendations for Mitigation and Monitoring

Policy	Assessment	Recommendations for mitigation or enhancement	Recommended monitoring indicators
1 Waste hierarchy	Emissions from facilities and from waste transport may increase but this will be strongly dependent on the locations of facilities, and will be offset by the greater benefits of additional recovery of resources and reduced emissions from landfill. Reduced landfill may also help to reduce the risk of water pollution, which may have benefits for biodiversity but is also dependent on operational standards at individual facilities. The need for new recycling and residual treatment capacity may have adverse impacts on biodiversity in terms of increased air emissions and landtake, although overall air quality is good and the significance therefore dependent on particular locational choices. Impacts on vulnerable sites should be assessed in site selection and at EIA, including the impact on biodiversity of air emissions and disturbance. By aiming to move waste management up the hierarchy, the strategy is likely to ensure any risks to human health are minimised, by reducing the quantity of waste requiring treatment and disposal. Current pollution control techniques and standards should ensure that developments pose a very small or no risk to human health. Moving waste up the hierarchy sends a strong message to communities that they must take responsibility for waste, although there may be negative impacts from the construction and operation of new treatment facilities. Improved access to services will be required, particularly kerbside recycling, and there will be more opportunities for public involvement in initiatives. However, moving waste up the hierarchy may have effects on the ability of ST&W to achieve self sufficiency, particularly in recycling facilities, although other policy supports the development of local capacity where practicable. Moving the management of waste up the waste hierarchy is likely to require new economic enterprises in waste treatment within the area and creates opportunities to promote new recycling/composting capacity within South Tyne and Wear. This could help to promote new and potentially innovative local economic development. The impact on the costs of waste management is examined in more detail in the options appraisal.	EIAs should pay particular attention to the impacts of development on air quality, both from facilities and from transport. Choices of location for waste management facilities should seek to minimise waste transport distances. Potential biodiversity sensitivities should be taken into account in selection of suitable sites, and EIAs should assess the impacts of air emissions and disturbance on biodiversity. Ensure the impact on communities is considered in development control policy. Choices for location of facilities should take into account the potential impacts on waste transport, and of associated impacts on amenity and congestion. Waste transport should be minimised where practicable. LDFs should encourage opportunities for movement of waste by rail and water wherever possible.	Tonnes of waste managed at different hierarchy levels, including trends, and percentage of arisings where relevant: • arisings • reused • recycled • composted • sent for residual treatment • used to recover energy • disposed to landfill Self-sufficiency: waste management capacity within ST&W: • recycling • composting • treatment % of households covered by kerbside collections and type % of households within 500m of a bring site % of households within 8km of a HWRC
2 Decision aims	The policy makes a clear commitment to taking account of climate change which should promote reduction of impacts, although the strategy does not specify how this will be done. Environmental impacts will be avoided, which is likely to encompass effects on air and water quality, biodiversity, landscapes, cultural and historic assets and possibly geodiversity.	EIAs should pay particular attention to the impacts of development on air quality, both from facilities and from transport.	Tonnes of waste managed at different hierarchy levels, including trends, and percentage of arisings where relevant:

Policy	Assessment	Recommendations for mitigation or enhancement	Recommended monitoring indicators
	The policy will provide additional support for the waste hierarchy through minimising landfill. It is also likely to help promote recycling and composting and increased energy and resource efficiency through maximising the opportunities to turn waste into resources, although these are not explicitly stated by the policy. Self sufficiency is also explicitly supported although other policy clarifies how this will be achieved. Minimising waste transport is a clear focus of the policy, through seeking to manage waste at the nearest appropriate facility and within ST&W wherever feasible and by reducing the need for people to travel to use waste facilities through improved access to services and facilities. This will help to reduce potential emissions from waste transport and associated effects on air quality and climate change. Alternatives to road transport are not promoted although this is more appropriate to address within LDFs as it is highly dependent on where facilities are located. Improved access to facilities will also help to reduce the incentives for fly-tipping by some members of the public. By maximising job creation, the policy will help to ensure some positive impacts for communities. Avoiding danger to human health and serious or irreversible environmental damage will also help to ensure that account is taken of significant impacts on communities including amenity and health effects. Appropriate use of the planning system should also ensure that account is taken of the impacts on communities as required by PPS1, and that waste facilities are deliverable in planning terms. The policy seeks to ensure that procurement of all goods and services takes account of resource use and lifecycle impacts. This will help to promote more sustainable procurement by the ST&W authorities.	Potential biodiversity sensitivities should be taken into account in selection of suitable sites, and EIAs should assess the impacts of air emissions and disturbance on biodiversity. Potential geodiversity sensitivities should be taken into account in selection of suitable sites. Ensure the impact on communities is considered in development control policy. Choices for location of facilities should take into account the potential impacts on waste transport, minimising it where practicable. The strategy should support the development of new recycling, composting and residual treatment capacity within ST&W wherever practicable. LDFs should encourage opportunities for movement of waste by rail and water wherever possible.	• reused • recycled • composted • sent for residual treatment • used to recover energy • disposed to landfill Self-sufficiency: waste management capacity within ST&W: • recycling • composting • treatment Report on implementation of sustainable procurement initiatives, including actions and effectiveness. No. of fly-tipping incidences
3 Education on waste reduction	The policy clearly supports the objective of promoting awareness and information on waste issues. This is likely to help reduce the amount of waste produced and the amount landfilled and so support implementation of the waste hierarchy and increased resource efficiency. It will promote greater public involvement and send a strong message that communities must take responsibility for their waste rather than landfilling it. Increased education and understanding of the issues will also make an indirect contribution to reducing waste transport requirements and potential emissions from facilities and from transport. It will also make a small contribution to the achievability of self-sufficiency.	Choices for location of facilities should take into account the potential impacts on waste transport, minimising it where practicable. The strategy should give policy support to the development of new recycling, composting and residual treatment capacity within ST&W wherever practicable.	Tonnes of waste arisings. Report on education and awareness schemes, including expenditure and impacts where known.

Policy	Assessment	Recommendations for mitigation or enhancement	Recommended monitoring indicators
4 Packaging	Working with others to reduce the amount of packaging produced will help to promote a reduction in the amount of waste generated and landfilled, so supporting implementation of the waste hierarchy and reducing the potential emissions from the creation, recycling, treatment and disposal of packaging. This will help to avoid potential impacts on air quality and reduce greenhouse gas emissions and the potential impacts of climate change. It will also indirectly support increased resource efficiency and may help to promote innovative approaches to the packaging of goods. Reduced packaging waste will also help to reduce waste transport requirements and indirectly make a small contribution to the achievability of self-sufficiency	None	Tonnes of waste arisings. Report on partnership work to reduce packaging, including expenditure and impacts where known.
5 Council min and reuse	Waste minimisation and reuse from council activities will help to reduce the amount of waste generated and landfilled and help to recover value from waste, so supporting implementation of the waste hierarchy and increased resource efficiency. This will make a contribution to reducing the emissions from the management and disposal of waste and so help to reduce the potential impacts of climate change and to avoid potential impacts on air quality. It is possible that the policy may also reduce the generation of hazardous waste from council activities, although this is not explicit. Reducing the amount of waste to be managed through the introduction of minimisation and reuse schemes will help to reduce waste transport requirements, although this will be more strongly dependent on other policies and actions, and will make a small contribution to the achievability of self-sufficiency. The clear commitment to introducing schemes for minimisation and reuse will help to ensure the deliverability of the objective to minimise and reuse waste. Leading by example will support the promotion of awareness and information on waste issues and seeks to make an impact on communities in communicating best practice in minimisation and reuse. The supporting text indicates that the strategy will also encourage sustainable procurement by providing for reduction, reuse and recycling measures in procurement of services. Introduction of reuse schemes creates opportunities to support social enterprises.	Choices for location of facilities should take into account the potential impacts on waste transport, minimising it where practicable.	Tonnages of councils' own waste arisings, by type of waste if known Report on implementation of minimisation and reuse initiatives, including actions and effectiveness. Report on implementation of sustainable procurement initiatives, including actions and effectiveness.
6 Waste from developments	Minimising the generation of waste from developments will reduce the amount of waste produced and landfilled, some of which may be biodegradable e.g. timber, and some which may be hazardous. This will support implementation of the waste hierarchy, help to reduce the need for waste transport and make a contribution to the achievability of self-sufficiency in waste management capacity. It will also help to reduce greenhouse gas emissions and the potential impacts of climate change. Influencing new developments to minimise waste will help to promote awareness and information about waste issues, and also help to promote the capture of economic benefits from waste minimisation and increased resource efficiency in the construction sector, which may make a contribution to promoting economic growth.	None	Number and % of developments with Site Waste Management Plans

Policy	Assessment	Recommendations for mitigation or enhancement	Recommended monitoring indicators
	The policy seeks to use planning and permitting procedures to deliver reduced waste generation from developments. The deliverability of this policy therefore rests on the inclusion of policies within the emerging LDFs, and the strategy includes a commitment to ensuring that such policies are included. However, it is not clear that this is explicitly covered in South Tyneside's Core Strategy, the only DPD yet to be adopted.		
7 Recycling targets	Increasing recycling and composting will promote the management of greater quantities of waste at higher levels of the hierarchy, recovering value from waste, reducing landfill and promoting greater resource efficiency through the recovery of resources. Increasing recycling and composting is likely to have a positive effect on air emissions as it will reduce the quantity of waste requiring treatment and disposal, thereby reducing emissions from these facilities. However, increased amounts of recyclables may increase the need for waste transport and therefore increase transport emissions, although these are likely to be less than from facilities. Greenhouse gas emissions and potential impacts on climate change are also likely to be reduced through increased resource recovery and reduced landfill of biodegradable waste. Increasing recycling will require outlets to be found for recyclable waste. This may have effects on the ability of ST&W to achieve self sufficiency wherever possible, resulting in increasing volumes of waste being exported out of the area for processing, increasing the need for waste transport which could have adverse effects on congestion depending on where recycling facilities are located in relation to the sources of waste, the transport network and the existing traffic levels. However, it will also create opportunities for new economic enterprises within the Partnership area and this could also help to promote social enterprise, both of which are explicitly promoted within other policies. The deliverability of recycling and composting targets depends on the effectiveness of collection systems, public education and involvement and the existence of markets for recyclate. These aspects are all addressed in other policies.	Choices for location of facilities should take into account the potential impacts on waste transport, and of associated impacts on amenity and congestion. Waste transport should be minimised where practicable.	Tonnes of waste managed at different hierarchy levels, including trends, and percentage of arisings where relevant: • recycled • composted Average number of daily vehicle movements at each site Self-sufficiency: waste management capacity within ST&W: • recycling • composting • treatment
8 Recycling facilities	Providing recycling facilities for all residents will improve public access to services and facilities and help to support the deliverability of the recycling and composting targets. It will send a strong message that communities must take responsibility for their own waste and help to promote public and community involvement in recycling activities, so promoting more sustainable communities. It may also help to promote a reduction in fly-tipping by members of the public. Provision of facilities, including by requiring them to be provided in new developments, should help to reduce the need for householders to use their cars to access bring sites and HWRCs, although this will make only a small contribution to car use overall in the Partnership area.	Choices for location of facilities should take into account the potential impacts on waste transport distances. Waste transport should be minimised where practicable.	% of households covered by kerbside collections and type % of households within 500m of a bring site % of households within 8km of a HWRC No of fly-tipping incidences Tonnes of waste managed

Policy	Assessment	Recommendations for mitigation or enhancement	Recommended monitoring indicators
	Provision of facilities for all residents has the potential to impact on both urban and rural local landscapes and townscapes, including potentially on areas of heritage value, although the significance of effects depends on the nature of the facilities which will be provided and their design which are not known at this stage. However, the strategy includes in other policy a commitment to minimising the visual impacts of facilities and services which should ensure that significant impacts are unlikely. Increasing the availability of recycling facilities will help to increase levels of recycling and composting. This will give rise in a more indirect way to similar effects as policy 7, in terms of air emissions, climate change, self-sufficiency, economic opportunities and potentially also on transport and amenity.		at different hierarchy levels, including trends, and percentage of arisings where relevant: • recycled • composted Average number of daily vehicle movements at each site Self-sufficiency: waste management capacity within ST&W: • recycling • composting • treatment
9 Awareness campaigns	Promoting awareness and information on waste issues is a direct aim of the policy, which will help to support the deliverability of the recycling and composting targets. It will promote public and community involvement in waste activities, sending a strong message that communities must take responsibility for their own waste and will help to encourage more sustainable communities. It may also help to promote a reduction in fly-tipping by members of the public. Maximising participation in recycling schemes through increased public awareness may increase the use of cars by householders to access bring sites and HWRCs to recycle their waste, although policy 2 contains a commitment to reduce the need for people to travel to recycle their waste and therefore adverse effects are unlikely. Increasing the availability of recycling facilities will help to increase levels of recycling and composting. This will give rise in a more indirect way to similar effects as policy 7, in terms of the impact on the waste hierarchy and resource efficiency, air emissions, climate change, self-sufficiency and potentially also on transport and amenity.	Choices for location of facilities should take into account the potential impacts on waste transport distances. Waste transport should be minimised where practicable.	% of households covered by kerbside collections and type Report on education and awareness-raising initiatives, including activities, expenditure and effectiveness where known Tonnes of waste managed at different hierarchy levels, including trends, and percentage of arisings where relevant: • recycled • composted Average number of daily vehicle movements at each site Self-sufficiency: waste management capacity

Policy	Assessment	Recommendations for mitigation or enhancement	Recommended monitoring indicators
			within ST&W: • recycling • composting treatment
10 Recyclable markets	Developing markets for recyclables will help to support greater recycling levels and the deliverability of targets, which will promote the management of greater quantities of waste at higher levels of the hierarchy, recovering additional value from waste and reducing the amount of waste to landfill. It will also help to promote greater resource efficiency by recovering resources from recycled waste rather than landfilling it. It will similarly lead to a reduction in greenhouse gas emissions and the potential impacts of climate change. It is possible that the amount of waste transport will increase, although the effect on greenhouse gas emissions from waste transport is likely to be less than from reduced landfill and increased recovery of resources, particularly with the commitment in other policies to minimise waste transport. Building capacity in the voluntary sector will help to support the creation of new jobs, albeit mainly unpaid work, and to promote community involvement. New markets for recycled materials may also indirectly support the creation of new enterprises and new jobs which can help to promote economic growth and innovation, although there may also be an effect on the ability to achieve self-sufficiency if the markets are outside the Partnership area, resulting in increasing volumes of waste being exported out of the area for processing. However, the strategy also seeks to promote the establishment of new enterprises within the Partnership area which can help to support local economic development. Developing markets for reuse of compost may help to reduce the consumption of peat-based composts, which would help to conserve peatlands with associated biodiversity benefits. However, it is not clear what markets/materials may be developed and so the effects are uncertain at this stage.	Choices for location of facilities should take into account the potential impacts on waste transport distances. Waste transport should be minimised where practicable.	Report on partnership work to develop markets, including activities, expenditure and effectiveness where known Tonnes of waste managed at different hierarchy levels, including trends, and percentage of arisings where relevant: • recycled • composted Average number of daily vehicle movements at each site Self-sufficiency: waste management capacity within ST&W: • recycling • composting • treatment No of waste management enterprises in ST&W, by type of activity
11 Council use of recycled products	Stimulating markets for recyclables will help to support greater recycling levels and the deliverability of targets, which will promote the management of greater quantities of waste at higher levels of the hierarchy, recovering additional value from waste and reducing the amount of waste to landfill. It will also help to promote greater resource efficiency by recovering resources from recycled waste rather than landfilling it. It will similarly lead to a reduction in greenhouse gas emissions and the potential impacts of climate change. It is possible that the amount of waste transport will increase, although the effect on greenhouse gas emissions from waste transport is	Choices for location of facilities should take into account the potential impacts on waste transport distances. Waste transport should be minimised where practicable.	Report on implementation of sustainable procurement initiatives, including actions and effectiveness.

Policy	Assessment	Recommendations for mitigation or enhancement	Recommended monitoring indicators
	likely to be less than from reduced landfill and increased recovery of resources, particularly with the commitment in other policies to minimise waste transport. Stronger markets for recycled materials may also indirectly support the creation of new enterprises and new jobs which can help to promote economic growth and innovation, although there may also be an effect on the ability to achieve self-sufficiency if the markets are outside the Partnership area, resulting in increasing volumes of waste being exported out of the area for processing. However, the strategy also seeks to promote the establishment of new recycling enterprises within the Partnership area which can help to support local economic development. Developing markets for reuse of compost may help to reduce the consumption of peat-based composts, which would help to conserve peatlands with associated biodiversity benefits. However, it is not clear what markets/materials may be developed and so the effects are uncertain at this stage. The policy directly seeks to have an impact on the wider community through leading by example. This will help to promote awareness and information and may also promote involvement of the wider community in the use of recycled products.		
12 Recovery and LATS targets	The policy supports the waste hierarchy by avoiding managing waste at the bottom of the hierarchy, ensuring that reuse, recycling and composting are maximised before treatment, recovering both materials and energy from residual waste and promoting increased resource efficiency. The policy clearly seeks to minimise the landfill of biodegradable waste. To deliver the policy will require new waste treatment enterprises. These can provide economic benefits by encouraging the establishment of new and potentially innovative enterprises, and these will be provided within the Partnership area where practicable. However, the effect on the costs of waste management are uncertain: the need to purchase LATS allowances will be avoided as will some landfill costs including landfill tax. However, other waste management costs will increase, for example for recycling and treatment. The policy will help to reduce emissions of methane from landfill sites, both through reduced landfill of biodegradable waste and by requiring landfill gas capture. It is likely to reduce the capacity for energy generation from landfill gas even though recovery is required, although this is unlikely to be as much as the energy potentially gained from residual treatment. The policy also promotes energy recovery which will offset the emission of greenhouse gases elsewhere, and therefore help to reduce the potential impacts of climate change. The extent to which energy will qualify as renewable is unknown, and depends in part on the choice of residual treatment technology. It is possible increased levels of recovery could generate hazardous waste through treatment by thermal methods. However, this will depend on the choice of treatment technology which is not known. The impacts are examined in more detail in the options appraisal.	Choice of location for facilities should pay particular attention to the impacts of development on biodiversity and air quality. The same should apply to EIAs for planning applications. Location of facilities should take account of the impacts on waste transport distances and of the effects of waste transport, both locally and for ST&W overall. Ensure LDFs consider geodiversity value in allocating future landfill sites. Ensure protection of landscapes in LDFs Ensure LDFs take account of potential impacts of waste treatment facilities on amenity.	Tonnes of waste managed at different hierarchy levels, including trends, and percentage of arisings where relevant: • recycled • composted • sent for residual treatment • used for energy recovery • disposed to landfill • BMW disposed to landfill • hazardous waste arisings Self-sufficiency: waste management capacity within ST&W: • recycling

Policy	Assessment	Recommendations for mitigation or enhancement	Recommended monitoring indicators
	Reducing the disposal of waste is likely to indirectly reduce potential impacts on biodiversity from landfill sites such as the risk of leachate pollution. However, new recycling, composting and residual treatment facilities will be required which have the potential for biodiversity impacts, through land take and physical disturbance and from emissions. The effects on air quality are unclear: residual treatment will emit pollutants while avoiding emissions from landfill. The effects of disturbance are dependent on conditions at specific sites, which are outside the scope of the strategy. Air quality in ST&W is generally good therefore the effects from emissions are only likely in site-specific circumstances. It is possible that there will be an increase in waste transport and therefore of potential effects arising, but the nature and significance depends on the location of treatment facilities in relation to sources of waste and waste infrastructure, including transfer stations and landfill. These are unknown and outside the scope of the strategy, although the strategy recognises the importance of minimising waste transport. Requiring new residual treatment capacity may create opportunities for promoting the transport of waste by rail or water. However, this is reliant on policy within the Local Development Frameworks to promote these opportunities. Promoting landfill diversion will help to preserve self-sufficiency in landfill capacity within ST&W although it will also require new recycling and treatment capacity. However, the strategy gives clear support to providing capacity within the Partnership area wherever practicable to promote self-sufficiency. The requirement for new treatment capacity may have adverse visual impacts affecting urban or rural landscapes and has the potential to affect amenity . However, the effects are dependent on site-specific circumstances and are therefore highly dependent on site selection and development control in LDFs. The deliverability of increased levels of recovery depends in part on any constraints on the development of facilities which are imposed by local planning documents. Such constraints could be in terms of the availability of suitable sites and the existence of positive policies to facilitate development. There are no such constraints within the current UDPs, but these are gradually being replaced by Local Development Frameworks which establish a new planning regime for waste-related development in ST&W. The strategy contains a commitment to continuing dialogue with the planning authorities to ensure the strategy is deliverable.	LDFs should encourage opportunities for movement of waste by rail and water wherever possible.	• composting • treatment No of waste management enterprises in ST&W, by type of activity Waste management costs by type, including recycling/composting, treatment and disposal Average number of daily vehicle movements, and trends MW (or KWh) of energy generated from waste, and trends: • from landfill gas; • other Report on facilities: compliance with environmental permit conditions.
13 Self-sufficiency	Supporting the development of local recycling, composting and treatment capacity will help to minimise waste transport by avoiding the need to transport waste to destinations outside the Partnership area wherever possible, and directly promotes increased self sufficiency. This will contribute to reducing energy consumption and greenhouse gas emissions from waste transport and so help to reduce the potential impacts of climate change. It also creates opportunities to use alternatives to road transport, although this is dependent on the opportunities at specific locations which are outside the scope of the strategy and on policies within LDFs to promote these	Choice of location for facilities should pay particular attention to the impacts of development on biodiversity and air quality. The same should apply to EIAs for planning applications.	Self-sufficiency: waste management capacity within ST&W: • recycling • composting • treatment

Policy	Assessment	Recommendations for mitigation or enhancement	Recommended monitoring indicators
	opportunities. Supporting the development of new waste management capacity within South Tyne and Wear will also have economic benefits by encouraging the establishment of new and potentially innovative businesses within the Partnership area. This will provide new jobs which may be locally important, and will help to create opportunities to promote social enterprises. It can also contribute to reducing fly-tipping by providing more convenient and accessible facilities for the commercial sector, thereby addressing one of the contributory factors. Providing waste management facilities within the Partnership area will increase the potential for emissions to air from facilities, but will also help to reduce the requirement for waste transport thereby reducing potential transport emissions. There is also the potential for biodiversity impacts, through land take and physical disturbance and from emissions. The effects of disturbance are dependent on conditions at specific sites, which are outside the scope of the strategy. However, air quality in the Partnership area is generally good and therefore impacts are unlikely to be significant except potentially in site-specific circumstances. Significant impacts on water quality are unlikely if facilities are well-managed. Effects of new local capacity on the sustainable use of water resources are also unlikely, as consumption is unlikely to be significant and water resources in the area are generally good. Some types of new waste management facilities within the Partnership area are likely to have impacts on the communities where facilities are located. There is also an increased potential for amenity effects within the Partnership area from the new facilities, and for adverse effects on landscape and potentially also on geodiversity. However, the significance of all these effects depends on where the facilities will be located and on development control to ensure effects are avoided or adequately mitigated. Furthermore, the provision of local facilities may contribute to avoiding impacts from the requirement for additional capacity elsewhere. Significant impacts on health are unlikely if facilities are well-managed. While the development of local capacity will help to increase the deliverability of the strategy, the deliverability of the facilities themselves depends in part on any constraints on the development of facilities which are imposed by local planning documents. Such constraints could be in terms of the availability of suitable sites and the existence of positive policies to facilitate development. There are no such constraints within the current UDPs, but these are gradually being replaced by Local Development Frameworks which establish a new planning regime for waste-related development in ST&W. The strategy contains a commitment to continuing dialogue with the planning authorities to ensure the deliverability of appropriate facilities.	Ensure LDFs consider geodiversity value in allocating future landfill sites. Ensure protection of landscapes in LDFs Ensure LDFs take account of potential impacts of waste treatment facilities on amenity. LDFs should encourage opportunities for movement of waste by rail and water wherever possible.	No of waste management enterprises in ST&W, by type of activity Report on facilities: compliance with environmental permit conditions. No of fly-tipping incidences

Policy	Assessment	Recommendations for mitigation or enhancement	Recommended monitoring indicators
14 Working together	The policy commits to cooperation between the councils in order to ensure that the necessary changes to services are deliverable. This is essential to deliverability of the required systems.	None	None
15 Communication	Promoting awareness of waste issues is a direct aim of the policy, which will help to support the deliverability of the targets in the strategy. It will promote public and community involvement in waste activities, sending a strong message that communities must take responsibility for their own waste and will help to encourage more sustainable communities. The policy will help to promote the management of greater quantities of waste at higher levels of the hierarchy, reducing the amount produced and increasing levels of reuse and recycling, leading to reduced landfill of waste including biodegradable waste. Additional value will be recovered from waste and resource efficiency promoted. Increased levels of recycling resulting from increased public awareness may increase the use of cars by householders to access bring sites and HWRCs to recycle their waste, although policy 2 contains a commitment to reduce the need for people to travel to recycle their waste and therefore adverse effects are unlikely. However, the increased amounts of recyclables could nevertheless lead to an increase in waste transport more generally and associated impacts on congestion and amenity, depending on where the processing facilities are located in relation to the sources of waste, the transport network and the existing traffic levels. It may also affect the ability of ST&W to achieve self sufficiency through increasing volumes of waste being exported out of the area for processing. However, other policy within the strategy seeks to support the development of local capacity where possible. Reducing the need for treatment and disposal of waste through increased awareness of the need to reduce, reuse and recycle is likely to indirectly reduce potential impacts on biodiversity from landfill sites such as the risk of leachate pollution. It will also contribute to a reduction in greenhouse gas emissions by increasing resource recovery and reducing the landfill of biodegradable waste, thereby helping to reduce the impacts of climate change.	Choices for location of facilities should take into account the potential impacts on waste transport distances. Waste transport should be minimised where practicable.	Report on education and awareness-raising initiatives, including activities, expenditure and effectiveness where known % of households covered by kerbside collections and type Average number of daily vehicle movements at each site Self-sufficiency: waste management capacity within ST&W: • recycling • composting • treatment Report on facilities: compliance with environmental permit conditions, including emissions to air and biodiversity conditions.
16 Monitoring	The policy acknowledges that monitoring is important to assess the effects of the strategy, and therefore its deliverability.	None	Publish annual monitoring report incorporating above monitoring recommendations.
17 Review	The policy adopts a programme of annual review for action plans and a quinquennial review for the strategy. However, it also builds in flexibility to adapt to changing circumstances by allowing for more frequent strategy reviews if necessary. The programme of reviews for the strategy and action plans will help to ensure the strategy remains deliverable in changing circumstances. The commitment to publishing the strategy on the councils' website will make a contribution to	None	Publish an annual Action Plan Progress Report summarising monitoring results.

Policy	Assessment	Recommendations for mitigation or enhancement	Recommended monitoring indicators
	increasing public involvement in decision-making and civic activity.		
18 Links with Planning	The policy explicitly seeks to ensure the deliverability of the strategy by working with planning authorities to ensure the planning framework and strategy are mutually informed and supportive. This will help to ensure the development of appropriate facilities to support increased recycling, composting and recovery, thereby ensuring implementation of the waste hierarchy and reduced landfill. It will also help to minimise waste transport by avoiding the need to transport waste to facilities outside of the Partnership area to be processed, thereby supporting the objective of increased self-sufficiency. The policy also recognises the need for support within LDFs to minimise the generation of waste from new developments thereby ensuring their contribution to waste reduction.	None	None

Annex E

Consultation Report

CONTENTS

1 EXECUTIVE SUMMARY

1.1 BACKGROUND

South Tyne and Wear Waste Management Partnership (STWWMP) comprising of Gateshead, South Tyneside and Sunderland Councils, has produced a Joint Municipal Waste Management Strategy. Local residents and other stakeholders were given an opportunity to comment on a draft version of the strategy during a period of public consultation from 12th July to 20th August 2007.

1.2 CONSULTATION PROCESS

To obtain the public's participation and opinion, the draft Strategy was made available and distributed via a number of routes including libraries, Council buildings and Council websites. Press releases and posters were issued to raise awareness and seek feedback on the Strategy.

In total, 1085 questionnaires were returned during the consultation period; originating as follows:

- 592 from Gateshead;
- 364 from South Tyneside; and
- 129 from Sunderland.

14 sets of written comments were also received from a variety of stakeholders including interest groups (such as Friends of the Earth, BAN Waste), residents, One NE and the private waste sector.

Focus groups/meetings were organised across the Partnership area and attended by representatives from all three authorities. These were held as follows:

- 6 in Gateshead;
- 10 in South Tyneside; and
- 5 in Sunderland.

Roadshows were also held across the three authorities during the consultation period.

Two common Stakeholder events were held to which interest groups, neighbouring local authorities and the private waste sector were invited. In total 39 representatives attended these professionally facilitated meetings.

The aim of the meetings and focus groups was to provide the public with an understanding of the key points of the Draft Strategy and for them to provide the Partnership with specific feedback to be considered in developing the final version of the Strategy. The returned questionnaires, responses at meetings

and written responses have been analysed to draw out key themes and messages.

1.3 FINDINGS

The main findings from an analysis of the responses and feedback from the consultation exercise were as follows:

- Most members of the public were very supportive of the Strategy;
- The Strategy should contain more ambitious recycling/composting targets;
- Education/awareness is key to achieving the goals of the Strategy;
- Householders should be required, rather than just encouraged, to recycle;
- The kerbside recycling service should be improved and expanded;
- Additional recycling and composting should be provided but only at a reasonable cost;
- The public are very supportive of getting a benefit from waste; and
- There was strong agreement that the choice of waste treatment facilities/methods should not be based on cost alone.

Outcome

In finalising the Strategy, the Partnership has taken into account all of these points and paid due regard to the issues that have been raised through this process of public consultation. Several of the Strategy's policies have been revised to reflect the comments received (see *Table 4.1*).

2 BACKGROUND

South Tyne and Wear Waste Management Partnership (STWWMP) comprising of Gateshead, South Tyneside and Sunderland Councils, has produced a Joint Municipal Waste Management Strategy. The purpose of this Strategy is to assist with planning for the management of waste generated in the Partnership area throughout the period 2007– 2027.

An initial draft version of the Strategy was prepared following a series of workshops attended by a range of stakeholders in which the three authorities considered a range of options for how we can reduce the amount of waste that is generated, how we can reuse and recycle and compost more waste and how we deal with any remaining waste that can't be reused or recycled.

The Partnership authorities considered it very important that the public and other interested stakeholders were involved in the development of the Strategy and they therefore sought opinions and feedback on the Strategy via a comprehensive public consultation exercise undertaken between 12 July and 20 August 2007.

To obtain the public's participation and opinion, the draft Strategy was made available and distributed via a number of routes. Hard copies for the public to view were placed in all libraries and in Council buildings and an electronic version was placed on all the Councils' websites. Press releases and posters were used to advertise the consultation process and to seek feedback on the Strategy.

A questionnaire, appended to this report, was developed and made available with the Strategy in order to make it easy for the public to give feedback on specific aspects of the Strategy.

In total, 1085 questionnaires were returned during the consultation period; originating as follows:

- 592 from Gateshead;
- 364 from South Tyneside; and
- 129 from Sunderland.

Fourteen sets of written comments were also received from a variety of stakeholders including interest groups, such as Friends of the Earth, BAN Waste, the Green Party, One NE, the private waste sector and individual residents.

In addition to the consultation aimed at receipt of feedback from individuals, 21 focus groups and meetings were organised across the Partnership area. Representatives from all three authorities attended their respective groups/meetings in order to explain the background to the Strategy and to answer specific questions. Details of these meetings are presented in *Table 3.1*.

Table 3.1 Focus Group Meetings

Group	Council	Date of Meeting
Older People's Focus Group	Gateshead	12 July 2007
Hebburn Community Area Forum	South Tyneside	12 July 2007
View Point 1	Gateshead	16 July 2007
View Point 2	Gateshead	16 July 2007
Community Spirit 50+	Sunderland	19 July 2007
Jarrow Community Area Forum	South Tyneside	19 July 2007
Riverside Community Action Forum	South Tyneside	19 July 2007
Community Spirit	Sunderland	19 July 2007
Community Spirit	Sunderland	19 July 2007
Business Forum	Gateshead	23 July 2007
West Shields Community Area Forum	South Tyneside	23 July 2007

Group	Council	Date of Meeting
East Shields Community Area Forum	South Tyneside	24 July 2007
Streetscape Staff	South Tyneside	31 July 2007
Youth Parliament	South Tyneside	31 July 2007
All Staff	South Tyneside	7 August 2007
Boldon Community Area Forum	South Tyneside	8 August 2007
Forum 50	South Tyneside	8 August 2007
Community Spirit	Sunderland	8 August 2007
Community Spirit	Sunderland	8 August 2007
Staff Forum	Gateshead	9 August 2007
Youth Assembly	Gateshead	12 August 2007

11 roadshows were also held across the three authorities during the consultation period as detailed in *Table 3.2*.

Table 3.2 Waste Strategy Roadshows

Location of Roadshow	Council	Date of Roadshow
Town Hall, South Shields	South Tynside	20 July 2007
The Galleries, Washington	Sunderland	23 July 2007
Boldon Village Hall	South Tyneside	27 July 2007
Central Nursery, Whickham (Gateshead Flower show)	Gateshead	27 July 2007
	Gateshead	28 July 2007
	Gateshead	29 July 2007
The Seafront, Sunderland (International Airshow)	Sunderland	28 July 2007
	Sunderland	29 July 2007
The Hetton Centre, Hetton-le-Hole	Sunderland	30 July 2007
The Bridges Shopping Centre, Sunderland	Sunderland	31 July 2007
Hartlyburn Community Association	South Tyneside	15 August 2007

Two common Stakeholder events were held to which interest groups, neighbouring local authorities and the private waste sector were invited. In total 39 people attended these meetings. Both professionally facilitated meetings were held in the Media Centre, Gateshead on 19 July and were attended by representatives from the organisations listed in *Table 3.3*.

Table 3.3 Stakeholder Meetings

Session	Organisations Represented	
Session 1	Durham County Council	The Pet Crematorium Ltd
	Environment Agency	Riverdale
	Glass Recycling UK	SITA
	Greentech Recycling	Tees Valley
	Groundwork - South Tyneside	WIDP
	Innovation Recycling Ltd	
Session 2	Abitibi Consolidated Recycling	Holystone Waste Management Ltd
	Alex Smiles Ltd	Interserve Civils
	Ban Waste	MWH
	Friends of the Earth	Northumberland County Council
	Environment Agency	Premier Waste Management
	GONE (Government Office North East)	Residents Against Toxic Sites (RATS)
		Shanks
	Graphite Resources Ltd	SITA
	Greenstar	United Utilities Contract Services

The aim of the meetings and focus groups was to provide the public and other stakeholders with an understanding of the key points of the Draft Strategy and for them to provide the Partnership with specific feedback to be considered in developing the final version of the Strategy. The three partnering authorities were represented at these events, giving presentations and answering questions.

4 FINDINGS

The returned questionnaires, feedback at meetings and written responses have been analysed to draw out key themes and messages.

4.1 FEEDBACK ON SPECIFIC POLICIES

Appendix A to *Annex E* presents a summary of the feedback and comments related to each of the Strategy's policies grouped by form of consultation:

- Stakeholder – feedback from the general stakeholder meetings;
- Correspondence – feedback in the form of written replies from members of the public and other stakeholders;
- Meetings – feedback noted during meetings; and
- Questionnaires – quantitative analysis of completed questionnaires together with a summary of any comments provided.

Table 4.1 provides an overview of the feedback.

Table 4.1 Overview of Feedback from the Consultation

Policy		Overview of Feedback
1	The Partnership will follow the waste hierarchy set by the Government and firstly promote measures that reduce waste, then re-use waste, followed by recycling and composting and then finally recovery of value, including energy, from the waste.	• Hierarchy is a good basis for the Strategy. • Public understanding of hierarchy needed for them to 'buy into' what the Partnership is trying to achieve. • All areas, not just energy recovery, need to be considered alongside value for money (VFM), deliverability, working with the community etc.

Policy		Overview of Feedback
2	In making decisions about how waste is managed, the Partnership will aim to: • Minimise the amount of waste that is landfilled, taking into account the cost of the alternatives; • Employ the most appropriate and sustainable methods and technologies for dealing with waste taking account of the overall objectives and aims detailed in this Strategy; • Deliver waste services that offer value for money for the residents of South Tyne and Wear; • Be self sufficient by managing and disposing of waste generated in South Tyne and Wear within the 'Partnership area' where this is feasible and in line with other policies; • Maximise the recycling opportunities to convert one person's waste into another's resources; • Use the opportunities presented by new waste management arrangements to create jobs in the waste sector and, in particular, to promote and support the involvement of social enterprises in the provision of waste management services; • Provide waste management services and facilities in the most user friendly and environmentally sound manner through appropriate design of services and use of the Planning system. This will include a requirement for minimising environmental impacts, such as visual intrusion; • Make waste management services readily accessible to all people who live, work and/or visit the South Tyne and Wear area. This includes reducing the need for people to travel to reuse/recycle/dispose of waste and includes ensuring that facilities are available for dealing with hazardous wastes (arising directly from household or from the treatment of MSW); • Manage waste in a way that not only avoids environmental damage and danger to human health, but which also takes account of the potential needs of future generations and, in particular, climate change; and • Consider resource use and take account of lifecycle impacts when procuring all goods and services rather than treating waste management as a separate issue.	• Order of items in this Policy needs to be reflected with weightings. • Balance needed between VFM and sustainability

Policy		Overview of Feedback
3	The Partnership will introduce measures to increase the level of education and understanding of waste reduction matters with all members of the general public and other stakeholders.	• Many respondents stressed that education is very important and should be a high priority in the Strategy. • As well as education, everything must be done to promote waste minimisation.
4	The Partnership acknowledges the impact of packaging on the overall amount of waste that is generated and will work with regional partners, industry and Government to reduce the amount of packaging produced.	• This is a Central Government issue rather than a local government issue. • A robust policy is required but how effective would this policy be?
5	The councils within the Partnership will introduce waste minimisation and reuse schemes in their own operations to lead by example and highlight best practice to the wider community.	• 3R's should be included in contracts and purchasing practices. • Internal targets and performance should be publicised in order for the public to see how the Councils are doing.
6	The Partnership will use planning and permitting procedures to influence the level of waste generation throughout the whole life of new developments and redevelopments - from construction right through their operational lifetimes. This will be done irrespective of the nature of the developments, whether they are housing, commercial or industrial developments.	• This maybe a good Policy but how difficult will it be to enforce. • Should waste minimisation and recycling etc., not be included as part of the planning process? • Could waste reduction etc., be linked into Local Area Plans?
7	The Partnership will aim to achieve the following recycling / composting targets: • 30% by 2010 • 35% by 2015 • 45% by 2020 In the longer term, the Partnership will look to exceed the statutory targets set by Government, where this is practicable.	• Medium (2015) and long term (2020) targets have been increased to reflect both comments that the targets were not ambitious and the Waste Strategy 2007. The short term (2010) target is unchanged due to a lack of currently available recycling infrastructure and lead in time to effectively introduce new materials and schemes
8	Viable recycling facilities will be made available to all residents, including those in flats and rural locations. Any new developments will be required to include recycling and composting facilities wherever practicable.	• Kerbside schemes should be enhanced. • Any system should be easy to use and effective. • Any new developments should automatically include recycling facilities - justified reason as to why not. • Collection strategies should be harmonised throughout the Partnership areas.

Policy		Overview of Feedback
9	The Partnership will seek to create a change in behaviour in the community by promoting increased public awareness of waste management issues. Awareness raising campaigns will be targeted at people at home, at school, at work and to our visitors with the aim of maximising participation in recycling schemes.	• Having an educated public regarding waste issues, recycling etc., was deemed to be the way for waste management schemes to be a success. • Enforcement should only be pursued after education policies have been allowed to mature.
10	The Partnership will work with industry and organisations such as WRAP to find and develop markets for recyclable materials and recycled products. In addition, the Partnership will assist in building capacity in the voluntary sector to promote reuse and recycling of materials.	• State what uses recycling has to the public in normal domestic use and highlight this to the public.
11	In addition to introducing waste minimisation and reuse principles into their own operations, the councils within the Partnership will aim to purchase recycled products wherever feasible in order to stimulate the markets for recovered materials as well as leading by example and highlighting best practice to the wider community.	• Procurement needs to be a stronger target - not just aiming to purchase recycled goods but also targeting waste reduction and reuse with products designed for ease of recycling/recovery and use of hiring rather than purchase.
12	In line with the Waste Hierarchy, the Partnership will aim to maximise reuse, recycling and composting before the residual waste is treated. The Partnership will aspire to meet the Waste Strategy 2007 targets for reducing waste that is not reused, recycled or composted. It will also aim to meet the following national waste recovery targets: • 53% by 2010 • 67% by 2015 • 75% by 2020 Where practicable these will be exceeded in the longer term. The Partnership will aim to minimise the landfill of biodegradable waste, within economic constraints, in order to reduce methane emissions. It will aim to meet its LATS allowances and only landfill biodegradable municipal waste (BMW) up to the amount that each council is allocated. The Partnership councils will work together in achieving this goal. The Partnership will also aim to recovery energy, as well as materials, from waste before final disposal and will require the capture and utilisation of landfill gas from that waste which is landfilled.	There were quite a few varying comments for this Policy. • Generally it was felt that, as the Strategy is for a period of 20 years, careful consideration needs to be given to the chosen technology. • In order to achieve this, investigation into new technologies/markets etc should continue and an open mind taken when looking at these. • Some opposition towards any form of thermal treatment was mentioned but these comments were mainly from interest groups. Medium (2015) and long term (2020) targets have been retained at their level in the draft strategy to reflect the Waste Strategy 2007. However, the short term (2010) target has been reduced to 35% due to a lack of currently available recovery infrastructure and lead in time to effectively introduce new infrastructure.

Policy		Overview of Feedback
13	The Partnership will provide support to the development of new recycling, composting and residual treatment capacity within South Tyne and Wear where this does not conflict with other policies or Planning requirements.	• End product risks need to be carefully considered. • Planning need to 'buy-in' to the Strategy at every step to ensure its success and deliverability. • Any changes should be open to the public.
14	The Partnership will work together in sourcing funding to ensure the necessary changes to services are made. The costs and benefits of delivering this Strategy will be shared between the Partnership authorities.	• Greater funding needed to deliver the Strategy. • Some mention of avoiding PFI arose.
15	The Partnership acknowledges that communication is a key component of the Strategy. The Partnership will prepare a Strategy to promote waste awareness and, in particular, the three R's to the whole of the community.	• Communication, education and promotion are the key to delivering the Strategy. • Any solution must involve public participation. • In order to achieve this, core funding needs to be made available. • Communication Strategy needs to be developed to ensure deliverability - would this be open to consultation?
16	Future performance monitoring is important to assess the effects of the Strategy. The Partnership will ensure that accurate, regular ongoing monitoring is carried out to this end.	• Any form of monitoring, review needs to be open to public scrutiny. • Timetables for regular reporting need to be decided upon and adhered to. • Any monitoring and review process needs to be extremely robust and plans set in place to take remedial action if and when necessary.
17	The Partnership will keep the policies included in this Strategy under review. Action Plans will be reviewed at least annually with a full Strategy review in 5 years. If required as a result of, for example, changes in legislation or local circumstances, the Strategy will be revised more frequently. New versions will be posted on the Councils' websites.	• Frequent reviews are needed. • Any amendments etc., should always be processed democratically with utmost transparency. • If relevant, on occasions community groups should be invited to have their input also.
18	The Partnership will monitor the development and adoption of LDFs and will have continuing dialogue with the Planning Authorities to ensure that the Strategy and emerging LDFs are mutually informed and support the development of appropriate facilities to enable the Strategy aims to be delivered. The aim will also be for Planning documents to support the policy of waste minimisation in new developments.	• It was generally agreed that the planning framework needs to reflect the key aims of the Strategy. • Timescales can be affected when planning a waste treatment facility. • How can the planning aspect be managed as part of a joint strategy?

4.2 *OVERALL SUMMARY*

The main findings from an analysis of the responses and feedback from the consultation exercise were as follows:

- Most members of the public were very supportive of the Strategy;
- The Strategy should contain more ambitious recycling/composting targets;
- Education/awareness is key to achieving the goals of the Strategy;
- Householders should be required, rather than just encouraged, to recycle;
- The kerbside recycling service should be improved and expanded;
- Additional recycling and composting should be provided but only at a reasonable cost;
- The public are very supportive of getting a benefit from waste; and
- There was strong agreement that the choice of waste treatment facilities/methods should not be based on cost alone.

The Partnership has taken into account all of the feedback and comments received from this consultation exercise and has paid due regard to the issues that have been raised by members of the public and other stakeholders. The Strategy has been amended in several places to take account of the feedback – particularly where common themes have been identified.

Inevitably, for several issues, there were a range of, often contradictory, views. In these cases the Partnership has tried to take a balanced view, taking into account the general direction of opinion and the need to develop a Strategy which will assist the Partnership to meet its legal and other obligations.

Table 5.1 details the changes that have been made to the Strategy in the light of the feedback from the consultation.

The final Strategy is a result of the analysis of the feedback from the public consultation and further consideration by the officers and members of the Partnership authorities

Table 5.1 Summary of Amendments to Strategy

Policy		Amendments / Revised Policy
1	The Partnership will follow the waste hierarchy set by the Government and firstly promote measures that reduce waste, then re-use waste, followed by recycling and composting and then finally recovery of value, including energy, from the waste.	No significant change to original wording, 'prior to disposal' added at the end.

Policy		Amendments / Revised Policy
2	In making decisions about how waste is managed, the Partnership will aim to: • Deliver waste services that offer value for money for the residents of South Tyne and Wear; • Employ the most appropriate and sustainable methods and technologies for dealing with waste taking account of the overall objectives and aims detailed in this Strategy; • Minimise the amount of waste that is landfilled, taking into account the cost of the alternatives; • Provide waste management services and facilities in the most user-friendly and environmentally sound manner through appropriate design of services and use of the Planning system. This will include a requirement for minimising environmental impacts, such as visual intrusion; • Make waste management services readily accessible to all people who live, work and/or visit the South Tyne and Wear area. This includes reducing the need for people to travel to reuse/recycle/dispose of waste and includes ensuring that facilities are available for dealing with hazardous wastes (arising directly from household or from the treatment of MSW); • Consider resource use and take account of lifecycle impacts when procuring all goods and services rather than treating waste management as a separate issue; • Manage waste in a way that not only avoids environmental damage and danger to human health, but which also takes account of the potential needs of future generations and, in particular, climate change; • Maximise the recycling opportunities to convert one person's waste into another's resources; • Use the opportunities presented by new **waste management arrangements to create jobs in the waste sector and, in particular, to promote and support the involvement of social enterprises in the provision of waste management services; and** • **Be self sufficient by managing and disposing of waste generated in South Tyne and Wear within the 'Partnership area' where this is feasible and in line with other policies.**	The list of specific aims has been re-ordered to reflect their respective priorities
3	The Partnership will introduce measures to increase the level of education and understanding of waste reduction matters with all members of the general public and other stakeholders.	No change to original wording

Policy		Amendments / Revised Policy
4	The Partnership acknowledges the impact of packaging on the overall amount of waste that is generated and will work with regional partners, industry and Government to reduce the amount of packaging produced.	No change to original wording
5	The councils within the Partnership will introduce waste minimisation and reuse schemes in their own operations to lead by example and highlight best practice to the wider community.	Policy has been expanded to specifically include waste reduction, reuse and recycling measures in contracts for council services.
6	The Partnership will use planning and permitting procedures to influence the level of waste generation throughout the whole life of new developments and redevelopments - from construction right through their operational lifetimes. This will be done irrespective of the nature of the developments, whether they are housing, commercial or industrial developments.	No change to original wording
7	The Partnership will aim to achieve the following recycling / composting targets: • 30% by 2010 • 35% by 2015 • 45% by 2020 In the longer term, the Partnership will look to exceed the statutory targets set by Government, where this is practicable.	The recycling / composting targets for household waste have been revised as follows: • 30% by 2010 • 45% by 2015 • 50% by 2020
8	Viable recycling facilities will be made available to all residents, including those in flats and rural locations. Any new developments will be required to include recycling and composting facilities wherever practicable.	The policy has been expanded to include two additional sentences: Recycling facilities will be designed to be easy for residents to use. The three councils will aim to move towards harmonised arrangements for collection of recyclable materials.
9	The Partnership will seek to create a change in behaviour in the community by promoting increased public awareness of waste management issues. Awareness raising campaigns will be targeted at people at home, at school, at work and to our visitors with the aim of maximising participation in recycling schemes.	No change to original wording
10	The Partnership will work with industry and organisations such as WRAP to find and develop markets for recyclable materials and recycled products. In addition, the Partnership will assist in building capacity in the voluntary sector to promote reuse and recycling of materials.	The policy has been expanded to include the encouragement of recycling of commercial and industrial waste as well as finding and developing markets for recyclable materials and recycled products.

Policy		Amendments / Revised Policy
11	In addition to introducing waste minimisation and reuse principles into their own operations, the councils within the Partnership will aim to purchase recycled products wherever feasible in order to stimulate the markets for recovered materials as well as leading by example and highlighting best practice to the wider community.	No change to original wording
12	In line with the Waste Hierarchy, the Partnership will aim to maximise reuse, recycling and composting before the residual waste is treated. The Partnership will aspire to meet the Waste Strategy 2007 targets for reducing waste that is not reused, recycled or composted. It will also aim to meet the following national waste recovery targets: • 53% by 2010 • 67% by 2015 • 75% by 2020 Where practicable these will be exceeded in the longer term. The Partnership will aim to minimise the landfill of biodegradable waste, within economic constraints, in order to reduce methane emissions. It will aim to meet its LATS allowances and only landfill biodegradable municipal waste (BMW) up to the amount that each council is allocated. The Partnership councils will work together in achieving this goal. The Partnership will also aim to recovery energy, as well as materials, from waste before final disposal and will require the capture and utilisation of landfill gas from that waste which is landfilled.	The policy has been amended to include achieving the national target for reducing waste that is not reused, recycled or composted: • Maximum of 225kg per person by 2020 It has also been clarified that the national recovery targets quoted apply to municipal waste. The Partnership recovery target for 2010 has been revised and reduced to 35%. This was carried out as it was acknowledged that the lack of infrastructure currently in South Tyne and Wear area will mean that these targets cannot be met. The 35% level was chosen as a realistic viable target.
13	The Partnership will provide support to the development of new recycling, composting and residual treatment capacity within South Tyne and Wear where this does not conflict with other policies or Planning requirements.	The Policy has been clarified to explain that support for the development of new recycling etc facilities will be provided through Planning policy for example.
14	The Partnership will work together in sourcing funding to ensure the necessary changes to services are made. The costs and benefits of delivering this Strategy will be shared between the Partnership authorities.	No change to original wording
15	The Partnership acknowledges that communication is a key component of the Strategy. The Partnership will prepare a Strategy to promote waste awareness and, in particular, the three R's to the whole of the community.	The Policy has been revised very slightly to include education as well as communication as a key component of the Strategy.

Policy		Amendments / Revised Policy
16	Future performance monitoring is important to assess the effects of the Strategy. The Partnership will ensure that accurate, regular ongoing monitoring is carried out to this end.	The policy has been expanded to include the Partnership ensuring that remedial steps are taken if it appears that targets are not likely to be met.
17	The Partnership will keep the policies included in this Strategy under review. Action Plans will be reviewed at least annually with a full Strategy review in 5 years. If required as a result of, for example, changes in legislation or local circumstances, the Strategy will be revised more frequently. New versions will be posted on the Councils' websites.	The Policy has been revised to include a statement that any changes to the Strategy will be subject to due democratic processes and further public consultation will be undertaken in the event of proposed significant changes.
18	The Partnership will monitor the development and adoption of LDFs and will have continuing dialogue with the Planning Authorities to ensure that the Strategy and emerging LDFs are mutually informed and support the development of appropriate facilities to enable the Strategy aims to be delivered. The aim will also be for Planning documents to support the policy of waste minimisation in new developments.	No change to original wording.

Appendix A to Annex E

Summary of Consultation Responses

Summary of STWWMP Joint Municipal Waste Management Strategy Consultation Responses 12th July 2007 - 20th August 2007

		General
Policy 1		**The Partnership will follow the waste hierarchy set by the Government and firstly promote measures that reduce waste then re-use waste, followed by recycling and composting and then finally recovery of value, including energy, from the waste prior to disposal.**
Stakeholder	**Conclusions**	General opinion is that following the waste hierarchy is a good basis for the Strategy. However the public need to understand the waste hierarchy for them to understand why the Partnership is doing what it is doing. Some areas of the waste hierarchy maybe out of the Partnerships control. Other areas such as VFM, costs, deliverability, working with the community sector also need to be considered. An action plan will be needed to follow the waste hierarchy and also to balance out any possible conflicts. The 1% growth assumption was questioned as a forecast figure. It was also mentioned that the waste hierarchy should be followed, but not to the detriment of the environment. The question was raised as to whether the Partnership was to employ fiscal measures to reduce waste.
Correspondence	**Conclusions**	Concerns were raised about the wording of Strategy being reliant on energy recovery.
Meetings	**Conclusions**	Government policy should be leading the way.
Public Questionnaires	**Conclusions**	82.03% of respondents replied that the choice of waste treatment facilities/methods should not be based on cost alone. Respondents believed the environment to be an important issue, with obtaining benefit from the waste to also be high on the agenda. An improved recycling scheme as well as an education/awareness raising initiative was deemed to also be an important part of the waste problem. A small number of respondents were negative about SWC and EfW. Improved recycling services was a common comment made from respondents. A small proportion of respondents didn't want EfW, PFI or SWC, however in contrast some respondents support EfW and SWC and believed the Draft Strategy was a good start. Again education/awareness was believed to be the way to succeed.
OVERVIEW	**Conclusion**	• Hierarchy is a good basis for the Strategy. • Public understanding of hierarchy needed for them to 'buy into' what the Partnership is trying to achieve. • All areas, not just energy recovery, needs to be considered alongside VFM, deliverability, working with the community etc.
ACTIONS		No change to Policy.

Policy 2		In making decisions about how waste is managed, the Partnership will aim to ……..
Stakeholder	**Conclusions**	Weighting of list of areas in Policy 2 should be weighted and then put into order. General feeling was that the order portrayed in the Strategy was not necessarily the best. Questions were raised as to how the strategy will incorporate sustainability and how it will try to reduce the impacts of vehicle movements. It was also stated that EfW was seen as the option with the least impact on human health.
Correspondence	**Conclusions**	Balance needed between VFM and sustainability, environment and human health risks. More emphasis needed on the reduce and reuse component of the 3R's
Meetings	**Conclusions**	The cost effectiveness of transporting materials elsewhere should be considered. Examine the costs of recycling against the cost of doing nothing - the point was made that environmental concerns should not dominate cost concerns.
Public Questionnaires	**Conclusions**	82.03% of respondents replied that the choice of waste treatment facilities/methods should not be based on cost alone. Respondents believed the environment to be an important issue, with obtaining benefit from the waste to also be high on the agenda. An improved recycling scheme as well as an education/awareness raising initiative was deemed to also be an important part of the waste problem. A small number of respondents were negative about SWC and EfW. Improved recycling services was a common comment made from respondents. A small proportion of respondents didn't want EfW, PFI or SWC, however in contrast some respondents support EfW and SWC and believed the Draft Strategy was a good start. Again education/awareness was believed to be the way to succeed.
OVERVIEW	**Conclusion**	• Order of items in this Policy needs to be reflected with weightings. • Balance needed between VFM and sustainability.
ACTIONS		Order of items in Policy changed.

		Waste Minimisation
Policy 3		**The Partnership will introduce measures to increase the level of education and understanding of waste reduction matters with all members of the general public and other stakeholders.**
Stakeholder	**Conclusions**	There was a high feeling that education is very important and should be a high priority in the Strategy. The question over whether reducing the size of waste receptacles had been considered in the strategy?
Correspondence	**Conclusions**	BVPI needed for waste minimisation. Everything must be done with regard to waste minimisation. (Interest groups)
Meetings	**Conclusions**	Several groups thought that education was key to maximising waste reduction. Government should address waste minimisation.
Public Questionnaires	**Conclusions**	The respondents to the questionnaires overwhelming felt that Council's should help householders reduce the amount of waste produced through education, information and awareness programmes.
OVERVIEW	**Conclusion**	• Many respondents stressed that education is very important and should be a high priority in the Strategy. • As well as education, everything must be done to promote waste minimisation.
ACTIONS		No change to Policy.

Policy 4		**The Partnership acknowledges the impact of packaging on the overall amount of waste that is generated and will work with regional partners, industry and Government to reduce the amount of packaging produced.**
Stakeholder	**Conclusions**	General feeling was although this was a good idea, this area should be for Central Government to tackle and not local government. A question was raised as to how effective this Policy would actually be. Packaging and the actions that the Council can take to combat it were raised as an issue.
Correspondence	**Conclusions**	Ensure that any initiatives on packaging would also recognise the life cycle of the packaging. Robust policy is required to reduce packaging.
Meetings	**Conclusions**	Local authorities should lobby government on reducing the amount of packaging used. Targets should be set to reduce packaging.
Public Questionnaires	**Conclusions**	Respondents felt that measures should be taken to reduce the amount of packaging, including carrier bags, used.
OVERVIEW	**Conclusion**	• This is a Central Government issue rather than a local government issue. • A robust policy is required but how effective would this policy be?
ACTIONS		No change to Policy.

Policy 5		The councils within the Partnership will introduce waste minimisation and reuse schemes in their own operations to lead by example and highlight best practice to the wider community.
Stakeholder	**Conclusions**	Generally this Policy was agreed with by the participants, however it was also suggested that the Councils should publish their 'internal' targets and their performance for the public to see. The Councils statement that they will lead by example was questioned as to how? Will they set recycling targets for their offices?
Correspondence	**Conclusions**	Provision of waste reduction, reuse and recycling measures in contracts and purchasing practices for council services and endeavour to ensure that their contractors follow the same procedures - should be included as part of Policy 5. Principles should be given more weight to avoid 'lip service'.
Meetings	**Conclusions**	It was generally felt that the council should set a good example regarding reuse and packaging through internal policies and strategies.
Public Questionnaires	**Conclusions**	Comments were received that the Council should lead by example, not only by their own actions but by also recycling as much as possible from other streams I.e., litter recycling etc.
OVERVIEW	**Conclusion**	• 3R's should be included in contracts and purchasing practices. • Internal targets and performance should be publicised in order for the public to see how the Councils are doing.
ACTIONS		**Policy changed to:** - The councils within the Partnership will introduce waste minimisation and reuse schemes in their own operations to lead by example and highlight best practice to the wider community. Where practicable, this will include waste reduction, reuse and recycling measures in contracts for council services. The councils will also endeavour to ensure that their contractors follow the same principles.

Policy 6		**The Partnership will use planning and permitting procedures to influence the level of waste generation throughout the whole life of new developments and redevelopments - from construction right through their operational lifetimes. This will be done irrespective of the nature of the developments, whether they are housing, commercial or industrial developments.**
Stakeholder	**Conclusions**	This maybe a good Policy but how difficult will it be to enforce. Should waste minimisation and recycling etc., not be included as part of the planning process. Could waste reduction etc., but be linked into Local Area Plans.
Correspondence	**Conclusions**	Agree with Policy.
Meetings	**Conclusions**	It was suggested that construction waste should also be recycled.
Public Questionnaires	**Conclusions**	Agreed with Policy.
OVERVIEW	**Conclusion**	• This maybe a good Policy but how difficult will it be to enforce. • Should waste minimisation and recycling etc., not be included as part of the planning process. • Could waste reduction etc., but be linked into Local Area Plans.
ACTIONS		No change to Policy.

		Recycling and Composting
Policy 7		**The Partnership will aim to achieve the following recycling/composting targets - 30% by 2010, 35% by 2015, 45% by 2020. In the longer tem, the Partnership will look to exceed the statutory targets set by Government, where this is practicable.**
Stakeholder	**Conclusions**	It was felt that the targets should be more ambitious as a minimum should be in line with the Waste Strategy 2007. Other targets were also mentioned - waste reduction by kg per head, internal standards/targets, separate targets for recycling and composting were also suggested. There was a feeling that the recycling and composting targets were too low. It was asked how the kerbside collections had increased recycling rates thus far. It was stated that a change in services would be required for these targets to be met. The increasing scope for recovery was raised as an issue that might restrict increases in recycling levels.
Correspondence	**Conclusions**	Targets should be more ambitious and meet the targets set in the Waste Strategy 2007. Enforcement and penalties should only be introduced after education measures have been exhausted. Suggested recycling/composting target of up to 75% have been mentioned.
Meetings	**Conclusions**	Suggestion that targets are too low although with current recycling schemes targets could prove ambitious. Composting is readily accepted.
Public Questionnaires	**Conclusions**	Suggestion that targets are too low, although with current recycling schemes targets could prove ambitious. Composting is readily accepted.
OVERVIEW	**Conclusion**	• Medium (2015) and long term(2020) targets have been increased to reflect comments and the Waste Strategy 2007, but the short term (2010) target is unchanged due to a lack of currently available recycling infrastructure and lead in time to effectively introduce new materials and schemes.
ACTIONS		**Policy changed to: -** The Partnership will aim to achieve the following recycling / composting targets for household waste:·30% by 2010· 45% by 2015· 50% by 2020 In the longer term, the Partnership will look to exceed the statutory targets set by Government, where this is practicable.

Policy 8		**Viable recycling facilities will be made available to all residents, including those in flats and rural locations. Any new developments will be required to include recycling and composting facilities wherever practicable.**
Stakeholder	**Conclusions**	It was felt that recycling facilities should also include reuse facilities. A suggestion was made that new developments should automatically include recycling facilities unless a justified reason for not having one can be provided. Collection strategies throughout the Partnership should be harmonised as much as possible. The majority of questions were regarding what new services would be on offer - SWC, plastic bag recycling, food waste collections etc. It was also asked whether these had been assessed in the strategy. It was also stated that there needed to be strong political support to make these services work.
Correspondence	**Conclusions**	Kerbside schemes should be enhanced, including kitchen waste, and come before bring sites. Any system introduced should be effective and easy for residents to use. Enforcement and AWC should only be introduced after all other systems including kitchen waste have been in place for a period of time and education campaigns have been exhausted.
Meetings	**Conclusions**	Concerns over suitability of kerbside collection containers, eg. too heavy. Requested collections for additional materials (using larger wheeled bins) eg. plastic, cardboard and food waste, but concerns over storage. Requested improved facilities at HWRCs. Mixed reaction to the introduction of SWCs, and praise for High Rise recycling scheme. All new developments should incorporate facilities for recycling.
Public Questionnaires	**Conclusions**	Respondents wanted an improved kerbside service, better containers, more materials, more collections. More accessible facilities were also requested, more locations etc.
OVERVIEW	**Conclusion**	• Kerbside schemes should be enhanced. • Any system should be easy to use and effective. Any new developments should automatically include recycling facilities - justified reason as to why not. • Collection strategies harmonised throughout the Partnership areas.
ACTIONS		**Policy changed to:** - Viable recycling facilities will be made available to all residents, including those in flats and rural locations. Recycling facilities will be designed to be easy for residents to use. Any new developments will be required to include recycling and composting facilities wherever practicable. The three councils will aim to move towards harmonised arrangements for collection of recyclable materials.

Policy 9		The Partnership will seek to create a change in behaviour in the community by promoting increased public awareness of waste management issues. Awareness raising campaigns will be targeted at people at home, at work and to our visitors with the aim of maximising participation in recycling schemes.
Stakeholder	**Conclusions**	Having an educated public regarding waste issues, recycling etc., was deemed to be the way for waste management schemes to be a success.
Correspondence	**Conclusions**	Enforcement only pursued after education policies have been allowed to mature. (Interest groups)
Meetings	**Conclusions**	Education around recycling is important to all sectors eg. schools, business etc. Enforcement and/or incentives viewed as an acceptable way of improving recycling and reuse.
Public Questionnaires	**Conclusions**	Education, information, awareness programmes are essential to delivering a successful waste management service.
OVERVIEW	**Conclusion**	• Having an educated public regarding waste issues, recycling etc., was deemed to be the way for waste management schemes to be a success. • Enforcement should only be pursued after education policies have been allowed to mature.
ACTIONS		No change to Policy.

Policy 10		The Partnership will work with industry and organisations such as WRAP to find and develop markets for recyclable materials and recycled products. In addition, the Partnership will assist in building capacity in the voluntary sector to promote reuse and recycling of materials.
Stakeholder	**Conclusions**	State what uses recycling has to the public in normal domestic use. The inclusion of the voluntary sector and to what degree was questioned.
Correspondence	**Conclusions**	Establish network of Community recycling centres - replacing HWRC.
Meetings	**Conclusions**	Agree to working in partnership with industry and voluntary sectors to find and develop recycling markets.
Public Questionnaires	**Conclusions**	Agreed with Policy.
OVERVIEW	**Conclusion**	• State what uses recycling has to the public in normal domestic use and highlight this to the public.
ACTIONS		**Policy changed to:** - The Partnership will work with industry and organisations such as WRAP to encourage recycling of commercial and industrial waste and to find and develop markets for recyclable materials and recycled products. In addition, the Partnership will assist in building capacity in the voluntary sector to promote reuse and recycling of materials.

Policy 11		In addition to introducing waste minimisation and reuse principles into their own operations, the councils within the Partnership will aim to purchase recycled products wherever feasible in order to stimulate the markets for recovered materials as well as leading by example and highlighting best practice to the wider community.
Stakeholder	**Conclusions**	More public awareness is needed. Procurement needs to be a stronger target - not just aiming purchase recycled goods but also target reduce, reuse designed for ease of recycling/recovery and hiring.
Correspondence	**Conclusions**	Agree with Policy.
Meetings	**Conclusions**	Support for use of recycled products by the Local Authorities.
Public Questionnaires	**Conclusions**	Agreed with Policy.
OVERVIEW	**Conclusion**	• Procurement needs to be a stronger target - not just aiming purchase recycled goods but also target reduce, reuse designed for ease of recycling/recovery and hiring rather than purchase.
ACTIONS		No change to Policy.

		General
Policy 12		**In line with the Waste Hierarchy, the Partnership will aim to maximise reuse, recycling and composting before the residual waste is treated. The Partnership will aspire to meet the Waste Strategy 2007 targets for reducing waste that is not reused, recycled or composted. It will also aim to meet the following national waste recovery targets: 53% by 2010, 67% by 2015, 75% by 2020. Where practicable these will be exceeded in the longer term. The Partnership…**
Stakeholder	**Conclusions**	There were quite a few varying comments for this Policy. Generally it was felt that as the Strategy is for a period of 20 years, careful consideration needs to be given to the chosen technology. In order to achieve this continuing investigation into new technologies/markets etc, should continue and an open mind taken when looking at these. A number of varied questions over the recovery aspect of the strategy were raised. It was asked where a new facility might be? Whether targets (especially the earliest one) could be met? Why there was no preferred option? What the boundaries to the assessment were and if the public have been fully consulted?
Correspondence	**Conclusions**	Recycling and waste avoidance before any form of treatment. Opposition to any form of incineration (concerns about resource loss, greenhouse gas contribution and health impacts). More ambitious waste recovery targets needed - e.g., 100% by 2020! Some concern over technology comments and associated markets eg, RDF.
Meetings	**Conclusions**	The majority of groups were in favour of EfW. Some concerns over and safety and impact on human health. There were queries over financial implications of new waste facility versus LATS penalties
Public Questionnaires	**Conclusions**	Over 86% of respondents agreed that benefit (energy) should be obtained from waste. Less than 2% disagreed with this.
OVERVIEW	**Conclusion**	There were quite a few varying comments for this Policy. • Generally it was felt that as the Strategy is for a period of 20 years, careful consideration needs to be given to the chosen technology. • In order to achieve this continuing investigation into new technologies/markets etc, should continue and an open mind taken when looking at these. • Some opposition towards any form of incineration was mentioned but these comments were mainly from the area of interest groups. • Medium (2015) and long term(2020) targets have been increased to reflect comments and the Waste Strategy 2007, but the short term (2010) target is unchanged due to a lack of currently available recycling infrastructure and lead in time to effectively introduce new materials and schemes.
ACTIONS		Policy changed to include Waste Strategy 2007 target for reducing waste that is not reused, recycled or composted: Maximum of 225kg per person by 2020. Wording of recovery targets also changed to include municipal waste.

		General
Policy 13		**The Partnership will provide support to the development of new recycling, composting and residual treatment capacity within South Tyne and Wear where this does not conflict with other policies or Planning requirements.**
Stakeholder	**Conclusions**	Risks associated with end products needs to be fully considered. This may affect the deliverability and sustainability of treatment option. Strategy will need to be supported through planning framework and other planning strategies.
Correspondence	**Conclusions**	Buy-in' to Strategy needed by Planning authorities at every step.
Meetings	**Conclusions**	Group questioned the life of landfill sites, and whether it is fair to allow waste from other Authorities - proximity principle is supported.
Public Questionnaires	**Conclusions**	Agreed with Policy.
OVERVIEW	**Conclusion**	• End product risks need to be carefully considered. • Planning need to 'buy-in to the Strategy at every step to ensure its success and deliverability. • Any changes should be open to the public.
ACTIONS		**Policy changed to: -** The Partnership will provide support, through Planning policy for example, to the development of new recycling, composting and residual treatment capacity within South Tyne and Wear where this does not conflict with other policies or Planning requirements.

		Financing and Communications
Policy 14		**The Partnership will work together in sourcing funding to ensure the necessary changes to services are made. The costs and benefits of delivery this Strategy will be shared between the Partnership authorities.**
Stakeholder	**Conclusions**	Need to secure more Section 106 funding to help improve service. Ability to obtain planning permission - critical path for delivery residual waste treatment. Not equal for all technologies.
Correspondence	**Conclusions**	Greater financial resources required to deliver the Strategy. PFI schemes must be avoided.
Meetings	**Conclusions**	Concerns over PFI resulting in out-sourcing of collection services leading to job cuts
Public Questionnaires	**Conclusions**	Agreed with Policy. Suggestion of more Partnerships to be entered into. Majority of respondents wanted services improved at a reasonable cost.
OVERVIEW	**Conclusion**	• Greater funding needed to deliver the Strategy. • Some mention of avoiding PFI arose
ACTIONS		No change to Policy.

Policy 15		The Partnership acknowledges that communication is a key component of the Strategy. The Partnership will prepare a Strategy to promote waste awareness and, in particular, the three R's to the whole of the community.
Stakeholder	**Conclusions**	It was agreed that communicating with the public was key. However should core funding be available for communication and waste minimisation strategies as they are such an important issue? When the communication strategy has been produced will it be available for consultation? Will there be a joint communication strategy for the three authorities?
Correspondence	**Conclusions**	A powerful education campaign must be sustained, however this will require investment to ensure its success. Any solution must involve public participation and Councils must provide leadership through education, awareness etc.
Meetings	**Conclusions**	None
Public Questionnaires	**Conclusions**	Education, information, awareness programmes are essential to delivering a successful waste management service.
OVERVIEW	**Conclusion**	• Communication, education and promotion is the key to delivering the Strategy. • Any solution must involve public participation. • In order to achieve this core funding needs to be made available. • Communication Strategy needs to be developed to ensure deliverability - would this be open to consultation?
ACTIONS		**Policy changed to:** - The Partnership acknowledges that education and communication is a key component of the Strategy. The Partnership will prepare a Strategy to promote waste awareness and, in particular, the three R's to the whole of the community.

		Monitoring and Review
Policy 16		**Future performance monitoring is important to assess the effects of the Strategy. The Partnership will ensure that accurate, regular ongoing monitoring is carried out to this end.**
Stakeholder	**Conclusions**	Add - remedial action to be taken/considered when ongoing monitoring indicates that targets won't be met. Needs to be extremely robust. Monitoring is important, but how is the Strategy measured? New national performance framework was raised as something to be taken into account.
Correspondence	**Conclusions**	Any form of performance monitoring, review and reporting must be transparent and open to public scrutiny. There should be predetermined timetables for reporting measures.
Meetings	**Conclusions**	Information regarding the audit trail of material was requested
Public Questionnaires	**Conclusions**	Agreed with Policy.
OVERVIEW	**Conclusion**	• Any form of monitoring, review needs to be open to public scrutiny. • Timetables for regular reporting needs to be decided upon and adhered to. • Any monitoring and review process needs to be extremely robust and plans set in place to take remedial action if and when necessary.
ACTIONS		**Policy changed to: -** Future performance monitoring is important to assess the effects of the Strategy. The Partnership will ensure that accurate, regular ongoing monitoring is carried out and that remedial steps are taken if it appears that targets are not likely to be met.

Policy 17		The Partnership will keep the policies included in this Strategy under review. Action Plans will be reviewed at least annually with a full Strategy review in 5 years. If required as a result of, for example, changes in legislation or local circumstances, the Strategy will be revised more frequently. New versions will be posted on the Council's websites.
Stakeholder	**Conclusions**	Frequent reviews needed - due to government policies and emerging technologies. A more frequent review of the strategy was called for. Questions were asked over the timescales of the delivery of certain aspects of the strategy. It was also stated that action plans need to be robust enough to make Councils act and carry out the strategy. Review period should be shorter 1-2 years?
Correspondence	**Conclusions**	Any amendments etc., should always be processed democratically with utmost transparency. If relevant on occasions community groups should be invited to have their input also.
Meetings	**Conclusions**	Use of consultants seen as good way forward to maximise professional expertise
Public Questionnaires	**Conclusions**	Consultation needs to be open.
OVERVIEW	**Conclusion**	• Frequent reviews are needed. • Any amendments etc., should always be processed democratically with utmost transparency. • If relevant on occasions community groups should be invited to have their input also.
ACTIONS		**Policy changed to**: - The Partnership will keep the policies included in this Strategy under review. Action Plans will be reviewed at least annually with a full Strategy review in 5 years. If required as a result of, for example, changes in legislation or local circumstances, the Strategy will be revised more frequently. Any changes to the Strategy will be subject to due democratic processes and further public consultation will be undertaken in the event of proposed significant changes to the Strategy. New versions will be posted on the Councils' websites.

Policy 18		The Partnership will monitor the development and adoption of LDF's and will have continuing dialogue with the Planning Authorities to ensure that the Strategy and emerging LDF's are mutually informed and support the development of appropriate facilities to enable the Strategy aims to be delivered. The aim will also be for Planning documents to support the policy of waste minimisation in new developments.
Stakeholder	**Conclusions**	It was generally agreed that the planning framework needs to reflect the key aims of the Strategy. Timescales can be affected when planning a waste treatment facility. How can the planning aspect be managed as part of a joint strategy?
Correspondence	**Conclusions**	Agree with Policy.
Meetings	**Conclusions**	None
Public Questionnaires	**Conclusions**	None
OVERVIEW	**Conclusion**	• It was generally agreed that the planning framework needs to reflect the key aims of the Strategy. • Timescales can be affected when planning a waste treatment facility. • How can the planning aspect be managed as part of a joint strategy?
ACTIONS		No change to Policy.

Appendix B to Annex E

Consultation Questionnaire

Let's talk rubbish!

We all produce it, we all throw it away and we all want to see less of it!

Rubbish is a growing problem and one that needs to be tackled now if we value our environment *and* the money in our pocket.

For every bit of rubbish we throw away that isn't recycled – it costs your council (and ultimately you!) money to get rid of it. And with much of it ending up in landfill sites, the cost to the environment is even worse.

So the big question is this:

"How can we reduce the rubbish we throw away and deal with what's left in a way that is both cost effective and more sustainable?"

We can all do our bit by:

- Reducing – what we throw out
- Reusing – what we can again and again
- Recycling – more in kerb-it boxes and at recycling centres

But, we need a long-term solution to this problem and this is where you can help your local council by getting involved in the waste debate!

Three heads are better than one

Dealing with rubbish falls to your local council – and is one of the major challenges they face in the future.

So, here in Tyne & Wear - Gateshead, South Tyneside and Sunderland councils are tackling this together in partnership (as the South Tyne and Wear Waste Management Partnership).

"Nearly 370,000 tonnes of rubbish was collected in one year by Gateshead, South Tyneside and Sunderland"

They are keen to get your views on how we manage rubbish in a more useful and sustainable way for the next 20 years.

The first thing they have done is to develop a draft strategy that sets out all the available options for dealing with our rubbish.

You can see a full copy of the draft strategy via your council's website or by calling into your local library. Below is a brief explanation of what the Partnership aims to do and how you can help.

What the Partnership wants to achieve

The Partnership wants a way of dealing with rubbish that will lead to:

1. **More reuse and reduction**
2. **More recycling and composting**
3. **More rubbish being turned into energy or a raw material**

Which in turn will result in:

4. **Less rubbish going to landfill**

"Currently 250,000 tonnes of rubbish from Gateshead, South Tyneside and Sunderland ends up in landfill sites"

There is no one magic solution to this problem but the best and worst options can be summarised opposite.

So, over the next 20 years, the Partnership want to change the way we all look at and manage our rubbish in Gateshead, South Tyneside and Sunderland by:

- **Reducing** the amount of rubbish we produce in the first place and increasing the amount we reuse.
- **Increasing** the amount of rubbish we recycle or compost to meet and possibly exceed national targets.
- **Improving** and expanding our waste facilities and services, to make them easier to use for everyone.
- **Managing** the rubbish we cannot reuse or recycle in a way that has benefits and uses the best of modern technology.
- **Working together** to deliver our joint strategy.

Our key targets

Amount of all household rubbish recycled or composted

2010 →	2015 →	2020
30%	35%	**45%**

Amount of rubbish turned into something that can be used

2010 →	2015 →	2020
53%	67%	**75%**

How you can take part in the waste debate

You can:

- **Complete the attached questionnaire**
  (and be entered into our £100 MetroCentre prize draw competition)
- **Phone your local council**

  Gateshead Council: 0191 433 3000
  South Tyneside Council: 0191 427 7000
  Sunderland Council: 0191 520 5503
- **Call into your local library**
  To see the full draft strategy document
- **Click on to:**
  www.gateshead.gov.uk
  www.southtyneside.info
  www.sunderland.gov.uk

Produced by South Tyne and Wear Waste Management Partnership, July 2007. Printed on recycled paper.
Please recycle this once you have finished with it – thank you.

Best to worst options

✔

AVOID
Choose products that produce minimal waste

✔✔

REDUCE
Produce less waste

REUSE
Use a product again in its original form

RECYCLE
Produce new products from used material

RECOVER
Turn rubbish into something useful

LAST RESORT
Residue to land fill

THE WASTE DEBATE:
HAVE YOUR SAY

Fill this in and you could win…
£100 of shopping vouchers. Just send in your questionnaire and one lucky resident from Gateshead, South Tyneside and Sunderland could win this fantastic prize

Please take a few minutes to complete this questionnaire. Your views are really important to us and will help us take forward the way we tackle waste in the future.

RETURN TO: FREEPOST VIEWPOINT (place in an envelope - you don't need a stamp) by MONDAY 20 AUGUST 2007. Thank you.

For each of the statements below, please let us know if you agree or disagree by ticking in the appropriate box:

WASTE REDUCTION

Each household produces over one tonne of rubbish per year. Every tonne that isn't thrown away is a tonne that doesn't have to be recycled, composted or treated and could help to limit increases in costs. Over 20% of what is thrown away is food waste:

1. Do you think that everyone should take steps to try and reduce the amount of rubbish they throw away?

☐	☐	☐	☐	☐
Strongly Agree	*Agree*	*Neither agree of disagree*	*Disagree*	*Strongly disagree*

2. Do you think Councils should help householders to reduce the amount of rubbish they throw away by providing information and educational programmes?

☐	☐	☐	☐	☐
Strongly Agree	*Agree*	*Neither agree of disagree*	*Disagree*	*Strongly disagree*

RECYCLING

Research shows that householders in our area are still not recycling a lot of paper, glass and cans and a large number of householders do not recycle regularly.

3. Do you recycle your paper, glass and cans every two weeks using the Kerb-it box?

YES ☐ NO ☐

4. If you answered NO to Question 3 what stops you from recycling every two weeks:

- Not enough rubbish to recycle every two weeks ☐
- Not enough time to do it ☐
- It's too much bother ☐
- It's not my job ☐
- It's too complicated ☐
- I don't know what to do ☐
- I've lost the instructions/I need someone to explain to me what to do ☐
- I can't manage to put the box out ☐
- I do recycle but use my local bring site ☐

5. If you still put some paper, cans and glass in the wheeled bin what would help you recycle more?

_____

_____

_____

6. Do you think that householders should be *required* to recycle?

YES ☐ NO ☐

In 2006/07 Gateshead, South Tyneside and Sunderland recycled and composted an average of 23% of their waste. The relatively simple ways of increasing recycling levels have now been used and the target of 45% in the Draft Strategy will be hard to reach. This could mean changes to collection arrangements as well as putting the waste through a treatment process.

Continued overleaf

7. Do you think:

We should aim to do much more than 45% ☐

45% is about right ☐

45% is too much ☐

If you think that we need to recycle and compost more should that be at:

Any cost ☐

The reasonable cost needed to achieve the target ☐

No additional cost ☐

RESIDUAL WASTE TREATMENT

After achieving a recycling and composting target there will still be rubbish that cannot or should not be landfilled. That rubbish could be treated to generate electricity and heat to heat buildings. It is estimated that every 10,000 tonnes of rubbish could generate enough electricity for about 1,000 households each year.

8. Do you think that obtaining benefit from the rubbish that cannot be recycled or composted by modern treatment facilities is the correct approach?

☐	☐	☐	☐	☐
Strongly Agree	*Agree*	*Neither agree of disagree*	*Disagree*	*Strongly disagree*

VALUE FOR MONEY

All three councils currently provide waste services at relatively low costs and with high levels of customer satisfaction

9. The choice of waste treatment facilities/methods should not be based on cost alone.

☐	☐	☐	☐	☐
Strongly Agree	*Agree*	*Neither agree of disagree*	*Disagree*	*Strongly disagree*

10. What other factors do you consider more important than cost?

Environment ☐

Treat or dispose of all our rubbish in our own area ☐

Reduce transport of waste ☐

Use waste to best benefit (produce energy) ☐

Other *(please specify)*

_____

_____

_____

OTHER COMMENTS

11. Do you have any other comments to make about the Draft Strategy?

_____

_____

_____

SOME INFORMATION TO HELP US

Your age and gender:

Up to 24 ☐ 25-44 ☐ 45-64 ☐ 65+ ☐

Male ☐ Female ☐

Number of Adults in household ☐

Number of children/dependents ☐

Car owner YES ☐ NO ☐

Where do you live? *(Please tick)*

Gateshead ☐

South Tyneside ☐

Sunderland ☐

Your postcode ☐

Your house number ☐

For your chance to win £100 of MetroCentre vouchers please complete your postcode and house number. (This information will only be used for this consultation process).

Annex F

Action Plan

Summary Action Plan 2007 to 2012

Actions	How do we achieve the action?	What is the outcome of the action?	What are the risks associated with achieving this action?
Overall			
1. Formally Adopt the Strategy, embrace its aims and deliver the Actions	• Adopt the Strategy through the Political processes. • Produce a detailed delivery plan. • Formally establish a Joint Waste Executive Committee.	• Commencement of delivery process. • Increase in public awareness issues of waste minimisation, recycling and residual treatment. • Drive the strategy forward.	• Affordability in delivering action plan. • Continued/renewed challenges from interest groups.
2. Raise the profile of Waste Services to a sufficiently high level to ensure that adequate funding is available to meet the objectives of the Strategy	• Early high profile intervention. • Prepare and adopt Communications Strategy.	• Increase in public awareness issues of waste minimisation, recycling and residual treatment. • Attain recycling and recovery targets. • Political buy-in. • Funding made available for new waste schemes.	• Adequate funding not available. • That the profile has not been raised to a sufficiently high level for keen buy-in.
Short term priorities			
Waste Minimisation			
3. Waste Awareness Campaign	• Develop and adopt communications strategy including waste awareness campaign using relevant media channels. • Support NERWAI (North East Regional Waste Awareness Initiative)	• Raise public and business awareness of waste issues. • Achievement of targets. • Community feel that waste is their responsibility.	• Ineffective campaigns. • Lack of public understanding. • Lack of response/participation.
4. **Waste Minimisation campaign to reduce**	• Design and deliver multi-media informational campaign (including	• Demonstrable reduction in BV84 (kg/head).	• Ability to measure change in tangible way and factor out other influences

Actions	How do we achieve the action?	What is the outcome of the action?	What are the risks associated with achieving this action?
impact of BV84 (kg/head)	Education Officers). • Prepare and adopt Communications Strategy.	• Increase in public awareness issues of waste minimisation.	e.g., global warming, wider environmental influence.
5. Encourage Home Composting	• Early high profile intervention (including Education Officers). • Compost Masterclass Events. • Area composting champions.	• Increase in number of home composters. • Increase in recycling performance (BV 82b household composting, subject to Govt acceptance). • Reduction in BV84.	• Lack of public take-up. • Government fail to recognise home composting in BV82b.
6. Influence the level of waste generation throughout the life of new housing and commercial developments	• Establish protocols with Planning Department, which enable the review of Planning Applications by Waste Officers.	• At best – the inclusion of enforceable conditions relating to waste • At worst – waste friendly consultation and advice	• Level of cooperation and enforceability that the Planning system is able to provide.
7. Encourage and engage businesses to use waste minimisation and recycling as a practical option rather than disposal	• Targeted promotional activity. • Increased awareness of financial and environmental benefits.	• Reduction in C & I waste generation. • Increased recognition of the cost of waste management.	• Failure to achieve desired reduction. • Difficult to measure non-local authority customer impact.
8. Influence and enable the community and national stakeholders to consider packaging reductions	• Lobby regional and national government. • Engage local businesses to assist in bringing change.	• Reduction in packaging/overall waste. • Higher recognition of long-term influence of packaging in waste.	• Lack of action at regional and national levels. • Outside influences with regard to packaging – world market forces.
Recycling, Composting and Recovery			
9. Make improvements to HWRC's	• Consider joint management arrangements for all facilities in	• Improved HWRC performance. • Improved customer satisfaction.	• Funding and land acquisition. • Failure to secure planning consent.

Actions	How do we achieve the action?	What is the outcome of the action?	What are the risks associated with achieving this action?
	partnership area. • Review level of site provision over partnership area. • Upgrade all existing sites /design new to Middlefields model.	• Improved economy of scale. • Improved image. • Raise profile of high quality waste services.	• Recycling levels not achieved.
10. Assist to develop and support 3rd Sector and Community recycling	• Support NERWAI. • Consider partnering arrangements with Groundwork or similar organisations in service delivery and communications.	• Increased 3rd Sector involvement in community recycling.	• NERWAI failure to achieve. • Lack of take-up from 3rd Sector. • Confidence with 3rd Sector delivery.
11. Optimise participation in recycling, composting and recovery initiatives	• See (3 & 4) above. • Progressively adapt collection methods to increase recycling to meet environmental conditions. • Enforcement (Policy alignment).	• See (3 & 4) above. • Increase in recycling and composting. Increased tonnage counts towards BV82.	• See (3 & 4) above. • Public acceptability. • Lack of buy-in. • Failure of campaign to create behaviour change.
12. Introduce additional materials to Kerbside Recycling	• Plastics • Cardboard • Kitchen Waste • Tetrapaks • Textiles Optimum collection and sorting arrangements per material type.	• Increase in BV82. • Increase in public satisfaction.	• Cost vs. output. • Improvements in kerbside recycling vs. technology solution costs. • Failure to achieve targets. • Lower than anticipated participation due to public resistance of schemes eg. container size number, collection arrangements etc.
13. Increase and Expand Bring Sites	• As (12) above but not kitchen waste. • Extension of existing arrangements. • 'Adopt a site'.	• Increase in BV82.	• Cost vs. output. • Failure to achieve targets. • Commercial support (servicing agents/sites). • Limited stakeholder support.
14. Promote/Enhance Recycling in Schools	• See (3, 4 & 10) above.	• See (3, 4 & 10) above.	• See (3, 4 & 10) above.

Actions	How do we achieve the action?	What is the outcome of the action?	What are the risks associated with achieving this action?
Residual Treatment			
15. LATS Interim Strategy (until facility / facilities operational)	• Secure Report from AEA, to be considered and implemented as appropriate.	• Compliance with LATS.	• Failure to achieve action would potentially involve fine of £150 per tonne.
16. LATS Strategy (Delivery of required residual capacity)	• Procure, award and deliver facility / facilities. • Manage procurement process.	• Cost-effective compliance with LATS and other targets.	• As 15 above.
Self- Sufficiency			
17. Waste minimisation within Council's operations, and "green" purchasing	• Environmental Audit & Action Plan. • Establish links with LA21, purchasing departments and NEPO.	• Improvement in recovery of municipal waste and impact on LATS. • Increased awareness. • Good practice.	• Public perception. • Loss of opportunity. • Ability to effectively measure.
Monitoring and Review			
18. Monitor and Review performance	• Quarterly compilation and reporting of performance information. • Annual overview.	• Maintain direction. • Early notification of reduced or improved performance. • Development of recovery plans as required.	• Loss of direction. • Failure to address weaknesses. • Financial penalties. • Failure to delivery recovery plan. • Reputational impact.
19. Monitor the development and adoption of LDF's in line with Planning guidance	• Quarterly liaison meetings with Planning Authorities.	• Incorporation of waste issues into UDP and LDF strategies.	• Failure to incorporate waste management into UDP or LDF. • Delay or non-delivery of future waste facilities or infrastructure.
20. Support the development of new waste	• Promote work of the Partnership at a regional and national level.	• Raise profile. • Ability to introduce step change as	• Lack of business interest. • Local potential not realised.

Actions	How do we achieve the action?	What is the outcome of the action?	What are the risks associated with achieving this action?
management capacity within South Tyne and Wear	• Ongoing dialogue with waste industry.	required. • Build market confidence in the Partnership and region.	• Failure to secure Partnership objectives.

Medium term priorities from 2010						
Waste Minimisation						
Recycling and Composting						
Residual Treatment						
Self- Sufficiency						
Monitoring and Review						
21. 2012 Review Strategy						

Glossary of Terms

ABPR	Animal By Products Regulations
AD	Anaerobic Digestion (but occasionally Aerobic Digestion)
ADF	Abiotic Depletion Factor
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
ATT	Advanced Thermal Treatment
BMW	Biodegradable Municipal Waste
BPEO	Best Practicable Environmental Option
BVPI	Best Value Performance Indicator
CA	Civic Amenity
CAPEX	Capital Expenditure
CD	Construction, Demolition and Excavation
CFC	Chloro-Fluoro-Carbon
CHP	Combined Heat and Power
CO	Carbon Monoxide
CV	Curriculum Vitae
DCF	Designated Collection Facilities
DIY	Do It Yourself
DPD	Development Plan Document
DVD	Digital Video Disk
EA	Environment Agency
EEC	European Economic Community
EEE	Electrical and Electronic Equipment
EfW	Energy from Waste
EIA	Environmental Impact Assessment
ELV	End-of-Life Vehicle
EPA	Environmental Protection Agency
ERM	Environmental Resources Management
EU	European Union
GJ	GigaJoule (1,000,000,000 Joules)
GVA	Gross Value Added
GWP	Global Warming Potential
HC	Hydro Carbon
HCI	Hydrogen Chloride
HCV	High Calorific Value
HF	Hydrogen Fluoride
HWRC	Household Waste Recycling Centre
IPCC	Intergovernmental Panel on Climate Change
IVC	In-Vessel Composting
JMWMS	Joint Municipal Waste Management Strategy
KAT	Kerbside Assessment Tool

KW	Kilo Watt
LA	Local Authority
LATS	Landfill Allowance Trading Scheme
LCA	Life Cycle Assessment
LCI	Life Cycle Inventory
LDF	Local Development Framework
LETS	Local Exchange Trading System
MBC	Metropolitan Borough Council
MBT	Mechanical-Biological Treatment
MJ	MegaJoule (1,000,000 Joules)
MRF	Materials Recovery (sometimes Recycling) Facility
MSW	Municipal Solid Waste
MW	MegaWatt (1,000,000 Watts)
MWI	Municipal Waste Incineration Directive
MWMS	Municipal Waste Management Strategy
OPEX	Operational Expenditure
OPRA	Operator & Pollution Risk Appraisal
PFI	Private Finance Initiative
PPS	Planning Policy Statement
PRN	Packaging Recovery Form
PVC	PolyVinyl Chloride
RDF	Refuse-Derived Fuel
ROC	Renewable Obligation Certificate
RSS	Regional Spatial Strategy
SA	Sustainability Appraisal
SAC	Special Areas of Conservation
SD	Sustainable Development
SEA	Strategic Environmental Assessment
SMART	Specific, Measurable, Achievable, Realistic, Time-related
SO2	Sulphur Dioxide
SPA	Special Protection Area
STWWMP	South Tyne and Wear Waste Management Partnership
SWC	Segregated Weekly Collection
TS	Transfer Station
UDP	Unitary Development Plan
WCA	Waste Collection Authority
WDA	Waste Disposal Authority
WEEE	Waste Electrical and Electronic Equipment
WET	Waste and Emissions Trading
WHO	World Health Organisation
WID	Waste Incineration Directive
WISARD	Waste - Integrated Systems Assessment for Recovery and Disposal
WRAP	Waste Resources Action Programme