Strategic Environmental Assessment (SEA)

ENVIRONMENTAL REPORT

MAY 2011

SUPPLEMENTARY REPORT F

recycle for Merseyside

RESOURCES
MERSEYSIDE
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SKM ENVIROS

MWDA
MERSEYSIDE WASTE DISPOSAL AUTHORITY

Environmental Report for the Review of the Joint Municipal Waste Management Strategy

ENVIRONMENTAL REPORT – DRAFT V3

31 MAY 2011

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SEA ENVIRONMENTAL REPORT – DRAFTV3

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1. Non Technical Summary

This non-technical summary sets out the key findings of the Environmental Report that has been produced as part of conducting a Strategic Environmental Assessment (SEA) of the updated Joint Municipal Waste Management Strategy (JMWMS) for Merseyside.

1.1. What is a SEA

The Environmental Assessment of Plans and Programmes Regulations 2004 require a Strategic Environmental Assessment (SEA) to be carried out when developing certain types of strategic 'plans or programmes', including Municipal Waste Management Strategies (MWMS). An SEA is also required when modifications that could result in significant environmental effects are made to existing strategic 'plans or programmes'.

The aim of this SEA is to assess the potential significant environmental impacts of the revised JMWMS and to identify suitable measures to prevent, reduce and monitor these impacts.

The output of the SEA is this Environment Report which outlines the impacts of the updated strategy. The public will be given an opportunity to comment on the contents of this Environment Report.

Under the Planning and Compulsory Purchase Act 2004, a number of plans in England and Wales are required to undergo a full Sustainability Appraisal (SA). This includes Local Development Documents and Regional Spatial Strategies. Municipal Waste Management Strategies (MWMS) are not required to undergo a Sustainability Appraisal. Although guidance produced by Defra on MWMS recommends that authorities balance environmental benefit against other factors including social and economic cost. This wider remit is taken into account in the appraisal of the JMWMS

1.2. The Joint Municipal Waste Management Strategy for Merseyside (JMWMS)

The JMWMS for Merseyside 2008 sets out the guiding principles for the delivery of sustainable waste management in Merseyside between 2008-2020 and is the agreed view of the Merseyside and Halton Waste Partnership (MHWP); comprising of the Merseyside Waste Disposal Authority and the five districts of Merseyside (Knowsley MBC, Liverpool CC, Sefton MBC, St Helens MBC and Wirral MBC). Halton Borough Council (BC) joined the partnership in 2006 and has a separate but aligned Municipal Waste Management Strategy.

The 2008 JMWMS was an update of the original 2005 Strategy bringing it in line with changes in legislation, policy and performance but retaining the original aims and objectives. The 2008 JMWMS committed the Partnership to a full review of the Strategy

in 2009/10 as the original aims and objectives will have been in place for five years. MHWP also commissioned a Sustainability Appraisal (SA) of the 2008 JMWMS.

1.3. The Environmental Report

The Environmental Report contains details of:

- The SEA process undertaken, including methodology for assessment;
- The social, economic and environmental factors (the SEA Objectives) against which the strategy will be assessed;
- The link between the baseline, sustainability issues for Merseyside and the SEA objectives;
- The context of the strategy, from a policy and legislative perspective;
- Baseline information on the social, environmental and economic situation in Merseyside including likely impacts of the JMWMS;
- An assessment of the likely effects of the JMWMS on the environment, including social and economic criteria;
- Measures to mitigate any significant negative environmental effects identified; and
- Measures to monitor the progress of the JMWMS against the SEA objectives.

1.4. Key aspects of the Environmental Report

1.4.1. Baseline Information

The Environmental Report sets out any key aspects of the environment in Merseyside that could be affected by the JMWMS. This ensures that the assessment picks up any potential significant impacts.

Baseline information is set out in Section 5. Some key issues for Merseyside identified in the baseline review include:

- Merseyside has six designated air quality management areas (AQMA). Transport and industry and commerce are the main contributors to nitrogen based (NOx) and particulate (PM10) emissions on Merseyside and road traffic is the biggest contributor to transport impacts
- The 2007 Indices of Deprivation scores produced by the Office of National Statistics placed all five Merseyside authorities within the top 100 most deprived areas in England.

- There has been a steady increase in recycling rate across the 5 districts on Merseyside since 2002. In 2009/10 Merseyside achieved a combined recycling rate of 34%.

- National Indicator figures indicate that all authorities had carbon dioxide (CO_2) emissions which were lower than the national average in 2008; however a comparison between the 2005 and 2008 figures indicates that the greatest CO_2 reduction occurred within Knowsley and St Helens.

- Merseyside has been internationally recognised as containing areas and sites of special biological and geological interest.

1.4.2. Sustainability Objectives

To assess the environmental effects of the JMWMS it was necessary to develop a set of sustainability objectives covering the wider remit of potential environmental, economic and social impacts. The objectives were drawn up with reference to those produced for the sustainability appraisal (SA) of the Merseyside Waste Development Plan Document and the sustainability objectives developed during the SA of the updated JMWMS in 2008 which was carried out using the North West SA toolkit. Section 6 shows how the SEA objectives relate to the sustainability issues on Merseyside.

Through consultation with the Merseyside Senior Officer Working Group on waste management, agreement on the scope of the SEA assessment criteria for the JMWMS review has been obtained and 22 SEA objectives produced, see below. Wording to some of the SEA objectives were also revised following feedback from Consultees.

No	SEA Objective
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.
2	To reduce municipal waste generation, including hazardous waste.
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.
4	To minimise the adverse impacts of waste management activity on human health.
5	To engage with all the members of the community in the development and delivery of waste management services.
6	To lead by example in the provision of in-house waste management services.
7	To reduce the amount of litter or fly-tipping in local communities.
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.
10	To protect, manage and restore land and soil quality.
11	To minimise adverse effects of waste management on air quality.
12	To encourage sustainable economic growth.

No	SEA Objective
13	To encourage innovation as well as research and development together with knowledge transfer.
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.
15	To reduce the environmental impacts of transportation associated with waste management.
16	To protect, manage and enhance biodiversity and geodiversity
17	To reduce the ecological footprint of waste management on Merseyside.
18	To use water and mineral resources prudently and efficiently.
19	To promote more sustainable means of energy generation and fuel usage.
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.
22	To conserve and enhance the landscape as regards waste management activity/impacts.

1.5. Assessment Methodology

The overall methodology for the SEA has followed guidance provided by ODPM on carrying out an SEA.

The assessment methodology considers the potential impact of both the policies of the strategy and the waste management options that have been considered as part of the development of the waste management strategy. The policies and options are compared with the SEA objectives and indicators that have been developed. The nature of the impact is assessed as being positive, negative, neutral or uncertain.

A scoping report was prepared and consulted upon with the statutory consultees of Natural England, English Heritage and the Environment Agency. Responses received are summarised in Appendix 1 of this report and their comments have been incorporated into the assessment process.

The assessment in the Environmental Report has considered the potential impact of both the strategy objectives and the waste management options that have been developed as part of the evolution of the strategy. Policy options at each stage of the waste hierarchy have been appraised separately by considering options for waste prevention, re-use, recycling and composting and residual waste treatment.

For each assessment the results are set out in a matrix and the nature of impacts is assessed as being positive, negative, neutral or uncertain. In addition, consideration of impacts that are indirect, cumulative or synergistic have also been incorporated. Mitigation measure have also been analysed to consider where negative impacts may be avoided or reduced and where positive impacts may be further improved.

1.6. Development of Options for Assessment

The SEA regulations require that the waste strategy is compared against other plan options or alternatives. The list of agreed sustainability objectives were used to appraise key aspect of the strategy, including:

- Strategy objectives – these objectives were reviewed as part of the SEA process to ensure that they are achievable and compatible with each other.
- Range of options for delivery of targets and strategy objectives. A detailed options assessment study has followed on from an 'Issues and Options' Study and has involved a detailed appraisal and consideration of the technical and financial performance of the various shortlisted options, the methodology and results of which are described in a separate 'Options Assessment Report'. The SEA has been undertaken in parallel to the detailed options assessment.

The options covered three main areas of waste management:

- Waste prevention, reuse, recycling measures;
- Service/organisational change; and
- Residual treatment and disposal options.

1.7. Results of the Assessment

The results of the assessment process are summarised below and a further detailed explanation is provided in Sections 8, 9, 10 and 11 of the report.

1.7.1. Headline Strategy Objectives

The overall impact of the strategy objectives in terms of the SEA objectives is generally positive and demonstrates that the draft JMWMS for Merseyside has adopted a sustainable approach to waste management. Each of the SEA objectives is supported by at least one of the draft Strategy Objectives.

The main reason for the positive impact across SEA objective themes is a result of more efficient use and management of resources (including a reduction in municipal waste) as waste moves up the waste hierarchy and is diverted from landfill. Diverting waste from landfill will reduce carbon emissions (through avoided landfill gas) and therefore a reduction in climate change impact. Indirect effects may also be observed through:

- a reduction in the impact of waste management on climate change, for example through protecting and improving the quality of inland and ground waters.

- greater waste prevention which conserves natural resources (ecological footprint) and environmental savings across the whole of the supply chain.

There is potential for mechanisms introduced for waste reduction e.g. restricted bin capacity and reuse (e.g. bulky waste charging) could increase fly-tipping if inappropriately implemented. Transport may increase when delivering the carbon benefits of diverting material from landfill and to move waste up the hierarchy.

However, in Life Cycle terms the benefits of moving waste up the hierarchy generally outweigh the impact of emissions from increased transport associated with recycling / reuse etc. This is because of avoided emissions elsewhere in the supply chain. However transport and treatment facilities may affect the *local* air quality proximal to sensitive sites / access routes.

1.7.2. Assessment of Waste Prevention/ Reuse/ Recycling Options

The overall conclusion of assessing the waste prevention, reuse, recycling and composting options against the SEA objectives is generally assessed as positive. Moving waste up the waste hierarchy will divert more waste from landfill and thus has greater positive impacts on (reducing) emissions of greenhouse gases from landfill sites. Increasing levels of recycling minimises the need for virgin materials to be used in production through the use of recycled materials as alternatives to virgin products, this has resource efficiency, embedded energy savings and carbon benefits.

Carbon benefits may be enhanced through a focus on materials / goods with a high carbon benefit and also recovering energy from food waste through anaerobic digestion. Waste prevention avoids carbon impacts across the entirety of the product chain and so is preferable to all other options. It also has a positive impact on reducing the ecological footprint of waste management on Merseyside and contributes to the protection and enhancement of global biodiversity and geodiversity.

A number of waste prevention/reuse/recycling options were deemed to have a mixed impact potentially having both positive and / or negative effects against the SEA objectives, for example mechanisms introduced for waste reduction e.g. restricted bin capacity and reuse (e.g. bulky waste charging) could increase fly-tipping if inappropriately implemented. Transport may increase when delivering the carbon benefits of diverting material from landfill and to move waste up the hierarchy. However as discussed in Section 1.7.1 in Life Cycle terms the benefits of moving waste up the hierarchy generally outweigh the impact of emissions from increased transport associated with recycling / reuse etc. Mitigating measures can be employed for the negative impacts identified against the waste prevention, reuse, recycling options.

1.7.3. Assessment of Service/Organisation Options

The options proposed around organisation and waste service efficiencies were all assessed as having a positive or neutral effect against the SEA criteria with the exception of encouraging sustainable economic growth. This criteria was deemed to have a mixed effect as there is potential for a reduction in the number of employees required through reduced facility requirements and number of vehicles/used. Although there is potential for such effects to be mitigated by the activities that:

- Move waste up the hierarchy, which could provide increased opportunities to work with voluntary and community networks/schemes e.g. collections/processing opportunities and improve how resources and recyclables are dealt with;
- Promote environmental technologies; and
- Use of local / regional markets and outlets for recyclables.

Joint working should allow for efficiencies in the number of depot and vehicle sharing/optimising of rounds which would lead to a decrease in road transportation and thus use of fossil fuels, creating a positive impact on SEA criteria for climate change and . reduction in environmental impact of transportation associated with waste management

Options associated with in-house waste prevention & recycling activity and sustainable procurement policies provide potential benefits against a number of SEA criteria through behaviour change and the results that changing behaviour may have in moving waste up the waste hierarchy.

1.7.4. Assessment of Residual Waste Treatment and Disposal Options

The assessment of the three residual waste treatment options against the SEA criteria, showed that the Mechanical Biological Treatment (MBT) option and the Energy from Waste (EfW) option in general perform notably better than the baseline option of residual waste to landfill.

Landfill performs worse than the MBT and EfW options against a number of the SEA objectives. This lower performance relates to issues such as:-

- the greater contribution of landfill to climate change from the production and fugitive release of methane (from landfill gas);
- a lower level of energy recovery relative to the two alternative treatment methods;
- the absence of any materials recycling of the residual waste compared to the other two options;
- the position of landfill in the waste hierarchy; and
- the impact of landfill sites on the landscape and the potential impact on land/soil and water quality.

The assessment of the MBT option and the EfW option have similar outcomes in terms of their environmental impact, apart from the assessment against the objectives related climate change impact and the reduction of greenhouse gas emissions from waste management services. Based on analysis of the EfW option and MBT option in WRATE[1], EfW scores better than MBT under this criteria with a higher level of equivalent CO_2 savings.

The main objective where MBT and EfW have the potential for greater negative impacts on the environment is in relation to the environmental impact of transportation associated with waste management.

All of the options assessed against the SEA Objectives have the potential to have negative impacts on the environment if not designed and operated appropriately. However all waste management facilities are operated within a strict environmental permitting system that controls emissions to air, land and water and sets requirements for dealing with both standard and emergency operating conditions.

Both the MBT and EfW options will require new waste management facilities to be built within Merseyside (or outside if waste is to be bulked and transported to a facility outside of the Partnership area) which mean that development land will be required for the facility. Both options however require less land take than new landfill developments. Depending on the location of the site(s) patterns of waste movements may either increase or decrease in comparison to the current situation.

Both MBT and EfW compare more favourably than continuing to landfill waste according to this analysis as both options seek to move waste up the waste management hierarchy, recovering value from waste and diverting waste from landfill.

Mitigating measures can be employed for the negative impacts identified with residual waste treatment options.

1.8. Mitigation and Monitoring

Both mitigation and monitoring measures have been proposed where the assessment has identified potential for negative impacts of the policies or options within the strategy. These are set out after each of the options and summarised in Section 12 of the report. The monitoring regime proposed is based on using easily accessible information, the majority of which may already be collected by districts in Merseyside.

Monitoring is a key part of the development and delivery of the strategy. It will also enable any unforeseen impacts or divergence from meeting targets to be identified at an early stage and mitigating measures to be proposed.

[1] The Life Cycle Assessment tool developed for the Environment Agency.

2. Introduction

This Environmental Report has been produced as part of work to review the Joint Municipal Waste Management Strategy for Merseyside (JMWMS). It has been produced as part of the Strategic Environmental Assessment (SEA) process and complies with the requirements of the Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations) and Guidance on Municipal Waste Management Strategies published by Defra in July 2005.

2.1. The Joint Municipal Waste Management Strategy for Merseyside

The Joint Municipal Waste Management Strategy (JMWMS) for Merseyside 2008 sets out the guiding principles for the delivery of sustainable waste management in Merseyside between 2008-2020 and is the agreed view of the Merseyside and Halton Waste Partnership (MHWP); comprising of the Merseyside Waste Disposal Authority and the five districts of Merseyside (Knowsley MBC, Liverpool CC, Sefton MBC, St Helens MBC and Wirral MBC). Halton Borough Council (BC) joined the partnership in 2006 and has a separate but aligned Municipal Waste Management Strategy.

The JMWMS 2008 was an update of the original 2005 strategy bringing it in line with changes in legislation, policy and performance but retaining the original aims and objectives. The JMWMS 2008 committed the Partnership to a full review of the Strategy from 2009/10 as the original aims and objectives will have been in place for five years. MHWP also commissioned a Sustainability Appraisal (SA) of the JMWMS 2008.

The JMWMS is currently being reviewed in line with this 5 year review commitment. The review focuses on the issues and options associated with the top three levels of the waste hierarchy, i.e. waste prevention and reuse, recycling and composting whilst recognising the impact of those activities on the amount of residual waste ultimately requiring treatment or disposal. As the current review considers all aspects of the strategy, a Strategic Environmental Assessment (SEA) was undertaken. Halton BC has decided to maintain an aligned strategy with Merseyside and will undertake its own review and SEA.

2.2. Waste Management Strategies and SEA

The Environmental Assessment of Plans and Programmes Regulations 2004 require a Strategic Environmental Assessment (SEA) to be carried out when developing certain types of strategic ‘plans or programmes’, including Municipal Waste Management Strategies (MWMS). An SEA is also required when modifications that could result in significant environmental effects are made to existing strategic ‘plans or programmes’.

The aim of this SEA is to assess the potential significant environmental impacts of the revised JMWMS and to identify suitable measures to prevent, reduce and monitor these impacts.

The output of the SEA is this Environment Report which outlines the impacts of the updated strategy. The public will be given an opportunity to comment on the contents of this Environment Report.

Under the Planning and Compulsory Purchase Act 2004, a number of plans in England and Wales are required to undergo a full Sustainability Appraisal (SA). This includes Local Development Documents and Regional Spatial Strategies. Municipal Waste Management Strategies (MWMS) are not required to undergo a Sustainability Appraisal.

Although a MWMS does not need to undergo Sustainability Appraisal, guidance produced by Defra on MWMS recommends that authorities balance environmental benefit against other factors including social and economic cost. This wider remit is taken into account in the appraisal of the JMWMS.

2.3. SEA Consultation

2.3.1. Scoping Report

A Scoping Report was written to seek the views of the relevant English consultation bodies. These bodies are English Heritage, Natural England (previously the Countryside Agency and English Nature) and the Environment Agency. Advice from the consultation bodies was sought on the following topics:

- Are the policies / plans / programmes / strategies / initiatives that have been reviewed appropriate?
- Do you know of any further baseline indicators that might provide useful information? If so, please provide the information or a source for the data.
- Are the sustainability problems and waste issues identified for Merseyside the correct ones?
- Do the SEA objectives encompass all the necessary issues?
- Are the Options for appraisal appropriate?

Written responses to the scoping report were received from all consultees and these are summarised in Appendix 1 along with responses. Advice from the consultees has been taken into consideration in the preparation of and assessment within this Environmental Report.

2.3.2. Environmental Report

Consultation on this report will take place from the 27th June – 26 August 2011.

3. Methodology

The process of SEA is designed so that the potential environmental impact of strategic plans and programmes can be assessed during their development.

The primary objective of the SEA Directive is to *"provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development"*. (Article 1 of the Directive).

As set out in the Office of the Deputy Prime Minister (ODPM) guidance document on the SEA Directive[2] the key elements of the environmental assessment are to;

- Prepare an Environmental Report on the likely significant effects of the plan or programme;
- Consult on the draft plan/programme and associated environmental report;
- Take account of the Environmental Report and consultation in decision making;
- Provide information when the plan or programme is adopted showing how the results of the environmental assessment have been taken into account.

The SEA process used in the assessment of the JMWMS is consistent with this approach, the key stages of which are discussed in more detail below.

3.1. Stages in the SEA

The SEA was undertaken based on the following methodology, which is consistent with the guidance set out in the Practical Guide:

- *Stage A* – Setting the context and objectives, establishing the baseline and deciding on the scope;
- *Stage B* – Developing and refining alternatives and assessing the effects;
- *Stage C* – Preparing the Environmental Report;
- *Stage D* – Consulting on the draft plan or programme and the Environmental Report;
- *Stage E* – Monitoring the significant effects of implementing the plan or programme on the environment.

A scoping report was produced that summarises the key work undertaken in Stage A and was used as the basis of the statutory consultation exercise. This report (the Environmental Report) sets out the work to complete Stage A and undertake Stages B and C. Stage D involves consultation on this report and Stage E will take place following the adoption of the JMWMS.

[2] A Practical Guide to the Strategic Environmental Assessment Directive

3.2. Appraisal Methodology

The assessment methodology considers the potential impact of both the policies of the strategy and the waste management options that have been considered as part of the development of the waste management strategy. The policies and options are compared with the SEA objectives and indicators that have been developed. The nature of the impact is assessed as being positive, negative, neutral or uncertain according to the scale in Table 1.

Table 1 Appraisal Scale

Major positive effect	++
Positive effect	+
Neutral effect	0
Negative effect	-
Major negative effect	--
Uncertain or unknown impact	?
Both positive and negative effect	+/-
Major positive and negative effects	++/--

The nature of impacts will vary between the options being considered and not all measures will be relevant in each case. Impacts can be indirect, cumulative or one-off, temporary or permanent and short/medium/long term and these are discussed in accompanying text. Unknown or uncertain means that it is not possible to measure the effect or that no data is currently available to allow a meaningful/robust assessment.

3.3. Scope of the Assessment

The geographical scope of the assessment is limited to Merseyside. The waste strategy considers a number of options for dealing with waste management in the future, activities and facilities for which will ultimately require a site. Sites are not identified as part of this assessment and thus the issues of land use are assessed on a generic basis.

The temporal scope of the assessment is limited to the period up to 2020, which reflects current National Waste Strategy[3] planning timescales and marks the end date for meeting EU Landfill Directive targets. Key years, in terms of the development of waste management facilities, is the interim target years of 2009/10 and 2012/13, by which time it is very important that residual waste treatment facilities are operational so that sufficient biodegradable waste can be diverted from landfill.

[3] In June 2010, the Government announced a full review of waste policy in England, which is due to report in May 2011.

The scope of the assessment is limited to consideration of waste management technologies that are currently being operated and certain technologies that may become available by 2020.

The assessment combines both quantitative and qualitative approaches. The qualitative assessment is informed by technical judgement and the quantitative input has been informed by modelling work undertaken to understand the impact of technologies on recycling rates and the diversion of biodegradable waste from landfill. WRATE has been used to assess certain environmental issues. Generic data sources have been used to assess issues of cost and landtake.

4. The Context of the SEA

4.1. JMWMS Context

As discussed in Section 2.1, the JMWMS for Merseyside is currently being reviewed. As part of the overall strategy review, SKM Enviros were commissioned to undertake an 'Issues and Options' Study which was completed in April 2010 and:

- Identified key issues/drivers for the strategy by considering the current policy and legislative context;
- Through an officer/member consultation process developed a short list of ten strategic objectives for the strategy, Table 2; and
- Identified the key mechanisms for delivering the objectives of the strategy.

The study considered the Strategy review in the context of the on-going PFI procurement process for residual waste treatment infrastructure. As a result, the 'Issues and Options' Study specifically focused on the issues and options associated with waste prevention, re-use, recycling and composting whilst also recognising the overall impact of these activities on the amount of residual waste ultimately requiring treatment or disposal.

Table 2 Strategic Objectives

Number	Objectives
1	Reduce the climate change/carbon impacts of waste management
2	Maximise prevention of waste
3	Maximise landfill diversion/ recovery of residual waste
4	Maximise sustainable economic activity associated with waste management
5	Reduce the ecological footprint of waste management activities
6	Promote behavioural/cultural change that delivers the strategy objectives
7	Promote the use of renewable energy
8	Achieve high recycling = 50-55%
9	Promote resource efficiency
10	Provide sufficient capacity for waste management activity

A detailed options assessment study has followed on from the 'Issues and Options' Study outlined above and has involved a detailed appraisal and consideration of the technical and financial performance of the various shortlisted options, the methodology and results of which are described in a separate 'Options Assessment Report'. The SEA has been undertaken in parallel to the detailed options assessment.

4.1.1. Strategy Objectives

A workshop was held with Senior Officers, on the 21st October 2010, to discuss the short listed strategy options from Table 2, and develop the preferred emphasis for each as part of the translation from an option into an objective and the extent to which targets should be attributed to each objective. These objectives were also reviewed as part of the SEA process to ensure that they are achievable and compatible with each other.

In addition to the Strategy objectives it was proposed that a over-arching vision should accompany the objectives which would include the desire to explore joint working whilst also addressing the 'cost' and 'value for money' of service delivery. These issues had been identified in the 'Issues and Options' Study as being very important for the JMWMS to consider.

The draft Strategy vision is set out below along with the proposed wording of the ten objectives developed by Senior Officers.

Strategy Vision:

"The Partnership will work together to deliver the strategy and provide a waste and resource management service that is cost effective, delivers value for money and is affordable whilst also optimising environmental benefits".

The Partnership seek to deliver the following [10] objectives (Table 3)"

Table 3 Strategy Objectives

No	Topic	Proposed Wording
1	Climate change	Demonstrate continuous improvement in the reduction of carbon emissions from the municipal waste management service. All waste management choices should seek to optimise carbon reduction wherever practicable. Commitment to review every 5 years that the CO_2e impact of the strategy has reduced. Current CO_2e impact is [x] tonnes of CO_2e
2	Waste prevention	Reduce the amount of waste produced per household on Merseyside to 1064 kg per hhld by 2020 and 1022 kg per hhld by 2030. (Further targets to be set in subsequent strategy review periods).
3	Diversion from landfill	Where waste is not recycled or composted, ensure that value can be recovered from it, e.g. alternative products, heat, power. Reduce the amount of municipal waste landfilled to 10% by 2020 and 2% by 2030 in line with the residual treatment contract
4	Sustainable economic activity	Encourage sustainable economic activity associated with waste management through the adoption of sustainable procurement strategies and working with organisations in the supply chain to improve how resources and recyclables are dealt with.
5	Ecological footprint	Demonstrate continuous improvement in reducing the ecological footprint of municipal waste management services on Merseyside, currently 0.038 hectares per person in 2010.
6	Behavioural change	The authorities will work to raise awareness of waste and resource

No	Topic	Proposed Wording
		management issues, to lead by example, encourage residents to get involved and make it easier to take part in waste prevention and reuse activities.
7	Renewable energy	All waste management decisions/infrastructure decisions to take account of the opportunities for using/generating renewable energy and fuels.
8	Recycling performance	Meet statutory recycling targets and exceed where there are opportunities to deliver environmental and economic benefits. Recycle 50% of household waste by 2020
9	Resource efficiency	Reduce the amount of scarce resources entering the waste management system, recognising the value of materials that are produced as waste and supporting opportunities for producer responsibility.
10	Waste management capacity	Provide a flexible waste management service that gives residents a range of options to reduce, reuse, recycle and compost the waste they produce and provide sufficient capacity to deal with any waste remaining
Note: For certain objectives the final target value is still to be determined and agreed during the drafting of the strategy, this is indicated by [x].		

4.2. Relevant Plans and Policies

A review of current policies and strategies impacting on the way that waste is managed and is likely to be managed in Merseyside up to 2030 has been undertaken. This has been carried out at both a national, regional and local level and has covered strategic economic, planning policy and waste documentation.

The selected policy documents were reviewed for common themes and a long list of thirty three themes was identified for consideration, see Table 4. This long list reflects the range of topics driving policy and strategy related to waste management at the national, regional and local level. Details of the documents reviewed are provided below along with a cross reference to the themes identified in Table 4. A full list of the documents is set out in Appendix 2.

Table 4 Summary of Key Themes

Number	Theme	Number	Theme
1	Resource efficiency	18	Innovation
2	Sustainable consumption and production	19	Energy efficiency
3	Reduction of climate change/carbon impacts	20	Renewable energy generation
4	Low carbon economic activity	21	Reducing transport Impacts
5	Protection of natural resources	22	Reducing the ecological footprint
6	Sustainable communities	23	Importance of partnership working & working together
7	Sustainable waste management	24	Provision of sufficient capacity for waste management activity

Number	Theme	Number	Theme
8	De-coupling of economic growth and waste growth/impacts	25	Promotion of key waste messages & awareness raising
9	Reduce the carbon impacts of waste management	26	Provision of efficient services
10	The waste hierarchy	27	Promoting behavioural/cultural change
11	Waste prevention	28	Self sufficiency and the proximity principle
12	Waste re-use and remanufacturing	29	Sustainable procurement
13	Zero waste	30	Leading by example
14	High recycling = 60-70%	31	Market development
15	High recycling = 50-55%	32	Healthy, safe and prosperous communities
16	Landfill diversion/ recovery of residual waste	33	Value for money
17	Consideration of all waste streams (MSW, C&I, C&DE)		

4.3. National Policy and Legislative Drivers

The documents reviewed at a national level include those relating to waste management specifically and also those that relate to reducing the carbon impacts of an activity, as this is an area of increasing focus for the economy in general and waste management in particular and it is therefore important to understand the wider carbon policy drivers.

The UK is signed up to statutory carbon targets at a national level through the Climate Change Act which are to reduce greenhouse gas (GHG) emissions.

- by 34% by 2020 (vs 1990 levels) and
- by 80% by 2050.

This is now beginning to impact at a national waste policy level as more specific sector policies have been produced that address how to meet these targets. Consultation waste strategies for both Wales and Scotland are included as these have been produced more recently than the Waste Strategy for England (2007) and are proposing more challenging recycling and composting targets. The revised Waste Framework (2008) is a key European driver for future waste management policy and practice in the UK.

A summary of the documents reviewed include:

- Securing the Future, the UK Sustainable Development Strategy, 2005, Defra;
- Waste Strategy for England 2007, Defra;
- Low Carbon Industrial Strategy, 2009, Department for Business (BIS), Department for Energy and Climate Change (DECC)
- Low Carbon Transition Plan, National Strategy for Climate and Energy, 2009, DECC;
- Low Carbon Transport Strategy, 2009, Department for Transport

- UK Renewable Energy Strategy, 2009, DECC;
- Towards Zero Waste – One Wales One Planet, A Consultation Strategy for Wales, 2009, Welsh Assembly Government;
- Consultation on Scotland's Zero Waste Plan, 2009, Scottish Environmental Protection Agency; and
- EU Waste Framework Directive, 2008/98/EC.

National themes focussed primarily on issues such as resource efficiency, sustainable consumption and production, the reduction of carbon and mitigating and adapting in response to present and future climate change impacts and also the role of waste prevention and zero waste policies as drivers for change.

4.4. Regional Policy and Legislative Drivers

The documents reviewed at a Regional and Merseyside level again include documents relating to waste strategy, community strategies and carbon strategies.

- Joint Municipal Waste Management Strategy for Merseyside, 2008;
- Municipal Waste Management Strategy for Halton, 2008;
- The Updated Regional Waste Strategy for England's Northwest, 4NW, 2010;
- Sustainable Consumption and Production Plan for England's North West 2010-2012;
- North West Climate Change Action Plan 2010;
- The North West of England Plan Regional Spatial Strategy to 2021
- RS2010 Regional Strategy for England's Northwest, Part 1 Consultation;
- Liverpool City Region Multi Area Agreement (MAA) 2009;
- Liverpool City Region Mini-Stern Review 2009;
- Sustainable Community Strategies and Local Area Agreements (LAAs);
- Local Carbon Strategies.

Regional policies tend to reflect more local concerns such as developing innovation, leading by example (as public sector organisations), reducing transport impacts, self sufficiency and proximity and ensuring that local communities are sustainable economically and from a waste management perspective.

The review of local plans such as sustainable community and climate change strategies highlights the increasing work being undertaken that joins up the environmental and climate change impacts of social and economic activities and that reducing the impacts of waste management is closely linked into this.

5. Baseline

To ensure that the SEA considers the potential environmental effects of the JMWMS on key SEA topics it is important to consider the local environmental baseline.

An assessment of the baseline position for Merseyside was carried out as part of the scoping phase of the SEA. The scoping report summarised the baseline position and identifies a number of factors that are a priority for Merseyside in the context of the waste management strategy.

The baseline position has been assessed in terms of the key topic areas set out in the SEA guidance (1) and is presented in accordance with the SEA assessment criteria listed in Table 27.

5.1. Climate Change

Waste management activities generate carbon dioxide and methane which are both greenhouse gases. Materials within the household waste stream such as kitchen waste, garden waste and paper contain carbon based organic matter. The treatment and disposal of these wastes has an impact on the emission of greenhouse gases. When biodegradable materials are broken down in the presence of air, carbon dioxide is released. Methane is produced when the biodegradable material is broken down due to the absence of air. Methane is at least 23 times more potent than carbon dioxide as a greenhouse gas[4]. In 2009/10, 46.9% of municipal waste in the England was sent to landfill. Methane emissions from (biodegradable waste in) landfill account for 40% of all UK methane emissions and 3% of all UK greenhouse gas emissions.

The waste management sector in the UK accounted for 3.6% of the UK's total estimated emissions of greenhouse gases in 2008, or 22.7 Mt CO_2e compared to 52.9 Mt CO_2e in 1990. Of the 2008 total, 89% arises from landfill, 9% from waste-water handling and 2% from waste incineration[5].

Transport accounts for 22% of total UK greenhouse gas emissions and the majority of this is through cars.[6] Although there are climate change impacts associated with transport of waste these are relatively small in comparison to the relative impacts from the landfilling of waste described above. Reducing the climate change impacts of waste management has greatest impact in relation to reducing the amount of biodegradable waste produced, diverting biodegradable waste from landfill and capturing and treating more methane from landfill(3).

[4] Twenty three is the GWP of methane using a 100 year time horizon as estimated by the International Panel on Climate Change (IPCC)
[5] Defra Climate Change Action Plan 2010
[6] UK Low Carbon Transition Plan, national strategy for climate and energy

In June 2009, Liverpool and the Liverpool City Region published '*The Economic Impact of EU and UK Climate Change Legislation on Liverpool and the Liverpool City Region'* based on the Stern Review. This report was developed in 2 phases, Phase 1 which was published in 2009 focused on reviewing and improving the baseline data already available with Phase 2 focusing on actions (in progress) .The Phase 1 report concluded that Merseyside CO_2 production was lower when compared to other UK regions, however the cost to business and public sector bodies of not complying could amount to 1% of the areas Gross Value Added (GVA)[7]. It also concluded that the area had significant assets to exploit the opportunities from the low carbon economy possibility facilitating the creation of between 6,000 to 7,000 jobs.

The recycling activity on Merseyside contributes to carbon savings as a result of the benefits of using secondary material as opposed to extracting raw materials.

CO_2 emissions were previously monitored through three government National Indicators:

- NI 185 - CO_2 reduction from local authority operations
- NI 186 - per capita reduction in CO_2 emissions in the local authority area
- NI 188 – Adapting to climate change.

The only element of waste management activity captured by these indicators is transport. data for the MHWP is provided in Table 5, figures for NI186 include adjustments to exclude emission sources to which the LA's have no control.

[7] GVA is an economic measure of the goods and services produced by an economic area and is linked to the measurement of gross domestic product. As the total aggregates of taxes on products and subsidies on products are only available at whole economy Gross Value Added is used for measuring Gross regional domestic product and other measures of the output of entities smaller than a whole economy.

Table 5 Local and National CO_2 Emission Estimates for 2005-2008 ('000 tonnes CO_2)[8]

Location	Date	Industry and Commercial	Domestic	Road Transport	Total	Population	Per capita
Knowsley	2005	618	342	261	1,221	150.1	8.1
	2006	590	335	252	1,177	150.1	7.8
	2007	539	326	257	1,122	149.8	7.5
	2008	464	320	249	1,033	149.7	6.9
Liverpool	2005	1,222	1,052	640	2,913	443.3	6.6
	2006	1,243	1,041	612	2,896	443.3	6.5
	2007	1,249	1,010	618	2,876	442.6	6.5
	2008	1,199	997	597	2,793	441.1	6.3
Sefton	2005	448	708	291	1,447	277.6	5.2
	2006	433	702	282	1,417	276.1	5.1
	2007	453	676	280	1,409	275.1	5.1
	2008	422	673	273	1,367	274.2	5.0
St Helens	2005	776	416	214	1,406	176.7	8.0
	2006	726	416	206	1,349	176.6	7.6
	2007	694	402	208	1,304	176.5	7.4
	2008	614	398	205	1,216	176.7	6.9
Wirral	2005	649	814	366	1,829	310.8	5.9
	2006	643	811	350	1,804	309.8	5.8
	2007	641	780	352	1,774	308.9	5.7
	2008	613	779	337	1,728	308.5	5.6
UK	2005	188,382	152,397	107,379	448,158	60,235.5	7.4
	2006	187,316	153,333	105,407	446,056	60,584.3	7.4
	2007	181,752	148,700	106,369	436,821	60,985.7	7.2
	2008	178,697	149,317	102,155	430,170	61,398.2	7.0

NI figures indicate that all authorities had CO_2 emissions lower than the national average in 2008; however a comparison between the 2005 and 2008 figures indicates that the greatest CO_2 reduction occurred within Knowsley and St Helens.

The Merseyside authorities are working towards the objectives of NI188 which includes a five stage process moving from little awareness of climate change to the development of a local Adaption Strategy for each LA.

[8] AEA 2010

5.2. Waste Management

Understanding the amount of waste arising in the region is important to the strategic environmental assessment process along with a summary and the key services that are currently provided by the Merseyside authorities.

5.2.1. Waste Arising and Composition

In 2009/2010 approximately 766,700 tonnes of municipal waste were produced within Merseyside which is a reduction on the total arising in 2008/09 of 793,500 tonnes.

A breakdown of arisings for 2009/10 is shown in Table 6 below.

Table 6 Municipal Waste Arising 2009/10

Municipal Waste Stream (Total collected)	2009/10 (tonnes)	% of Total Waste Stream
Residual Waste	453,579	59%
Recycling / Composting	251,665	33%
Reuse	1,518	0.2%
Sub total: Household Waste	**706,762**	**92%**
Residual Waste	24,921	3.3%
Recycling / Composting	905	0.1%
Reuse	0	0%
Rubble	34,102	4%
Sub total: Non-Household Waste	**59,928**	**8%**
TOTAL Municipal Solid Waste (MSW)	**766,690**	**100%**

5.2.2. Recycling and Composting Performance

Table 7 and Figure 1 below show the percentage increase in recycling since 2002[9] for the Merseyside authorities. These figures present both BVPI and NI data and although not directly comparable provide an indication of the increase in recycling levels observed throughout the 5 authorities. The figures demonstrate a steady increase in recycling rate throughout the majority of the authorities. In 2009/10 Merseyside achieved a combined recycling rate of 34%.

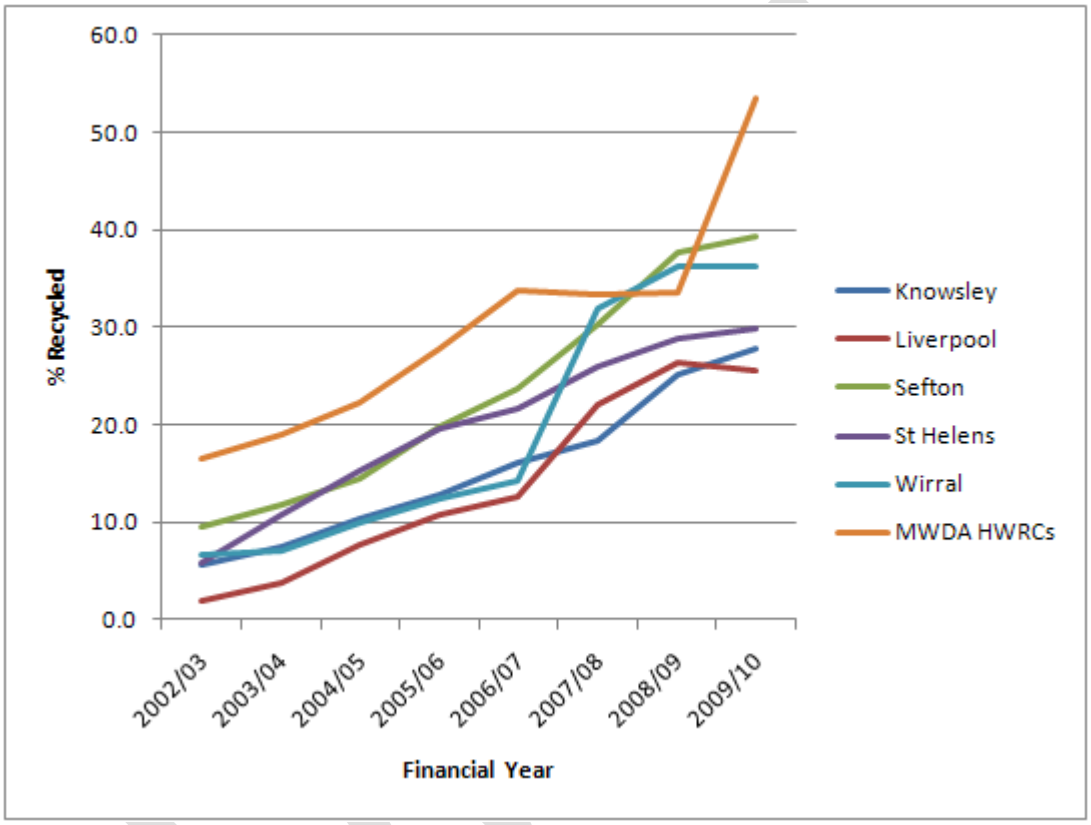
Table 7 Percentage (%) Recycling Figures Combining BVPI Data and NI192

Authority	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08[10]	2008/09[11]	2009/10
Knowsley	5.60	7.50	10.40	12.80	16.00	18.40	25.05	27.80

[9] Liverpool City Region (LCR) State of the Environment 2009-10, (June 2010)
[10] BVPI 82a and b up to 2007/08
[11] NI192 data from 2008/09

Authority	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08[10]	2008/09[11]	2009/10
Liverpool	1.90	3.80	7.60	10.70	12.70	22.10	26.39	25.50
Sefton	9.50	11.70	14.50	19.70	23.70	30.20	37.66	39.40
St Helens	5.90	10.80	15.30	19.60	21.60	25.90	28.78	29.80
Wirral	6.70	7.00	9.90	12.40	14.20	32.00	36.31	36.20
MWDA HWRCs	16.5	19.0	22.2	27.7	33.8	33.3	33.7	53.4

Figure 1 Summary of Recycling Performance 2002/03 to 2009/10



5.2.3. Refuse and Recycling Collections

Refuse collection services are provided by a combination of private waste contactors and in house services and Table 8 summarises the current refuse contracts. All authorities have 100% coverage for refuse collection and a 'no side waste policy'. Two of the five authorities have opted for a fortnightly collection service.

Table 8 Current WCA Refuse Collection Services [12]

Authority	Households	Receptacle	Collection Frequency	Operator
Knowsley	64,627	140l to 360l wheeled bins, refuse sacks, bulk bins	Weekly	In-house service
Liverpool	214,938	240l wheeled bin	Weekly	Enterprise-Liverpool
Sefton	124,442	240l wheeled bin, refuse sacks	Fortnightly	In-house service
St Helens	78,820	240l wheeled bin	Weekly	In-house service
Wirral	145,427	240l wheeled bin	Fortnightly	Biffa

Garden waste is collected free of charge by all authorities details of the services are summarised in Table 9. Knowsley and Sefton also offer a separate kerbside food waste collection as detailed in Table 10.

Table 9 Kerbside Garden and Garden/Food Waste Collection Services

Authority	Coverage (households & %)	Receptacle	Materials collected	Collection Frequency	Compositing facility
Knowsley	63,193 (98%)	140l to 240l wheeled bin	Garden	Fortnightly	White Moss Horticulture
Liverpool	140,000 (65%)	240l wheeled bin	Garden	Fortnightly	White Moss Horticulture
Sefton	86,976 (70%)	240l wheeled bin	Garden	Fortnightly	WRS Composting
St Helens	65,000 (82%)	240 l wheeled bin	Garden, cardboard and food	Fortnightly	James Heyes and Sons
Wirral	108,000 (74%)	240l wheeled bin	Garden	Fortnightly	Armstrong Environmental Services, Haddocks Wood

Table 10 Kerbside Food Waste Collection Service

Authority	Coverage	Receptacle	Collection Frequency	Compositing facility
Knowsley	Opt in	23 litre kerbside food caddy (combined with kitchen caddies)	Weekly	Rotters Community Composting, TEG Environmental
Sefton	Opt in	23 litre kerbside food caddy (combined with kitchen caddies)	Weekly	TEG Environmental

[12] Watedataflow 08/09 Household figures www.wastedataflow.org

All authorities offer a dry recycling collection service, Table 11 summarises these services for each of the authorities. The collected recyclate is either sorted at the kerbside or at a Materials Recovery Facility (MRF) and then sent to a variety of end destinations, detailed in Table 12. Sefton and St Helens do not accept cardboard within their recycling service however St Helens do allow this material to be included within household garden waste. Both authorities also accept aerosols and aluminium foil. Plastic bottles are collected by four out of five authorities from the kerbside.

Table 11 Kerbside Dry Recycling Collection Service

Authority	Coverage (households& %)	Receptacle	Collection Frequency	Materials collected								Collection Method	Sorting / bulking Destination
				Paper	Card	Cans	Glass	Plastic Bottles	Textiles	Shoes	Other		
Knowsley	63,193 (98%)	240litre wheeled bin	Fortnightly	✓	✓	✓	✓	✓				Co-mingled	Knowsley Bulking Facility
Liverpool	212,781 (99%)	240l wheeled bin 55l box	Fortnightly	✓	✓	✓	✓	✓				Co-mingled	MRF (Bidston)
Sefton	124,442 (100%)	55 litre box and bag	Weekly	✓		✓	✓		✓	✓	Aerosols and aluminium foil	Kerbside sort	Private sector bulking facility
St Helens	78,820 (100%)	55l k box and reusable sacks for paper and plastic bottles.	Fortnightly	✓		✓	✓	✓	✓	✓	Aerosols and aluminium foil	Kerbside sort	St Helens Council Depot
Wirral	137,444 (95%)	wheeled bin	Fortnightly	✓	✓	✓	✓	✓				Co-mingled	Wirral Council Depot

Table 12 Details of Final Destination of Primary Dry Recycled Materials Once Sorted/bulked[13]

Authority	Paper	Card	Cans	Glass	Plastic (Bottles)	Textiles	Shoes
Knowsley	UPM Kymmene (UK) Ltd, Shotton Paper Mill, Abitibi Consolidated Ltd	UPM Kymmene (UK) Ltd, Severnside Recycling, Shotton Paper Mill, Recycling UK Ltd	Solidcast Ltd, AMG Resources, Alutrade, Eurokey Recycling Ltd, European Metal Recycling	Reuse Collections Ltd t/a Berryman, Glass Recycling UK Ltd	Roydon Polythene Ltd, Recresco Ltd, Eurokey Recycling Ltd		
Liverpool	Shotton Paper Mill, UPM Kymmene (UK) Ltd, Abitibi Consolidated Ltd, Recycling UK Ltd	St Regis Paper Co Ltd, Shotton Paper Mill, Recycling UK Ltd	Corus UK Ltd, Alutrade, AMG Resources Ltd, Eurokey Recycling Ltd, European Metal Recycling	Glass Recycling UK Ltd, Viridor Waste Management, CRT Recycling Ltd, Reuse Collections Ltd t/a Berryman,	Eurokey Recycling Ltd, Roydon Polythene Ltd, Recycling UK Ltd		
Sefton	Merseyside Waste Disposal, Abitibi Consolidated Ltd, Palm Recycling Ltd		Solidcast Ltd, Abitibi Consolidated Ltd, Palm Recycling Ltd	Viridor Glass Recycling Ltd		Green World Recycling	European Shoe Recycling, Green World Recycling
St Helens	Abitibi Consolidated Ltd,		SC Chadwick and Sons Ltd	Glass Recycling UK Ltd, Viridor Glass Recycling Ltd	Roydon Polythene Ltd, Recresco Ltd, Yield UK	Salvation Army Trading, European Shoe Recycling,	Salvation Army Trading, European Shoe Recycling,
Wirral	Shotton Paper Mill, Severnside	Shotton Paper Mill	Alutrade Ltd, European Metal Recycling, Eurokey Recycling Ltd, AMG Resources,	UPM Kymmene UK Ltd, Reuse Collections Ltd	Eurokey Recycling Ltd, Roydon Polythene Ltd		

[13] Final destinations taken from WasteDataFlow

5.2.4. Trade Waste Collection

Three out of the five authorities operate a trade waste collection service, as summarised in Table 13. Liverpool and the Wirral do not offer a collection service and advise companies to contact local waste disposal contractors for quotes. St Helens are the only council to offer a trade recycling service which is arranged through discussion with the council.

Table 13 Summary of Trade Waste Services

Authority	Collection Method	Operator	Recycling service offered
Knowsley	Separate trade waste collection	In-house service	No
Sefton	Separate trade waste collection	In-house service	No
St Helens	Separate trade waste collection	In-house service	Yes (by arrangement)

5.2.5. Bring Sites

All authorities provide bring sites for residents to recycle household waste. Table 14 provides information on the number of sites in each authority area and types of material accepted (note not all bring sites accept all material identified).

Table 14 Bring Bank Sites and Materials Collected

Authority	Number of Bring Sites	Material accepted (note not all bring sites accept all material identified)
Knowsley	31	Paper, cans, glass, textiles and shoes
Liverpool	31	Paper, cans, glass, textiles, tetrapak
Sefton	42	Paper, cans, glass, textiles, plastic bottles and tetrapak
St Helens	80	Paper, cans, glass, textiles, shoes, and Cds
Wirral	19	Paper, cans, glass, textiles, shoes, books and tetrapak

5.2.6. Other Services

All authorities offer a bulky household waste collection for larger household items this collection service is free in Liverpool, Sefton and St Helens but charged for in Knowsley and the Wirral, with all authorities setting a limit on the number of items that can be collected during one visit. Table 15 summarises the collection details:

Table 15 Bulky waste services

Authority	Collection details
Knowsley	Charged £10.00 for up to 5 items and £20.00 for 6-10 items.
Liverpool	Free of charge maximum of 5 items per collection. No limit to the number of collections
Sefton	Free of charge maximum of 3 items per collection. No limit to the number of collections
St Helens	Free of charge maximum of 8 items per collection. No limit to the number of collections.
Wirral	Charged £20.00 for up to six separate items.

5.2.7. Third Sector Activity

There is an active Furniture Recycling Network with social enterprises and charitable organisations providing coverage for collection of furniture and electrical goods reuse across the five authorities. Each of the authorities provides website links or contact details for the organisations operating within their area. Local recycling groups can also apply for grants of between £2-5,000 through the Community Resource Action Fund set up by MWDA and Veolia Environmental Services Merseyside and Halton Ltd.

A list of the active furniture and electrical reuse and recycling organisations within the MWP area is provided in Table 16.

Table 16 Third Sector Groups

Group Name	Areas covered
Knowsley Community Recycling Service	Knowsley
Bulky Bob's, Liverpool	Liverpool, Oldham, Warrington
Sefton Helping Hands, Old Roan	Sefton
Create Liverpool, Liverpool	Liverpool, Sefton, St Helens, Wirral, Warrington
Future Furniture Ltd, St Helen's	St Helens
St Vincent De Paul Furniture Store, Liverpool	Countywide
Vauxhall Neighbourhood Council, Liverpool	Liverpool
Wirral Independent Recycling Enterprise (WIRE) Ltd	Wirral

5.2.8. Household Waste Recycling Centres (HWRCs)

There are 14 HWRCs in Merseyside[14], where residents can take household waste to be recycled or disposed. The centres are currently run by Veolia Environmental Services on behalf of MWDA, though a contact awarded in June 2009. Table 17 summarises the location of the HWRC sites.

Table 17 HWRC Locations

Authority	Site
Knowsley	Huyton
	Kirkby
Liverpool	Otterspool
Sefton	South Sefton
	Sefton Meadows
	Southport
	Formby

[14] Under the WMRC contract two sites in Halton are also managed by Veolia, at Johnsons Lane and Picow Farm

Authority	Site
St Helens	Newton-le-Willows
	Ravenhead
	Rainhill
	Rainford
Wirral	Bidston
	Clatterbridge
	West Kirby

The sites are open seven days a week with the exception of Christmas Day, Boxing Day and New Years day. A variety of materials are accepted at each of the HWRCs including paper, card, metals, textiles, glass and electrical equipment.

Current policies for HWRCs include a waste permit scheme which has been introduced to reduce the amount of non-household trade waste disposed of illegally at the sites.

MWDA in conjunction with Veolia Environmental Services are upgrading access and signage to all existing HWRC with the improvement due to be completed across all centres by the end of 2010. In addition, as part of the new contract, the range of recyclable materials collected at each of the HWRCs will be increased with each centre accepting Waste Electrical and Electronic Equipment (WEEE).

5.3. Health and Communities

5.3.1. Human Health

Much work has been undertaken to consider the impacts of waste management facilities and practices on human health and to date no specific links have been proven. Reports by Defra and WRAP have concluded that present day practices for managing municipal waste have a minor effect on human health and the environment when compared to everyday activities[15]. The reports listed considered alternate weekly collections and various waste disposal and treatment operations. Figures relating to health are often headline in nature and not specific to waste management.

Life expectancy is, overall, lower in Merseyside than for the national average (of 77.7 years for males and 81.9 years for females)[16]. Average life expectancy between 2007-2009 was 75.9 years for males and 80.4 years for females.

[15] Review of Environmental and health effects of waste management – municipal wastes and similar wastes, May 2004, Defra, Health impact assessment of alternate week waste collections of biodegradable waste. Defra Waste Implementation Programme 2007 and Scoping study of potential health effects of fortnightly residual waste collection and related changes to domestic waste systems, WRAP, 2009

[16] Office of national statistics, 2009

A high proportion of the population in Merseyside describes their health as 'not good' or 'have a limiting long term illnesses'. Census statistics indicate that 23.5% of the population describe themselves as having a 'limiting long term illness' which is higher than the national average of 18.2%. 12.6% described themselves as 'general health not good' compared to the national average of 9.2%

There is no evidence linking this situation to waste management operations. The health and safety of the public and waste operators is an important consideration in all waste management operations and is considered as standard in all day to day operations. The potential health effects of waste management facilities are taken into account at a site specific level through the planning process.

Possible health impacts could be derived from air emissions associated with the transport of waste as part of the collection and disposal system. Section 5.4.4 considers the impact of transport on air quality in Merseyside. Any significant increase in transport movements as a result of the strategy could impact negatively on air quality and thus human health.

5.3.2. Population and Households

The number of people living within Merseyside combined with the number of households will have an impact on the amount of waste produced on Merseyside and therefore requiring management.

Table 18 provides population estimates derived from 2007 mid-year estimates[17] and is compared to information compiled during the 2001 census for each of the authorities.

Table 18 Population Figures

Authority	Population (2001)	Population (2007)
Knowsley	150,459	150,900
Liverpool	439,473	435,500
Sefton	282,958	276,200
St. Helens	176,843	177,400
Wirral	312,293	310,200
Total	1,362,026	1,350,200

The two data sets indicate overall population decline in all authorities apart from St Helens. Changes in population will need to be taken into account within the JMWMS and the individual collection schemes offered by the WCAs. However it is the number of households within an area that is likely to have the most impact on waste levels rather than overall population levels as analysis of waste arising is generally assessed at the household rather than individual level.

[17] Local context, Greater Merseyside 2009, Connexions Greater Merseyside

Table 19 Household Numbers[18]

Authority	Households	Population/household
Knowsley	64,627	2.33
Liverpool	214,938	2.03
Sefton	124,442	2.22
St Helens	78,820	2.25
Wirral	145,427	2.13

Despite the declining trend in population, household numbers are predicted to rise in the period up to 2021. Estimates are provided below derived from ONS statistics.

Table 20 Household Trends 2008-2023[19], 000s

	2008	2013	2018	2023	% Change
Knowsley	62	64	66	68	10
Liverpool	191	200	207	213	12
St. Helens	74	77	79	81	9
Sefton	117	118	120	122	4
Wirral	135	136	139	141	4

This increase in household numbers will need to be factored into the JMWMS and individual collection schemes operated by the local authorities.

Housing types and ownership also vary across the Merseyside authorities. Semi detached properties are the predominant housing type in all regions with the exception of Liverpool and Knowsley which also have a large number of terraced dwellings. Housing ownership through either a mortgage or owned outright is the highest within the Wirral at 40.97% (Merseyside average 29.78%). Liverpool shows high levels of both rent and owned properties.

5.4. Local Environmental Quality

5.4.1. Fly Tipping

Dealing with fly tipping is a joint responsibility between local authorities and the Environment Agency. Both local authority incidents and EA handled incidents are recorded through the Flycapture database held by Defra.

At a national level nearly 947,000 fly-tipping incidents were dealt with by local authorities in England in 2009/10, an 18.7% decrease from 08-09. Of these incidents 63% of fly-tips

[18] WasteDataFlow 2008/09 figures, derived from national statistics

[19] http://www.communities.gov.uk/documents/housing/xls/140987.xls accessed 27/05/11

involved household waste and there was an overall 2.3% increase in enforcement actions by local authorities[20]. The Merseyside figures are summarised below.

The Environment Agency dealt with a total of 1,047 illegal waste dumping incidents in 2009/10 (a rise from 676 in 2008-09). Incidents recorded in the Flycapture database are summarised in Table 21.

Table 21 Fly-tipping incidents by authority for 2009/10

	Knowsley	Liverpool*	Sefton	St Helens	Wirral
Total incidents	1,544	27,935	2,775	880	6,030
Total action taken	2	6,105	2,636	2,729	3,369
*Figures for Liverpool are higher due to a difference in reporting methodology					

5.4.2. Water

River Quality

The main rivers catchment areas within Merseyside are the River Mersey, and the River Alt. The Alt runs mainly through Sefton from Huyton in Knowsley to the boundary of the River Mersey estuary and the Irish Sea at Hightown, between Crosby and Formby. The River Mersey runs directly through Merseyside giving the area its name. It divides Merseyside from Wirral to the west and Knowsley, Liverpool, Sefton, and St. Helens east of the river. The River Mersey runs from near Stockport, westwards into the Irish Sea at Liverpool. Warrington.

Water quality within these rivers has improved over the last 40 years particularly since the implementation of a number of Acts of Parliament to control the discharge of waste water.

At a national level river water quality has generally improved over the past couple of decades in terms of chemistry and biology and there has also been a fall in the amount of nutrients in our rivers over this time. In 2008, 72 per cent of English rivers were classified as excellent or good for biological quality, this is up from 55 per cent in 1990. In 2008, 79 per cent of English rivers were at excellent or good quality for chemical quality, up from 55 per cent in 1990[21]

A river basin management plan for the North West River Basin District has been produced by the Environment Agency[22] containing improvement targets and priorities up to 2015 and incorporating a new reporting system for river water quality introduced through the EU Water Framework Directive.

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20 Defra flytipping statistics 2009/10
21 Environment Agency
22 River Basin Management Plan North West River Basin District, EA, December 2009

Figure 2 Key statistics for Alt Crossens catchment

River and lake water bodies	Now	2015
% at good ecological status or potential	0	0
% assessed at good or high biological status (11 water bodies assessed)	18	18
% assessed at good chemical status (3 water bodies assessed)	0	0
% at good status overall (chemical and ecological)	0	0
% improving for one or more element in rivers		14

Figure 3 Key statistics for Mersey catchment

River and lake water bodies	Now	2015
% at good ecological status or potential	0	4
% assessed at good or high biological status (25 water bodies assessed)	0	4
% assessed at good chemical status (6 water bodies assessed)	100	100
% at good status overall (chemical and ecological)	0	0
% improving for one or more element in rivers		48

Merseyside has also between identified as containing areas which are subject to the threat of flooding. The authorities of Knowsley, Liverpool, St Helens and the Wirral, are threatened by potential flooding from the River Mersey (Figure 4), in addition Knowsley and Sefton are also affected by the River Alt (Figure 5). A Catchment Flood Management Plan (CFMP) which encompasses approximately 600km^2 of the River Mersey and the River Alt has been developed and has seen a number of flood defence improvements including a 20 mile network of embankments and drainage channels and the creation of Altmouth pumping station which acts as a barrier to prevent tidal flooding. Sefton and the Wirral are also located within areas that have the potential to be affected by tidal flooding.

Figure 4 Flood Risk to properties across the Mersey catchment[23]

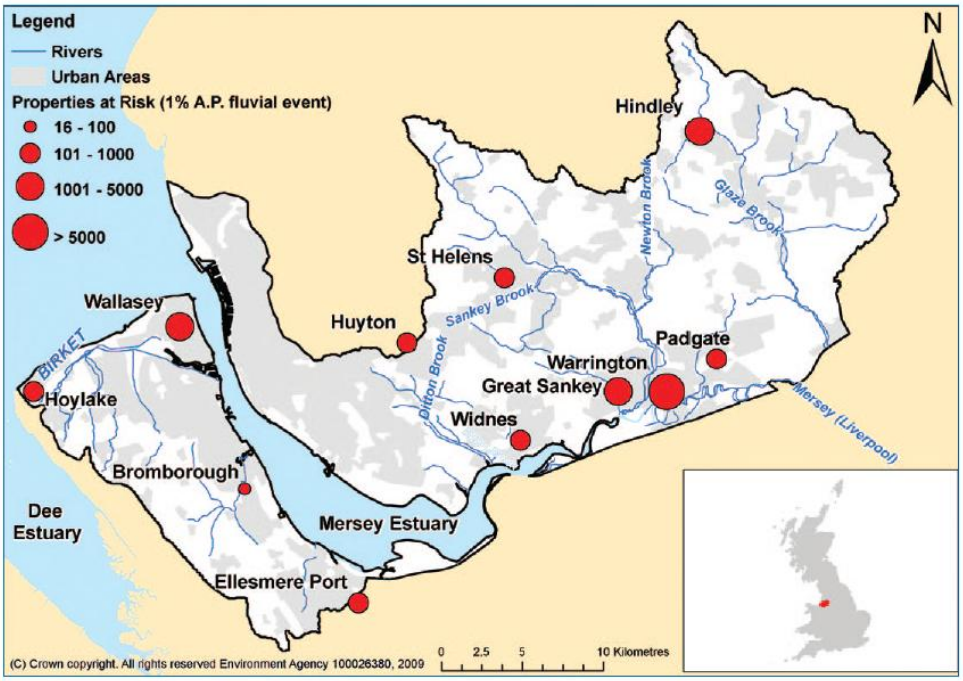
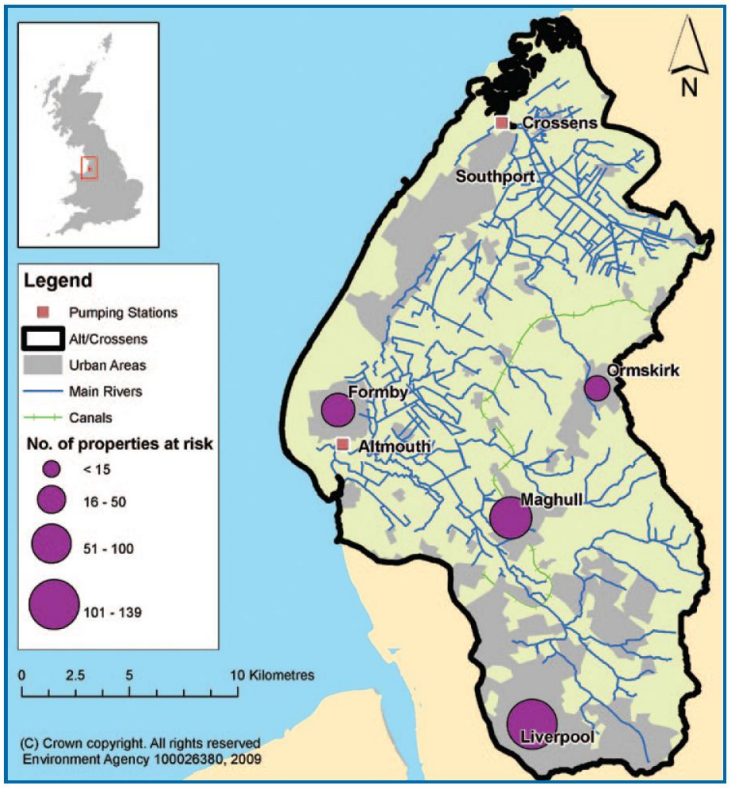


Figure 5 Flood Risk to properties across the Alt catchment[24]



[23] Mersey Estuary Catchment Flood Management Plan Summary Report, EA, December 2009
[24] Alt Crossens Catchment Flood Management Plan Summary Report, EA, December 2009

Bathing Waters

There are seven designated beaches within Sefton and Wirral districts at which water quality is monitored systematically. All beaches currently have bathing water qualities of 'Excellent' or 'Good'.

The quality of these beaches has been steadily improving over the past 10 years as waste water discharges into rivers and coastal waters have decreased[25].

Groundwater

Merseyside is situated within Groundwater Protection Zones (GPZ), monitored by the Environment Agency under the Groundwater Protection Policy. Large areas of Knowsley, the Wirral and south and west Liverpool fall within these zone, with smaller areas located in the south and south east of St Helens and Sefton.

The potential impact of the JMWMS on water quality will be a primarily site specific issue. Different facility types may have the potential for impacts on water courses or GPZ, e.g. windrow composting sites have the potential for run-off into surface water and contribution to eutrophication or landfill leachate could percolate into the groundwater causing contamination of groundwater. Waste management activities are controlled by strict regulation designed to minimise potential environmental impacts, with locations controlled through the planning process and facility design and operation through the Environmental Permitting system.

5.4.3. Land and Soil

Generally the solid geology of the Merseyside area is characterised by sandstones and mudstones of the Triassic age, above this lies thick deposits of till and pockets of sands and gravels deposited during the last glacial period.

Soils are graded using the Agricultural Land Classification System which addresses farmland quality. Individual information on specific sites must be obtained by site surveys. Maps produced by the MAGIC database show that the Merseyside area is predominately urban, and that approximately 20% of land outside the urban conurbations is of Grade 1 or 2 (the quality scale has 1 as the highest and 5 as the lowest followed by non agricultural and urban). Knowsley, Sefton and Wirral have the highest proportion of grade 1 and 2 land.

Land contamination is a major issue for the Merseyside authorities and is one which local authorities have a statutory duty to address. This is done firstly by identifying, recording and prioritising affected locations, by carrying out inspections to determine whether they

[25] Environment Agency, North West Region Bathing Water Quality

meet the statutory definition of contaminated land, and then by facilitating their remediation.

Liverpool has identified 11,000 sites within the city for further inspection, of which 1,906 were initially classified as high priority. For Sefton, the equivalent figures are 8,649 sites of potential concern and 1,099 of high priority. St Helens has identified 9,105 high priority sites covering 47.9 km^2, equivalent to 35.2% of the Borough area.

Wirral is also working through inspection and assessment of its list of high priority sites, but faces a smaller challenge because most of its housing was built on greenfield sites and industrial and residential areas overlap in relatively few places.

Land contamination issues are addressed through the land use planning and regeneration regime. As sites are brought forward for development, local authorities are able to require developers to investigate their contamination status and to undertake remediation to render them fit for the proposed end use by means of a planning condition.

The impact of the JMWMS on land and soil (if any) will be a site specific issue, as above different facility types have the potential to impact the soil quality either positively or negatively. Waste management activities are controlled by strict regulation and sites handling waste need to be licensed/permitted to ensure that they do not harm the environment and if any land clean up is required then this will also be dealt with through the planning system.

5.4.4. Air Quality

The impact of waste management on air quality is considered on a local rather than national level.

The impact on local air quality is most likely to arise through transport impacts, e.g. through household waste collections and the transport of waste and recyclables to transfer/recycling/treatment/disposal facilities.

Local authorities are responsible for reviewing local air quality in accordance with the Environment Act 1995. This involves measuring air pollution and trying to predict how it will change in the future and is to ensure that local air quality objectives are achieved and where these are not met then Local Air Quality Management Areas can be declared. Then local authorities put together a plan to improve Local Air Quality. Road transport is the main source of in the majority of Air Quality Management Areas (AQMA).

Merseyside has six designated AQMA, a Liverpool wide AQMA (for NO_2), 3 in Sefton (for PM10 and NO_2 covering Waterloo, Bootle and Seaforth) and 2 in St Helens (for NO_2 covering the M6 and Newton-le-Willows High Street).

Transport and industry and commerce are the main contributors to NOx and PM10 emissions on Merseyside and road traffic is the biggest contributor to transport impacts.

Table 22 Road Transport Contribution to Total Emissions[26]

Pollutant	UK	Greater London	Merseyside
Benzene	18%	51%	56%
1,3-Butadiene	55%	91%	92%
Carbon Monoxide	43%	68%	68%
Nitrogen Oxides	32%	42%	35%
Particulates, PM10	21%	69%	31%
Carbon Dioxide	22%	25%	22%

A national indicator NI194 was also introduced as part of the local government performance framework in relation to air quality – to monitor the % reduction in NOx and primary PM10 emissions through local authority's estate and operations.

Even though the plan is not site specific the impact of traffic movements should be considered in the assessment as traffic movements are a major contributor to local air quality emissions.

5.5. Economics

The Merseyside economy has grown in the ten year period between 1996 and 2006, however this growth has been slightly behind the UK and Northwest as a whole. On a per head basis the performance is similar with the average GVA per job contributing £28,265, in 2006 compared to the North West average of £31,376 and the national average of £35,473[27].

Since 2006, events such as the European Capital of Culture in 2008 and the opening of the Arena & Convention Centre and Grosvenor's £1 billion regeneration project Liverpool ONE have contributed to the economy.

There are opportunities for waste management to contribute to the economic sector through job creation, the purchasing of services and by providing secondary resources for local industries (recyclates), although waste management in general is unlikely to be a major employer.

[26] UK Emissions of Air Pollutants 1970 to 2006 (Defra), London Atmospheric Emissions Inventory 2004, Merseyside Atmospheric Emissions Inventory 2006

[27] The Mersey Partnership Economic Review 2009.

5.5.1. Employment/Unemployment

Within Merseyside, the service industry in particular financial services and business services and retail are the main employment sectors and this sector has seen an increase over the period 1998-2007. Manufacturing sector jobs has seen a decline over the same period[27]. A breakdown by sector is shown in Table 23.

Table 23 Jobs by Sector

	Jobs 2007		Jobs 2007
Public Administration	61,900	Manufacturing	103,900
Construction	44,300	Real Estate & Business Services	138,700
Other Services	42,000	Hotels & Restaurants	59,600
Health & Social Care	128,500	Financial Services	36,700
Education	90,600	Transport & Comm's.	54,000
Wholesale & Retail	147,800		

Unemployment varies across between 8 and 13% which are in line with the North West and UK averages, with Liverpool the noticeable exception, Table 24.

Table 24 Employment/unemployment rates for Merseyside authorities, April 2009-March 2010[28]

	St. Helens	Liverpool	Sefton	Wirral	Knowsley	North West	England
In Employment; Aged 16-64 (Males); 16-59 (Females)	76,000	176,100	115,000	126,400	60,500	3,000,100	23,554,500
Employment Rate; Aged 16-64 (Males); 16-59 (Females)	66.9%	60.2%	68.3%	66.2%	62.5%	67.8%	70.5%
Unemployed; Aged 16-64 (Males); 16-59 (Females)	8,000	25,600	11,100	12,200	6,600	292,900	2,061,100
Unemployment Rate; Aged 16-64 (Males); 16-59 (Females)	9.5%	12.7%	8.8%	8.8%	9.8%	8.9%	8%

5.5.2. Deprivation

Indices of deprivation were produced as a means of comparing different areas of England against different measures of deprivation. Data is ranked such that the lower the score the greater the deprivation. The most deprived local authority ranks 1 and the least deprived 354. The indices are made up of seven deprivation elements, relating to income, employment, health and disability, education, barriers to housing and services, living environment and crime.

[28] Office of National Statistics

The 2007 Indices of Deprivation scores produced by the Office of National Statistics placed all five Merseyside authorities within the top 100 most deprived areas. Liverpool was classified as the most deprived with Knowsley not that far behind, Table 25.

Table 25 Indices of Deprivation, 2007

	Knowsley	Sefton	Liverpool	Wirral	St Helens
Average Score	43.2	25.13	46.97	30.06	29.82
Rank of Average Score	5	83	1	48	47

5.6. Transport

Merseyside has a well developed transport network, served by road, rail and water based transport options. The road network provides access through the main urban areas with connections to regional and national road motorway network. Key roads include the M53, M62, M57, M6 and M56 along with several arterial roads into the Merseyside area and two road and one rail tunnels run under the River Mersey connecting Liverpool to the Wirral (Queensway and Kingsway tunnels). One rail/road bridge crosses the river at Halton and Runcorn, with a second road crossing granted permission and due to be completed by 2016.

Rail links serve Liverpool and the Wirral peninsula, St Helens and other urban areas have access to the west coast main line (via Liverpool Lime Street). Merseyrail is the urban rail network. Liverpool Port facilities (at the Liverpool and Birkenhead Docks) allow for the movement of waste via coastal or canal networks (Leeds Liverpool, Bridgewater and Manchester Ship canals). Liverpool John Lennon Airport also serves the Merseyside area.

There are therefore opportunities to transfer waste onto non road networks if necessary. Transport impacts on the environment through the presence of the infrastructure on the landscape and the emissions, noise and vibration caused by the movement of vehicles. The contribution of transport to local air quality on Merseyside is summarised in section 5.4.4 above. The assessment will consider the environmental impacts of waste movements associated with proposed changes to current service provision in the revised strategy.

5.7. Biodiversity

Merseyside has been internationally recognised as containing areas and sites of special biological and geological interest. These include three Special Protection Areas (SPAs), the Mersey Estuary, the Ribble/Alt Estuary and the Dee Estuary, all of which have internationally important areas of mud and sand flats, salt marshes and migratory wildfowl.

All three have been designated as Ramsar Sites[29], which are wetlands of international importance. There are also 17 Local Nature Reserves and 14 Sites of Special Scientific Interest (SSSI). The SSSI cover between 1.1 and 4,634 hectares and a range of habitats including grasslands, woodland, lowland heath and littoral sediment. The largest of the SSSI is the Sefton coastline stretching 20km between Southport and Crosby. This SSSI is of special interest for its intertidal mudflats, sand dunes and the large populations of migrating waterfowl. Within Sefton there are also three National Nature Reserves namely Cabin Hill, Ainsdale Sand Dunes and the Ribble/Alt Estuary.

Merseyside is covered by two Biodiversity Action Plans; the North Merseyside Biodiversity Action Plan which covers Knowsley, Liverpool, St Helens and Sefton and the Wirral Action Plan. The plans incorporate 48 Species Action Plans and 26 Habitat Actions Plans.

The Mersey Forest is a community forest covering 465 square miles of Merseyside and North Cheshire. It is a network of green spaces and woodland that was established in 1994 and has involved considerable tree planting activity and is supported by all of the Merseyside authorities.

The JMWMS is not a site specific plan and therefore local biodiversity impacts are considered as outside the control of this plan, except in limited circumstances e.g. the management of closed landfill sites. In a wider sense and at a national level waste management will impact on biodiversity as the amount of material recycled displaces primary materials extracted for use.

Local biodiversity issues have been considered in the SEA of the Waste Development Plan Document and will be considered at individual sites through the planning process.

5.8. Natural Resources

Natural resource use is primarily a national rather than local issue as natural resources such as water, minerals and sources of energy are consumed locally but derived from non local sources. Natural resources use is also linked to consumption of goods and services by the population of a particular area. This is often measured as an ecological footprint which highlights the impact of consumption and waste production within the context of ecological limits. It is a calculation of the notional and direct land area needed to support a population with the resources that they consume and to absorb the wastes that they generate. It is measured in global hectares and differentiates between crop and pasture land, forest and sea area, build land (land directly built for human development and energy land (forest area needed to absorb CO_2). Energy land is the most significant

[29] Ramsar sites are wetlands of international importance, designated under the Ramsar Convention. The Ramsar Convention is an international agreement signed in Ramsar, Iran, in 1971, which provides for the conservation and good use of wetlands. The UK Government ratified the Convention and designated the first Ramsar sites in 1976

proportion of the ecological footprint, accounting for over 50% of the total. A standard methodology for ecological footprints has been developed by the global footprint network.

Based on the Living Planet Index, we are currently using 50% more natural resources than the planet can sustain and overall humanity's Ecological Footprint has doubled since 1966. In 2007 people used the equivalent of 1.5 planets to support their activities. In 2007 the global hectares demanded by the UK was 4.9 per person[30].

The current recycling and composting activity carried out on Merseyside generates a reduction in the ecological footprint of the area. In 2005/06 a North West study reported that MWDA recycling activity at HWRCs reduced its ecological footprint by 35% and recycling collections in Sefton by 14%[31]. The impact on the overall ecological footprint will be tested through this SEA assessment process.

5.9. Buildings, Heritage and Landscape

5.9.1. Cultural Heritage

In 2004, Liverpool was designated as a World Heritage Site by UNESCO and in 2008 the Capital of Culture. The English Heritage 'Heritage Counts' report for 2010[32] (the most recent data available for the area) suggests that currently Merseyside has 3,047 registered historic assets, these are summarised in Table 26.

Table 26 Heritage Assets

Listed Heritage Assets on Merseyside											
Area	**Listed Buildings**				**Scheduled Ancient Monument**	**Parks and Gardens**				**World Heritage Sites**	**Battlefields**
	Gd I	Gd II*	Gd II	**Total**		Gd I	Gd II*	Gd II	**Total**		
Knowsley	1	3	92	**96**	0	0	0	1	**1**	0	0
Liverpool	26	99	1,380	**1,505**	4	0	2	6	**8**	1	0
Sefton	2	19	537	**558**	13	0	1	3	**4**	0	0
St Helens	2	13	121	**136**	12	0	0	0	**0**	0	0
Wirral	8	27	662	**697**	9	1	1	1	**3**	0	0
TOTAL	**39**	**161**	**2,792**	**2,992**	**38**	**1**	**4**	**11**	**16**	**1**	**0**

Liverpool has the highest concentration of assets, the largest collection of Grade I listed buildings located with the Albert Dock. In addition the Merseyside area has 16 museums

30 Living Planet Report, Biodiversity, biocapacity and development, World Wildlife Fund, 2010
31 The Ecological, Carbon and Ecocarb Footprints of Waste Management in the North West 2005/06.
32 Heritage Counts 2010 – Merseyside data, http://hc.english-heritage.org.uk/

and heritage centres accredited with the Museums Libraries and Archives Council (MLA) an accreditation scheme which sets national standards for UK museums[33].

The potential impact on the built environment from air bourne pollutants will be considered. This will be considered at a Merseyside wide level rather than specific locations.

5.9.2. Landscape

As Merseyside is a predominately urban conurbation the landscape is typically characterised by residential developments, town and city centres, and industrial premises. There are no Areas of Outstanding Natural Beauty (AONB) within Merseyside.

Facility design consideration will depend on specifications during facility procurement and will not specifically relate to the JMWMS. Any development carried out must respect the existing landscape and character.

[33] http://www.english-nature.org.uk/citation/citation_photo/2000426.pdf

6. Sustainability Issues

The sustainability issues for Merseyside were derived from a series of actions taken as part of the development of the JMWMS for Merseyside that commenced in March 2010 following a review of key policies and plans (local, regional, national, international). This identified a range of themes[34] (33) that influence the management of waste and resources, and that should be considered in the development of a JMWMS.

These themes were presented to the first of two workshops on the 2nd March 2010 at which officers from each of the Partner Authorities were presented with the range of themes and invited to prioritise those of most importance. Two further themes were added at the workshop (Affordability & Deliverability). The themes were then discussed at a second workshop on the 9th March 2010 at which elected members were invited.

These workshops formed the basis for the draft Strategy objectives. The workshops also discussed the range of options that may be applied within the Strategy to deliver against the ambitions of the strategy.

The review of the baseline information of Merseyside, was undertaken in November / December of 2010, and was presented in the SEA Scoping Report issued in January 2011. The baseline is presented in Section 5 of this Report and has been updated in the light of comments received as part of the consultation exercise (see Appendix 1). It was also identified by one of the respondents to the consultation that the Sustainability issues were not explicitly drawn out in the scoping report therefore not making clear the link between the Sustainability Objectives and the baseline information. This section makes clear the sustainability issues identified and how the two aspects relate to each other.

The key sustainability issues for Merseyside are considered to be as follows:

- Climate change is a major environmental issue for all areas. Merseyside has a lower than the average UK CO_2 emission estimate (2008 data[35]) for all authorities, with significant reductions apparent in Districts that previously had the highest emissions (Knowsley & St Helens). All Districts are exhibiting a declining trend in emissions, however it should also be noted that in terms of waste management performance the partnership area has a significantly higher reliance upon landfill than the England average (~63% of municipal waste sent to landfill, versus ~47% for England[36]). Landfill is the most significant contributor as regards global warming potential of all options for municipal waste. This is because of the impact of fugitive methane emissions (which are a large component of landfill gas) generated through the degradation of biodegradable materials in landfill. The amount of waste landfilled is in decline and is

34 As listed in Table 4
35 Local & National CO_2 emission estimates for 2005 – 2008, AEA, 2010.
36 Defra MSW statistics for 2009/10, released 2010.

likely to continue to decline if existing trends are maintained and when the residual waste treatment procurement is implemented providing an alternative to landfill for residual waste. Examination of two alternative residual waste treatment scenarios through life cycle assessment modelling is part of this SEA.

- Furthermore, with regards to climate change impacts, one aspect linked to the higher than average amounts of waste landfilled from the Partnership area, is the lower than average level of municipal waste recycled (~34% average for Merseyside versus ~39% for England[37]). Recycling has a beneficial climate change impact, as in most cases, there is a net benefit in carbon emissions due to savings from use of secondary materials rather than virgin material extraction and raw material processing. Again the trend of recycling is continual improvement for most Districts as shown by Figure 1, with some evidence of performance flattening out for Liverpool and Wirral. However projections from Wirral are estimating a notable increase in household waste recycling, reuse and composting for the year 2010/11[38]. Climate change impacts are addressed through SEA Objective 1.
- There are associated wider benefits of reducing carbon emissions and 'The Economic Impact of EU and UK Climate Change Legislation on Liverpool and the Liverpool City Region' report estimated that the economic cost of not complying with legislation could amount to 1% of the area's Gross Value Added (GVA). Other consequences on air quality, flooding etc are noted below.
- The mode of delivery of the waste management service, in terms of waste transfer and collection arrangements, is characterised by individual collection contracts, with a mix of in-house and 'contracted out' service providers with differing collection methods, frequencies and materials collected. There is some rationalisation of the services with three of the five Districts opting for co-mingled collections and Sefton MBC also exploring the co-mingled recyclable route. Co-mingled collections would be managed through the materials recycling contract delivered by Veolia. It is likely that there would be some efficiencies and overriding benefits in operating common (or similar) collection systems across all authorities, in terms of economies of procurement / materials marketing and common perception of what can and cannot be recycled across Merseyside. Knowsley MBC is exploring, on behalf of the MWP, joint working options that could deliver efficiencies (cost and environmental) across the Partnership in terms of service provision.
- Only Knowsley & Sefton offer separate food waste collections, however it is likely that in order to deliver the Waste Framework Directive[39] target of 50% recycling of

[37] Sefton is the closest to the national average in terms of recycling, with the NI192 reporting measure (household waste recycled, reused and composted) showing Sefton at 39.4% versus the England average of 39.7% in 2009/10.
[38] Officer projections, December 2010.
[39] EU Waste Framework Directive (2008/98/EC)

household waste by 2020 most, if not all, of the Districts will need to increase recycling levels through measures such as food waste composting / digestion.

- St Helens, Knowsley & Sefton offer trade waste collection services, with St Helens the only authority offering recycling collections (by arrangement). This may become an issue for Merseyside as the definition of municipal waste may be widened to include commercial type wastes, and also with reference to the Waste Framework Directive definition which also includes waste "from other origins....similar to waste from households" to count towards the 2020 recycling target. Expanding the provision of trade waste services across the Partnership area could however have significant implications for landfill diversion under the Landfill Directive[40] as it would bring additional waste into the Landfill Allowance Trading Scheme[41] and potentially increase liabilities under this aspect of legislation (where diversion levels of biodegradable trade waste are lower than the diversion levels of biodegradable household waste).
- The overall amount of municipal waste is declining in Merseyside. This is a trend exhibited since 2007/8 and likely to be linked to a variety of factors including a slight decline in population estimates (although this is countered by higher housing numbers projected[42]), but the overall trend in reduction of arisings is similar to that experienced nationally, and so may be more a factor of the economic downturn as local variables. There have however also been significant local factors which may explain some of the reduction experienced such as the trade waste controls at HWRCs and the ongoing promotion of waste prevention measures including the extensive work on campaigns such as Love Food Hate Waste. As regards the trend going forwards, it would be anticipated that waste arisings will 'bounce back' to a certain extent when the economy recovers, and in response to projected increases in housing. The waste management issues are the focus of this SEA and are addressed through all the SEA objectives.
- The public health perception and statistics for residents of Merseyside are lower than the national average with a lower life expectancy. There is no correlation with waste management services identified, although it is recognised that waste management services have a higher than average (for industrial sectors) number of accidents and incidents to workers, and occasionally to members of the public through for example waste collection services. Data is being gathered on incidents related to waste management services across the partnership, to establish whether there are any trends observed in this area. The movement and treatment of waste will also add to the emissions burden which may be sensitive in some areas, notably adjacent to vehicle access routes or waste facilities and in AQSA. These site specific aspects are considered in waste development documents and the planning process. Public health

[40] Directive 1999/31/EC on the Landfilling of waste
[41] Landfill Allowance Trading Scheme (England), Regs, 2004, 2005
[42] It is observed that households with fewer persons in them generate more waste per person than households with a greater number of inhabitants.

impacts are addressed through SEA Objective 4, and with regard to local amenity issues in SEA Objective 8.

- In addition to the comments made above relating waste arisings to housing and population, the nature of housing, the use of 'infill' development and the trend of less people living per household lends itself to smaller properties and multi occupancy properties which may present issues with regards to having adequate storage capacity for recyclables. There are currently a higher than average (for the North West) proportion of flats or multi tenement properties for both Liverpool and Sefton. This may present a challenge for the Strategy in terms of service delivery. Engaging and involving residents in the delivery of the service is addressed through SEA Objective 5, and overall waste management performance through SEA Objectives 2 & 3.
- There have been significant issues associated with fly-tipping, notably in Liverpool, but also on the Wirral, and a trend of increasing incidents noted by the Environment Agency in 2009/10. Access to adequate waste management facilities, enforcement, charging mechanisms and communications / education initiatives can all influence the number and likelihood of fly-tipping incidents. Fly-tipping impacts are addressed through SEA Objective 7.
- There is the potential of flooding in Merseyside from both of the river systems (Mersey & Alt) and also in terms of tidal flooding in areas of Sefton and the Wirral. Flood defences have been improved over the last 20 years, and there is the link with climate change emissions identified previously.
- The quality of water has been improving and there is the potential for some impacts through waste management activity. This may be either through illegal deposit / release of waste through fly-tipping (noted above) or through emissions from waste treatment processes. Emissions from waste management facilities will be governed by the environmental permit for a facility and are regulated by the Environment Agency. Any issue of local sensitivities to emissions (including for groundwater) will also be addressed through the planning process, and site specific issues such as these are not dealt with through this Strategy. A broad (non-site specific) assessment of the Strategy impacts to water is however considered through SEA Objective 9.
- The land in Merseyside is predominantly urban with some significant areas of contaminated land / priority areas. The impact of the waste service on land and soil is a factor that will be governed by the nature of any waste treatment process and the specific location in question. Site specific issues such as these are not dealt with through this Strategy. A broad (non-site specific) assessment of the Strategy impacts to land is however considered through SEA Objective 10.
- Air quality impacts may be localised for example around waste management facilities or more general in terms of transport routes used by waste collection and bulk haul vehicles. There are some sensitive areas in Merseyside predominantly around NO_2 and PM10. The site specific aspects are outside of the remit of this Strategy, however general consideration has been made as regards the emissions from different options

within the strategy as regards collection and treatment. In many cases recycling of waste avoids emissions to air that would otherwise have occurred. A broad (non-site specific) assessment of the Strategy impacts to air is however considered through SEA Objective 11.

- There are potential opportunities to transport wastes / recyclables via alternative (non road) routes in Merseyside via the strong rail and waterway routes in the city region. A broad (non-site specific) assessment of the Strategy impacts as regards transport is considered through SEA Objective 15.
- The social and economic challenges of areas of extreme deprivation in the Partnership area (notably in parts of Liverpool and Knowsley) need to be considered in the management of the service going forward. These challenges may be exacerbated by the impact of the economic downturn.
- All Districts have a higher than average (England) unemployment rate, with Liverpool exhibiting very high unemployment. There is some potential for employment / voluntary work or up-skilling through waste management services / social enterprises related to refurbishment of goods, recycling or communications activities. Economic and wider employment aspects are addressed through SEA Objectives 12, 13 & 14.
- There are some sensitive biodiversity sites and priorities for Merseyside and the impact of the waste service on flora and fauna is a factor that will be governed by the nature of any waste treatment process in particular and the specific location in question. Site specific issues such as these are not dealt with through this Strategy, although broad consideration of wider environmental issues such as the ecological footprint is assessed. A broad (non-site specific) assessment of the Strategy impacts on biodiversity is considered through SEA Objective 16.
- The challenge of 'one planet living' and consuming resources at a manner that the world can sustain is a challenge for all areas in the developed world. Waste prevention, re-use, recycling, composting and energy recovery helps reduce demand of raw and scarce materials, whilst behavioural change activities can also influence consumption levels. Waste arisings are falling at present, and this is partly driven by the economic downturn. Improved resource management is a measure considered in this SEA. These aspects are considered through SEA Objectives 17, 18, 19 & 20.
- Merseyside has a range of buildings of cultural importance, notably focussed in Liverpool, and the impact of the waste service on buildings and heritage is a factor that will be governed by the appearance of any waste treatment process and access routes to the facility/ies in particular and associated with the specific location in question. Site specific issues such as these are not dealt with through this Strategy. A broad (non-site specific) assessment of the Strategy impacts to buildings / sites of cultural importance is however considered through SEA Objective 21.
- The landscape of Merseyside is diverse with dense urban development and coastal areas of special scientific interest, impact of the waste service on the landscape is a factor that may be governed by the appearance of collection receptacles, any waste

deposit / treatment process and other aspects associated with misuse of the service (e.g. fly-tipping). These may be generic issues associated with delivery of the service but are primarily associated with the specific location in question. Site specific issues such as these are not dealt with through this Strategy, however some wider issues (e.g. around fly-tipping) are addressed. A broad (non-site specific) assessment of the Strategy impacts to the landscape of Merseyside is however considered through SEA Objective 22.

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7. Objectives and Indicators

The environmental effects of the revised JMWMS and its alternatives will be analysed and compared against a series of SEA criteria. As previously discussed the waste strategy was assessed against a wider set of sustainability criteria that consider both potential economic and social impacts of the strategy.

These SEA assessment criteria have been drawn up with reference to those produced for the SA of the Merseyside Waste Development Plan Document and the sustainability objectives developed during the SA of the updated JMWMS in 2008 which was carried out using the North West SA toolkit.

The criteria were also cross referenced with the Schedule 2 categories in the SEA Regulations and the key themes for the strategy identified in Section 4.1

Through consultation with the Merseyside Senior Officer Working Group on waste management, agreement on the scope of the SEA assessment criteria for the JMWMS review has been obtained and 22 SEA objectives produced. Wording to some of the SEA assessment criteria were also revised following feedback from Consultees.

A summary of the revised SEA Criteria is contained within Table 27.

Table 27 Revised SEA Assessment Criteria

No	SEA Objective	Indicator for measurement (where applicable)
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	tonnes of carbon dioxide (CO_2) equivalent, over 100 year timescale
2	To reduce municipal waste generation, including hazardous waste.	kg of municipal waste per person. Qualitative assessment of hazardous waste.
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	kg of household waste per person kg of residual hh waste per household % of hh waste reused % hh waste recycling rate % of hh waste recovered % of household waste sent to landfill
4	To minimise the adverse impacts of waste management activity on human health.	Human toxicity measure (WRATE)
5	To engage with all the members of the community in the development and delivery of waste management services.	Qualitative view of accessibility / engagement Coverage of WM systems
6	To lead by example in the provision of in-house waste management services.	Qualitative assessment
7	To reduce the amount of litter or fly-tipping in local communities.	Flycapture data
8	To minimise the impact on local amenity (noise, dust,	Qualitative assessment

No	SEA Objective	Indicator for measurement (where applicable)
	light, vermin, odour).	
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	Freshwater Aquatic Ecotoxicity measure Eutrophication measure Fly-tipping
10	To protect, manage and restore land and soil quality.	Qualitative assessment
11	To minimise adverse effects of waste management on air quality.	Human toxicity measure (WRATE) Acidification measure (SO2 equivalents)
12	To encourage sustainable economic growth.	Qualitative assessment
13	To encourage innovation as well as research and development together with knowledge transfer.	Qualitative assessment
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	Qualitative assessment
15	To reduce the environmental impacts of transportation associated with waste management.	Qualitative assessment
16	To protect, manage and enhance biodiversity and geodiversity	Ecological Footprint
17	To reduce the ecological footprint of waste management on Merseyside.	Ecological footprint
18	To use water and mineral resources prudently and efficiently.	Abiotic Resource Deletion (WRATE)
19	To promote more sustainable means of energy generation and fuel usage.	Qualitative assessment
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	Qualitative assessment
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	Qualitative assessment
22	To conserve and enhance the landscape as regards waste management activity/impacts.	Fly-tipping Qualitative assessment

8. Assessment of Strategy Objectives

The waste management strategy objectives provide a framework for implementation of the strategy in Merseyside. The strategic objectives in the waste strategy document are set out in Section 4.1 of this report and form the basis of the waste management activity in Merseyside. The detailed delivery of the strategy will be set out in individual district council action plans (DCAPs) and an action plan for the Merseyside Waste Disposal Authority that will accompany the strategy.

The 10 strategic objectives reflect national, regional and local government policy and were developed to reflect the needs of Merseyside as mentioned previously in Section 6. The objectives in the draft strategy have been assessed against the SEA objectives and analysed according to the scale of impact/effect discussed in Section 3.2 and summarised below.

Major positive effect	++
Positive effect	+
Neutral effect	0
Negative effect	-
Major negative effect	--
Uncertain or unknown impact	?
Both positive and negative effect	+/-
Major positive and negative effects	++/--

A short discussion of the assessment and proposed mitigations is included after Table 28 and takes into consideration any cumulative impacts, secondary impacts, synergistic impacts and whether there are short or longer term issues.

Table 28 Assessment of Core Strategy Objectives against SEA Objective

No	SEA Objective	Core Strategy Objectives									
		1. Reduce the climate change/carbon impacts of waste management	2.Maximise prevention of waste	3.Maximise landfill diversion/ recovery of residual waste	4.Maximise sustainable economic activity associated with waste management	5.Reduce the ecological footprint of waste management activities	6.Promote behavioural/cultural change that delivers the strategy	7.Promote the use of renewable energy	8.Achieve high recycling = 50-55%	9.Promote resource efficiency	10.Provide sufficient capacity for waste management activity
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	++	++	++	+	++	+	++	++/-	+	+
2	To reduce municipal waste generation, including hazardous waste.	++	++	+	+/0	++	++	0	+/-	++	+/-
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	++	++	++	++	++	++	+/-	++	++	+
4	To minimise the adverse impacts of waste management activity on human health.	+/0	+	+/-	0	+/0	0	+	+/-	0	+/-
5	To engage with all the members of the community in the development and delivery of waste management services.	+	+	+	++	+	++	0	++	0	+
6	To lead by example in the provision of in-house waste management services.	+	+	+	++	+	+	+/0	+/0	+	0
7	To reduce the amount of litter or fly-tipping in local communities.	+/-	0/--	0	0	+/-	++	0	+/-	0	+/0
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	0	++/-	+/-	0	0	+	+/-	+/-	0	+/-
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	+/0	0	+/0	0	+	+	0	0/-	0	+/-
No	SEA Objective	Core Strategy Objectives									

		1. Reduce the climate change/carbon impacts of waste management	2.Maximise prevention of waste	3.Maximise landfill diversion/ recovery of residual waste	4.Maximise sustainable economic activity associated with waste management	5.Reduce the ecological footprint of waste management activities	6.Promote behavioural/cultural change that delivers the strategy objectives	7.Promote the use of renewable energy	8.Achieve high recycling = 50-55%	9.Promote resource efficiency	10.Provide sufficient capacity for waste management activity
10	To protect, manage and restore land and soil quality.	0	0	+/0	0	+/0	+	0	+/-	0	0
11	To minimise adverse effects of waste management on air quality.	+	+	+/-	0	0	0	+	+/-	0	+/-
12	To encourage sustainable economic growth.	0	+/-	+	++	0	+/0	0	+	++	0
13	To encourage innovation as well as research and development together with knowledge transfer.	+	+	+	+	+	+	+	+	+	0
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	0	+/-	+	++	0	+	+/0	+	+/0	+/0
15	To reduce the environmental impacts of transportation associated with waste management.	+/-	+	+/-	+/-	+/-	+/-	0	+/-	+/-	+/-
16	To protect, manage and enhance biodiversity and geodiversity	+/0	+	+	0	++	+/0	0	0	+	+/-
17	To reduce the ecological footprint of waste management on Merseyside.	++	++	+	+	++	+	++	++/-	++	+/-
18	To use water and mineral resources prudently and efficiently.	++	++	+	+	++	+	++	++	++	0
19	To promote more sustainable means of energy generation and fuel usage.	+	+	+/-	0	+	0	++	+/-	+	0
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	++	++	+/-	+	++	0	+	++/-	++	0
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	0	+/-	0	+	0	0	+/-	0	+/-
22	To conserve and enhance the landscape as regards waste management activity/impacts.	+	+	++/-	+/-	+	+/0	+/-	+/-	+	+/-

The overall impact of the Strategy objectives in terms of the SEA objectives is generally positive and demonstrates that the Merseyside JMWMS has adopted a sustainable approach to waste management and resource efficiency. Each of the SEA objectives is supported by at least one of the draft Strategy Objectives. The key impacts in relation to each Strategy Objective and associated mitigation issues are discussed below.

8.1. Objective 1 - Reduce the climate change/carbon impacts of waste management

Objective 1 in the Strategy seeks to demonstrate continuous improvement in the reduction of carbon emissions from the municipal waste management service. All waste management choices should seek to optimise carbon reduction wherever practicable.

This objective has a significant positive impact against six of the SEA criteria, in the themes of:

- Climate change;
- Reduction in municipal waste generation;
- Abide by the waste hierarchy;
- Reduction in ecological footprint;
- Prudent & efficient use of water and mineral resources; and
- Maximise energy efficiency.

The benefits associated with these themes are directly related to a reduction in carbon emissions through waste management service decisions and therefore a reduction in climate change impact. The main reason for the positive impact across these themes is a result of better use of resources (including a reduction in municipal waste) as waste moves up the waste hierarchy and is diverted from landfill (and subsequent methane reduction).

The impact of Objective 1, on the following two themes was deemed to be mixed having the potential for positive and / or negative effects:

- Reduction in the amount of litter or fly tipping in local communities;
- Reduction in environmental impact of transportation associated with waste management.

There is potential for mechanisms introduced for waste reduction e.g. restricted bin capacity and reuse (e.g. bulky waste) charging to increase fly tipping if inappropriately implemented. Transport may increase when delivering the carbon benefits of diverting material from landfill and to move waste up the hierarchy. The benefits of moving waste up the hierarchy generally outweigh the impact of carbon emissions from increased transport associated with recycling etc.

Indirect effects may also be observed through a reduction in the impact of waste management on climate change, for example through protecting and improving the quality of inland and ground waters.

Duration of impacts: Short to long term, the implementation of this objective is designed to continue throughout the Strategy period (to 2041).

Mitigation Issues:
The following mitigations also include linkages and interrelationships with other Strategy Objectives and criteria, including indirect, synergistic and secondary effects of delivering against this objective[43]:

- Sensitive consideration and design of waste management services, combined with effective education, communications and enforcement/ will help prevent or mitigate fly tipping.
- Optimising the design of collection and waste transport systems (including the use of alternatives such as biofuels) together with the use of local markets and outlets for recyclables and waste outputs will help reduce transport impacts.
- Consideration of appropriate use of intermodal transport (e.g. rail, water transport) may enable greater movement of secondary resources derived from waste without significant increased carbon / local air quality impacts.
- A focus on the top end of the waste hierarchy and through collecting recyclables that yield higher carbon returns would generate improved performance against this objective.
- Improved efficiency of waste management infrastructure / vehicles / energy recovery processes would enable improved performance against this objective.

8.2. Objective 2 - Maximise prevention of waste

Objective 2 in the strategy seeks to prevent the amount of waste produced per household on Merseyside. This objective has a significant positive impact against six of the SEA criteria, in the themes of:

- Climate change;
- Reduction in municipal waste generation;
- Abide by the waste hierarchy;
- Reduction in ecological footprint;
- Prudent & efficient use of water and mineral resources; and

[43] Further detail is included in Appendix 4

- Maximise energy efficiency.

The main reason for the positive impact across these themes is due to less waste being generated and therefore offsetting burdens from the product chain and the impacts of the management of these products when they arise as wastes.

The impact of Objective 2 on the following three themes was deemed to be mixed having the potential for both positive and / or negative effects:

- Minimise impact on local amenity (noise, dust, light, vermin, odour);
- Encourage sustainable economic growth; and
- Encourage formation, sustaining and growth of voluntary and community networks and schemes.

If measures introduced to encourage waste prevention (e.g. home composting, green waste charging, junk mail schemes, alternate weekly collections etc.) are not effectively communicated to and thus managed by residents, there is potential to increase the impact on local amenity through flies, odour, side waste etc. The cost associated with implementing waste prevention measures could be deemed to have a negative effect on economic growth for some businesses but others are likely to save more money in the long run through a reduction in waste costs.

Community groups could have a positive role to play in preventing waste through operation of reuse scheme and raising awareness of waste prevention e.g. through master composters. However, potential negative effects could be observed where waste is prevented obviating the need for community groups (e.g. where community reuse or recycling schemes are not supported due to a preference on waste prevention).

There is potential for mechanisms introduced to increase waste reduction (e.g. restricted bin capacity and reuse e.g. bulky waste charging) to have a negative effect and increase fly tipping if inappropriately implemented.

Duration of impacts: Short to long term, the implementation of this objective is designed to continue throughout the Strategy period (to 2041).

Mitigation Issues:

The following mitigations also include linkages and interrelationships with other Strategy objectives and criteria, including indirect, synergistic and secondary effects of delivering against this objective:-

- Sensitive consideration and design of waste management services, combined with effective education, communications and enforcement/policing will help prevent or mitigate fly tipping.

- The impact of waste prevention measures on businesses and community groups should be considered and, where appropriate, mitigating measures be introduced for any negative impacts.

8.3. Objective 3 - Maximise landfill diversion/ recovery of residual waste

Objective 3 in the Strategy seeks to maximise the diversion of municipal waste from landfill to 10% by 2020 and 2% by 2030 in line with the residual treatment contract. Where waste is not recycled or composted, ensuring that value can be recovered from it, through alternative products, heat and/or power.

This objective has a significant positive impact against two of the SEA criteria, in the themes of:

- Climate change; and
- Abide by the waste hierarchy.

The benefits associated with these themes are directly related to diverting waste away from landfill and the movement of waste up the waste hierarchy. Diverting waste from landfill will reduce carbon emissions (through avoided landfill gas) and therefore a reduction in climate change impact.

The impact of Objective 3 on the following eight themes was deemed to be mixed having the potential for both positive and / or negative effects:

- Minimise impact on local amenity (noise, dust, light, vermin, odour);
- Minimise adverse effects on human health;
- Minimise adverse effects of waste management on air quality;
- Reduction in environmental impact of transportation associated with waste management;
- Promote more sustainable means of energy generation and fuel usage;
- Maximise energy efficiency;
- Protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance; and
- Conserve and enhance the landscape as regards waste management activity/impact.

The impact on human health will be dependent on the nature of alternative treatment methods, as a facility poorly run could have negative local impacts, conversely a well run facility may exhibit less impacts to human health than landfill (the baseline). Vehicle movements from treatment processes could raise the emissions burden around vehicle routes. Transport may well increase to meet objectives to increase the amount of material diverted from landfill and move waste up the hierarchy. This may impact on the local air quality and increase carbon emissions from transport. However, in Life Cycle terms the

benefits of moving waste up the hierarchy generally outweigh the impact of emissions from increased transport associated with recycling / reuse etc. This is because of avoided emissions elsewhere in the supply chain. However transport and treatment facilities may affect the *local* air quality proximal to sensitive sites / access routes.

The effect of diverting waste from landfill on the promotion of more sustainable means of energy generation and fuel usage was deemed to have mixed effects due to a decline in energy generation from landfill gas but the potential for some recovery options to generate increased energy through recovery processes. The impact on 'maximising energy efficiency' could be negative where the net energy use of waste treatment is higher than the baseline. The impact of facilities on SEA Objective 21 (Buildings & Heritage) and 22 (Landscape) will depend on the sensitivity of locations and the type of facility being used, less landfill sites may exhibit a positive impact on the landscape.

Duration of impacts: Short to long term, the implementation of this objective is designed to continue throughout the Strategy period (to 2041).

Mitigation Issues:

The following mitigations also include linkages and interrelationships with other Strategy objectives and criteria, including indirect, synergistic and secondary effects of delivering against this objective:

- Optimising the design of collection and waste transport systems together with the use of local / regional markets / reprocessing, reuse options and outlets for recyclables and waste outputs will help reduce transport impacts.
- Consideration of appropriate use of intermodal transport may enable greater movement of secondary resources derived from waste without significant increased carbon / local air quality impacts
- The planning system and associated good practice (e.g. in waste management facility design) in this area should ensure sites are sensitively considered to address any local concerns over visual / amenity impacts and appropriateness with regards to access / local environmental issues
- The environmental permitting should ensure that Best Available Techniques are adopted as regards emissions and plant processes are concerned, notably for the more significant and potentially polluting infrastructure.
- The procurement for new infrastructure should also consider 'future proofing' for improved emissions standards that may arise in future (e.g. through provision of space on sites for additional emissions control equipment).
- The procurement of new infrastructure should also consider stipulating best practice environmental standards to new facilities, where appropriate, including Environmental Management Systems, Design Standards (e.g. BREEAM), high quality specifications for outputs, use of recycled materials in site construction, energy efficiency criteria etc.

- Improved efficiency of waste management infrastructure / vehicles / energy recovery processes would enable improved performance against this objective.

8.4. Objective 4 - Maximise sustainable economic activity associated with waste management

Objective 4 in the Strategy seeks to encourage sustainable economic activity associated with waste management, through the adoption of sustainable procurement strategies and working with organisations in the supply chain to improve how resources and recyclables are dealt with.

This objective has a significant positive impact against five of the SEA criteria, in the themes of:

- Abide by the waste hierarchy;
- Engagement with members of the community in development and delivery of waste services;
- Lead by example in the provision of in-house waste management services;
- Encourage sustainable economic growth; and
- Encourage formation, sustaining and growth of voluntary and community networks and schemes.

The benefits associated with these themes relate to the opportunities to lead by example with in-house sustainable procurement strategies and working with organisations to help move waste up the hierarchy, potentially increasing competitiveness and encouraging innovation. Moving waste up the hierarchy may provide increased opportunities to work with voluntary and community networks/schemes e.g. collections/re-use schemes,etc processing opportunities and improve how resources and recyclables are dealt with.

The impact of Objective 4, on the following two themes was deemed to be mixed, having the potential for both positive and / or negative effects:

- Reduction in environmental impact of transportation associated with waste management.
- Conserve and enhance the landscape as regards waste management activity/impact.

Transport may increase to meet objectives to divert more waste away from landfill and move waste up the hierarchy whilst increased resource efficiency and sustainable procurement may reduce the import (associated transport) impact of materials However, in Life Cycle terms the benefits of moving waste up the hierarchy generally outweigh the impact of emissions from increased transport associated with recycling / reuse etc. This is because of avoided emissions elsewhere in the supply chain. Transport and treatment facilities may affect the *local* air quality proximal to sensitive sites / access routes and

there could be some negative impact possible on the landscape through more facilities handling waste, but with an overall benefit on environmental impact in general.

Duration of impacts: Short to long term, the implementation of this objective is designed to continue throughout the Strategy period (to 2041).

Mitigation Issues:
The following mitigations also include linkages and interrelationships with other Strategy objectives and criteria, including indirect, synergistic and secondary effects of delivering against this objective:-

- Optimising the design of collection and waste transport systems together with the use of local / regional markets and outlets for recyclables and waste outputs will help reduce transport impacts.
- Consideration of appropriate use of intermodal transport may enable greater movement of secondary resources derived from waste without significant increased carbon / local air quality impacts
- The planning system and associated good practice (e.g. in waste management facility design) in this area should ensure sites are sensitively considered to address any local concerns over visual / amenity impacts and appropriateness with regards to access / local environmental issues

8.5. Objective 5 - Reduce the ecological footprint of waste management activities

Objective 5 in the Strategy seeks to demonstrate continuous improvement in reducing the ecological footprint of municipal waste management services on Merseyside, hectares per person.

This objective has a significant positive impact against seven of the SEA criteria, in the themes of:

- Climate change;
- Reduction in municipal waste generation;
- Abide by the waste hierarchy;
- Protect, manage and enhance biodiversity and geodiversity;
- Reduction in ecological footprint;
- Prudent & efficient use of water and mineral resources; and
- Maximise energy efficiency.

The benefits associated with these themes relate to the opportunities from moving waste up the hierarchy may provide on reducing the ecological footprint of waste management

activities. The benefits include efficient use of resources and the wider benefits this may have for example on protecting, enhancing and managing biodiversity and geodiversity.

The impact of Objective 5, on the following two themes was deemed to be mixed having the potential for both positive and / or negative effects:

- Reduction in the amount of litter or fly tipping in local communities; and
- Reduction in environmental impact of transportation associated with waste management.

There is potential for mechanisms introduced for waste reduction (e.g. restricted bin capacity, charging for green waste collections) and reuse (e.g. bulky waste charging) to increase fly tipping if inappropriately implemented. Transport may increase to meet objectives to increase the amount of material diverted from landfill and to move waste up the hierarchy. However, in Life Cycle terms the benefits of moving waste up the hierarchy generally outweigh the impact of emissions from increased transport associated with recycling / reuse etc. This is because of avoided emissions elsewhere in the supply chain. However transport and treatment facilities may affect the *local* air quality proximal to sensitive sites / access routes.

Duration of impacts: Short to long term, the implementation of this objective is designed to continue throughout the Strategy period (to 2041).

Mitigation Issues:

The following mitigations also include linkages and interrelationships with other Strategy objectives and criteria, including indirect, synergistic and secondary effects of delivering against this objective:

- Optimising the design of collection and waste transport systems together with the use of local / regional markets and outlets for recyclables and waste outputs will help reduce transport impacts.
- Consideration of appropriate use of intermodal transport may enable greater movement of secondary resources derived from waste without significant increased carbon / local air quality impacts
- The planning system and associated good practice (e.g. in waste management facility design) in this area should ensure sites are sensitively considered to address any local concerns over visual / amenity impacts and appropriateness with regards to access / local environmental issues
- Sensitive consideration and design of waste management services, combined with effective education, communications and enforcement/policing will help prevent or mitigate fly tipping.

8.6. Objective 6 - Promote behavioural/cultural change that delivers the strategy objectives

Objective 6 in the Strategy seeks to promote behaviour change through raising awareness of waste and resource management issues, to lead by example, encourage residents to get involved and make it easier to take part in waste prevention and reuse activities. This objective has a significant positive impact against four of the SEA criteria, in the themes of:

- Reduction in municipal waste generation;
- Abide by the waste hierarchy;
- Engagement with members of the community in development and delivery of waste services; and
- Reduction in the amount of litter or fly tipping in local communities.

The benefits associated with these themes relate to the opportunities for education and awareness raising of waste management issues which can lead to behaviour change. By changing behaviours, residents and businesses should manage their waste more efficiently and reduce the amount of waste produced in the first place. There should also be opportunities for voluntary and community initiatives to be developed.

Objective 6 was deemed to have a mixed impact having the potential for both positive and / or negative effects on one theme:

- Reduction in environmental impact of transportation associated with waste management.

Transport may increase to meet objectives to increase the amount of material diverted from landfill and move waste up the hierarchy. However, in Life Cycle terms the benefits of moving waste up the hierarchy generally outweigh the impact of emissions from increased transport associated with recycling / reuse etc. This is because of avoided emissions elsewhere in the supply chain. However transport and treatment facilities may affect the *local* air quality proximal to sensitive sites / access routes.

Duration of impacts: Short to long term, the implementation of this objective is designed to continue throughout the Strategy period (to 2041).

Mitigation Issues:

The following mitigations also include linkages and interrelationships with other Strategy objectives and criteria, including indirect, synergistic and secondary effects of delivering against this objective:-

- Optimising the design of collection and waste transport systems together with the use of local / regional markets / reprocessing and outlets for re-use, recyclables and waste outputs will help reduce transport impacts.

- Consideration of appropriate use of intermodal transport may enable greater movement of secondary resources derived from waste without significant increased carbon / local air quality impacts
- The Planning system and associated good practice (e.g. in waste management facility design) in this area should ensure sites are sensitively considered to address any local concerns over visual / amenity impacts and appropriateness with regards to access / local environmental issues
- Encourage sustained community involvement through effective and targeted communications in consideration of the waste hierarchy and making linkages with wider environmental protection issues (e.g. carbon, fly-tipping, energy).
- Facilitate comprehensive engagement and participation through targeted waste management systems that are accessible to all members of the community including 'hard to reach' areas, such as flats and multiple-occupancy dwellings

8.7. Objective 7 - Promote the use of renewable energy

Objective 7 in the Strategy seeks to ensure all waste management decisions/infrastructure decisions take account of the opportunities for using/generating renewable energy and fuels. This objective has a significant positive impact against four of the SEA criteria, in the themes of:

- Climate change;
- Reduction in ecological footprint;
- Prudent & efficient use of water and mineral resources; and
- Promote more sustainable means of energy generation and fuel usage.

The benefits associated with these themes relate to the opportunities from diverting waste away from landfill and the potential to generate renewable energy from waste. When considered against other sustainability criteria this criteria exhibits minor or indirect positive impacts. For example there is potential for community involvement with renewable energy schemes such as community anaerobic digestion facilities. There are also opportunities to purchase/use renewable energy in-house to encourage behaviour change and raise awareness of the benefits of renewable energy.

The impact of Objective 7, on the following three themes was deemed to be mixed having the potential for both positive and / or negative effects:

- Abide by the waste hierarchy;
- Minimise impact on local amenity (noise, dust, light, vermin, odour);
- Conserve and enhance the landscape as regards waste management activity/impact.

With regards to abiding by the waste hierarchy, it is recognised that the waste hierarchy is not a strict progression in terms of environmental performance, and that in some instances options lower in the hierarchy may be more appropriate for some materials than an alternative option higher in the hierarchy. However it is important to consider the hierarchy as a guide in decision making for waste management services (to avoid the situation arising that for example waste recovery is used as a general preference to viable recycling or reuse). This point was made by the Environment Agency in response to the consultation to the scoping report (see Appendix 1). As a consequence this objective will be re-worded in the JMWMS to also consider the waste hierarchy.

Transport may, depending on location, increase to meet objectives to divert more waste from landfill through energy recovery options and move waste up the hierarchy. This increase in transport may impact on the local air quality. The appearance of some renewable energy systems may exhibit a visual impact on the landscape for example a treatment facility with a stack.

Duration of impacts: Short to long term, the implementation of this objective is designed to continue throughout the Strategy period (to 2041).

Mitigation Issues:
The following mitigations also include linkages and interrelationships with other Strategy objectives and criteria, including indirect, synergistic and secondary effects of delivering against this objective:

- Optimising the design of collection and waste transport systems (including the use of alternative fuels such as biofuels) together with the use of local / regional markets / reprocessing and outlets for recyclables and waste outputs will help reduce transport impacts.
- Consideration of appropriate use of intermodal transport may enable greater movement of secondary resources derived from waste without significant increased carbon / local air quality impacts
- The planning system and associated good practice (e.g. in waste management facility design) in this area should ensure sites are sensitively considered to address any local concerns over visual / amenity impacts and appropriateness with regards to access / local environmental issues
- Reword objective to include consideration of the waste hierarchy.

8.8. Objective 8 - Achieve high recycling = 50-55%

Objective 8 in the Strategy seeks to meet statutory recycling targets and exceed these where there are opportunities to deliver environmental and economic benefits. This objective has a significant positive impact against three of the SEA criteria, in the themes of:

- Abide by the waste hierarchy;
- Engagement with members of the community in development and delivery of waste services; and
- Prudent & efficient use of water and mineral resources.

The benefits associated with these themes relate to the opportunities for engagement with members of the community on waste management issues to encourage behaviour change. The behaviour change will help move waste up the hierarchy and increase recycling levels, with the consequent resource use, carbon and wider environmental benefits associated.

Objective 8 was deemed to have a mixed impact (having both positive and negative effects) across 14 themes. The main reasons for some of the negative impacts relate to the fact that transport may increase to meet recycling targets. The benefits of recycling generally outweigh the impact of carbon emissions from increased transport associated with recycling etc.

There is potential for mechanisms introduced to reduce the amount of residual waste and encourage recycling (e.g. restricted bin capacity, alternate week collection) to lead to an increase in flytipping if inappropriately implemented. The provision of additional containers and infrastructure for recycling may detract from the appearance of sites / areas of historic environment importance or local sites or towns of cultural/historical/ archaeological importance.

Public health impacts from increased collection services in terms of emissions and the potential for accidents was also an area that could exhibit negative impacts. This could be mitigated by managing collection frequencies, optimising route planning and monitoring contractor performance as regards health and safety.

Duration of impacts: Short to long term, the implementation of this objective is designed to continue throughout the Strategy period (to 2041).

Mitigation Issues:

The following mitigations also include linkages and interrelationships with other Strategy objectives and criteria, including indirect, synergistic and secondary effects of delivering against this objective:-

- Optimising the design of collection and waste transport systems together with the use of local / regional markets and outlets for recyclables and waste outputs will help reduce transport impacts.
- Consideration of appropriate use of intermodal transport may enable greater movement of secondary resources derived from waste without significant increased carbon / local air quality impacts

- The planning system and associated good practice (e.g. in waste management facility design) in this area should ensure sites are sensitively considered to address any local concerns over visual / amenity impacts and appropriateness with regards to access / local environmental issues
- Sensitive consideration and design of waste management services, combined with effective education, communications and enforcement/policing will help prevent or mitigate flytipping.
- Ensure consideration of the waste hierarchy and wider economic / environmental issues in taking decisions on waste recycling services.
- Monitor, consider and seek to continually improve health & safety performance through collection / waste treatment procurement activity for waste services
- Facilitate comprehensive engagement and participation through targeted waste management systems and awareness campaigns that are accessible to all members of the community including 'hard to reach' areas, such as flats and multiple-occupancy dwellings

8.9. Objective 9 - Promote resource efficiency

Objective 9 in the Strategy seeks to reduce the amount of scarce resources entering the waste management system, recognising the value of materials that are produced as waste and supporting opportunities for producer responsibility. This objective has a significant positive impact against six of the SEA criteria, in the themes of:

- Reduction in municipal waste generation;
- Abide by the waste hierarchy;
- Reduction in ecological footprint;
- Encouraging sustainable economic growth
- Prudent & efficient use of water and mineral resources; and
- Maximise energy efficiency.

The benefits associated with these themes relate to the opportunities from moving waste up the hierarchy and supporting producer responsibility opportunities and more efficient use of resources.

Objective 9 was deemed to have a mixed impact potentially having both positive and / or negative effects) on one theme:

- Reduction in environmental impact of transportation associated with waste management.

Transport may increase to meet objectives to increase the amount of material diverted from landfill and move waste up the hierarchy. However, in Life Cycle terms the benefits of moving waste up the hierarchy generally outweigh the impact of emissions from increased transport associated with recycling / reuse etc. This is because of avoided emissions elsewhere in the supply chain. However transport and treatment facilities may affect the *local* air quality proximal to sensitive sites / access routes.

Duration of impacts: Short to long term, the implementation of this objective is designed to continue throughout the Strategy period (to 2030).

Mitigation Issues:

The following mitigations also include linkages and interrelationships with other Strategy objectives and criteria, including indirect, synergistic and secondary effects of delivering against this objective:-

- Optimising the design of collection and waste transport systems together with the use of local / regional markets / reprocessing and outlets for re-use, recyclables and waste outputs will help reduce transport impacts.
- Consideration of appropriate use of intermodal transport may enable greater movement of secondary resources derived from waste without significant increased carbon / local air quality impacts
- Encourage sustained community involvement through effective and targeted communications in consideration of the waste hierarchy and making linkages with wider environmental protection issues (e.g. carbon, fly-tipping, energy).
- The Planning system and associated good practice (e.g. in waste management facility design) in this area should ensure sites are sensitively considered to address any local concerns over visual / amenity impacts and appropriateness with regards to access / local environmental issues

8.10. Objective 10 - Provide sufficient capacity for waste management activity

Objective 10 in the strategy seeks to provide a flexible waste management service that gives residents a range of options to prevent, reduce, reuse, recycle and compost the waste they produce and provide sufficient capacity to deal with any waste remaining.

This objective was not deemed to have a significant positive impact against any of the SEA criteria. Objective 10 was deemed to have a mixed impact having the potential for both positive and negative effects on ten themes. It is important that there is sufficient capacity at waste management facilities but facilities need to be accessible. Ensuring facilities are accessible will reduce the negative impact associated with transport and the distance vehicles have to travel to get to waste management facilities.

The impact of waste management capacity on ecological footprint will be dependent on the number, type and capacity of waste management facilities. These factors will also affect the impact waste management facilities will have on the landscape and the historic environment of local sites or towns of cultural/historical/archaeological importance. The nature and size of facilities could affect the local air quality.

Duration of impacts: Short to long term, the implementation of this objective is designed to continue throughout the Strategy period (to 2030).

Mitigation Issues:

The following mitigations also include linkages and interrelationships with other Strategy objectives and criteria, including indirect, synergistic and secondary effects of delivering against this objective:

- Optimising the design of collection and waste transport systems and facilities (MRFS, Recovery Facilities, Recycling Centres etc together with the use of local / regional markets and outlets for recyclables and waste outputs will help reduce transport impacts.
- Consideration of appropriate use of intermodal transport may enable greater movement of secondary resources derived from waste without significant increased carbon / local air quality impacts
- The planning system and associated good practice (e.g. in waste management facility design) in this area should ensure sites are sensitively considered to address any local concerns over visual / amenity impacts and appropriateness with regards to access / local environmental issues
- The environmental permitting should ensure that Best Available Techniques are adopted as regards emissions and plant processes are concerned, notably for the more significant and potentially polluting infrastructure.
- The procurement for new infrastructure should also consider 'future proofing' for improved emissions standards that may arise in future (e.g. through provision of space on sites for additional emissions control equipment).
- The procurement of new infrastructure should also consider stipulating best practice environmental standards to new facilities, where appropriate, including Environmental Management Systems, Design Standards (e.g. BREEAM), high quality specifications for outputs, use of recycled materials in site construction, energy efficiency criteria and future environmental management.
- Improved efficiency of waste management infrastructure / vehicles / energy recovery processes would enable improved performance against this objective.

- Facilitate comprehensive engagement and participation through targeted waste management systems that are accessible to all members of the community including ‘hard to reach’ areas, such as flats and multiple-occupancy dwellings.

9. Assessment of Waste Prevention/ Reuse/ Recycling Options

As well as identifying the key options for the revised strategy, the 'Issues and Options' Study considered the range of delivery options, that could support the achievement of the strategy objectives and ensure that the local councils in the MHWP continue to work together to achieve lower carbon emissions, higher recycling targets and progress up the waste hierarchy.

Waste prevention activity was identified as a delivery option that could support the achievement of several strategy objectives. Waste prevention activity can be sub-divided into those options relating:

- to enforcement policies (e.g. those that restrict waste generation or disposal by limiting residual capacity or charging for green waste collections); and
- those relating to promotion and operation of campaigns that target behaviour to change patterns of household consumption (e.g. changing shopping habits, real nappy campaigns).

Reuse activities can also be sub-divided into those activities that are concerned with influencing behaviour (e.g. lobbying government[44], use of freecycle) and those that relate to direct support initiatives across Merseyside (e.g. bulky waste charging and support for refurbishment groups).

Recycling and composting options relate primarily to the range and type of services that can be provided by the partnership across all waste collection systems. Also of importance is a recycling campaign that involves education and communication with householders to encourage participation in the schemes that are being provided in order to help drive an increases in recycling levels and the improve the quality of materials collected. The issue of flats and multiple occupancy households was identified as a sustainability issue for Merseyside and therefore has implications for design of recycling systems to ensure maximum participation.

The SEA considers the environmental impact of different proposed options and mitigation measures to avoid or reduce the negative impacts (or enhance positive ones). The sustainability analysis identifies the anticipated nature of the environmental impact relevant to the SEA objectives and is presented in Table 29. A summary discussion of the results is included after Table 29 with the detailed explanation of individual scores provided in Appendix 4.

[44] Lobbying government was included in the original list of option but has since been incorporated as a recommendation.

A number of options in Table 29 have been grouped into activities with common themes, as follows:

- **Restricting residual capacity:**
  1 – Alternate Weekly Collections (AWC);
  9 - Reduced residual bin size/max recyclable;
  11 - No side waste - common policy.

- **Reuse activity:**
  2 - Bulky waste reuse;
  14 - Reuse campaigns;
  16 -Reuse/ Refurbishment support.

- **Recycling measures:**
  4 - Common recycling systems all authorities;
  5 - All WCAs collect same materials for recycling;
  6 - Trade waste recycling;
  7 - Street sweepings recycling;
  15 - Recycling campaigns; The remainder of the options assessed are analysed separately due to their distinctive characteristics.

No	SEA Objective	Restricting residual capacity	Reuse activity	Recycling measures	3 - Food waste plus IVC	3a - Food waste plus AD	8 - HWRC Recycling/ Reuse Sites Only	10 - Green waste charging	12 - Bulky waste charging;	13 - Waste prevention campaigns
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	+	+	+	++	++	+	+/?	+	+
2	To reduce municipal waste generation, including hazardous waste.	+	+	+/0	+/0	+/0	0	+	+	+
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	++	++	+/++	+/++	+/++	+	+	+/-	+
4	To minimise the adverse impacts of waste management activity on human health.	++/-	0	+/++	0/-	0/-	0	+/0	0	+/0
5	To engage with all the members of the community in the development and delivery of waste management services.	+/-	+/++	+/++	+/0	+/0	+/-	+/-	+/-	+/0
6	To lead by example in the provision of in-house waste management services.	0	+/0	+/0	+/0	+/0	0	0	0	+/0
7	To reduce the amount of litter or fly-tipping in local communities.	0/--	+	+/0	0	0	0/-	0/-	0/-	0
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	+/-	0	0/-	+/-	+/-	+	0/-	0/-	0
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	+/-	+/0	+/++	+/-	+/-	?	0	0	0
10	To protect, manage and restore land and soil quality.	0	0	0	+/++	+/++	0	0	0	0
11	To minimise adverse effects of waste management on air quality.	+	+/0	+/++	+/-	+/-	+/-	+/0	0	0
12	To encourage sustainable economic growth.	+	+	+	+	++	+	+/0	+/0	0
13	To encourage innovation as well as research and development together with knowledge transfer.	0	+/0	+/0	0	+/0	0	+/0	0	+
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	+	+	+	+/0	+/0	+/0	+/0	+/-	+/0
15	To reduce the environmental impacts of transportation associated with waste management.	+/-	+/-	+/-	-	-	0/-	+/0	+/0	+/0
16	To protect, manage and enhance biodiversity and geodiversity	+	+/0	+	++	++	+	+	+	+
17	To reduce the ecological footprint of waste management on Merseyside.	+	+	++	++	++	+	+	+	+
18	To use water and mineral resources prudently and efficiently.	+	+	++	+/0	+	+	0	+/0	+
19	To promote more sustainable means of energy generation and fuel usage.	+/0	0	+/0	0	++	0	0	0	0
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	+/-	+/-	+/-	0/-	++/-	+/0	+/0	+/0	+/0
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	0	0	0	0	0	0	0	0
22	To conserve and enhance the landscape as regards waste management activity/impacts.	0/-	0	0	0	0	0/-	0/-	0/-	+/0

The overall conclusion of assessing the recycling and composting options against the SEA objectives is generally assessed as positive. Moving waste up the waste hierarchy will divert more waste from landfill and thus have greater positive impacts on (reducing) emissions of greenhouse gases from landfill sites. Increasing levels of recycling minimises the need for virgin materials to be used in production through the use of recycled materials as alternatives to virgin products, has resource efficiency and carbon benefits. Carbon benefits may be enhanced through a focus on materials / goods with a high carbon benefit and also recovering energy from food waste through anaerobic digestion. It may be more appropriate to set future strategic targets around carbon benefits as opposed to traditional tonnage based targets. Waste prevention avoids carbon impacts across the entirety of the product chain and so is preferable to all other options. It also has a positive impact on reducing the ecological footprint of waste management on Merseyside and contributes to the protection and enhancement of global biodiversity and geodiversity.

A number of waste prevention/reuse/recycling options were deemed to have a mixed impact, potentially having both positive and / or negative effects against the following criteria:

- *Engagement with members of the community in development and delivery of waste services* – there is the potential for resistance from householders when a charge is introduced for some services. Appropriate engagement and targeted communications are required to explain the rationale for collection measures, and charges should be sensitively applied. There may be opportunities for the community to get involved in waste activities such as becoming home composting / or other prevention campaigns such as Love Food, Hate Waste advisors.
- *Reduction in the amount of litter or fly tipping in local communities* – the introduction of schemes such as green waste charging, 'recycling / reuse only' Household Waste Sites and bulky waste charging have the potential for short term, temporary fly-tipping incidents based on the collection measures implemented.
- *Minimise impact on local amenity (noise, dust, light, vermin, odour)* - The collection of materials for recycling and composting could lead to an increase in road transportation and thus road traffic impacts e.g. noise and local air quality. There is potential odour and dust impacts from composting sites and flies/odour from alternate weekly collection if not appropriately managed. Waste management facilities are required to operate within strict environmental permit standards and will have controls in place to minimise potential emissions to air and water courses and control nuisances such as noise, dust and odour.
- *Protect, improve and where necessary restore the quality of inland, estuarine and ground waters* – certain collection measures implemented have the potential for increase in fly tipping which could impact on water quality. In addition increased

organic waste composting increases the risk of potential run off from use of the compost and digestate.

- *Minimise adverse effects of waste management on air quality* - WRATE scores for human toxicity against food waste options to In Vessel Composting (IVC) and Anaerobic Digestion (AD) were poorer than the baseline score, this is likely to be for example due to the risk from process emissions and additional transport. However, all processing facilities have the potential for air pollution. The potential impact would depend on the location, design and operation of the facility and such issues would be addressed through the planning process as part of planning applications and through the site permitting requirements controlled by the Environment Agency.

- *Reduction in environmental impact of transportation associated with waste management* – An increase in quantities of material collected for recycling have the potential for increased road transport in order to collect materials from householders and transfer to reprocessing facilities. The actual impacts will depend on the balance of collection frequencies, container type, location of transfer and reprocessing facilities and the proximity to collection rounds.

- *Maximise energy efficiency* - Increased recycling reduces the need for fossil fuels to be used in product manufacture. However, there is a potential impact from increase in road transportation and hence fuel usage due to increased recycling/composting. AD can provide vehicle fuel (and biogas for other energy recovery applications) to reduce fossil fuel consumption.

- *Conserve and enhance the landscape as regards waste management activity/impact* – there is the potential for a short term, temporary increase in fly-tipping incidents based on certain collection options (e.g. charging for green waste/bulky waste) which could impact on the landscape.

The benefits associated with these themes relate to the opportunities from moving waste up the hierarchy and supporting producer responsibility opportunities and more efficient use of resources. The impact of lobbying government and retailers was deemed to be unknown in terms of the effect on SEA criteria as the impact will depend on the nature of lobbying events undertaken.

Duration of impacts: Short to long term, the implementation of these options is designed to continue throughout the Strategy period (to 2041).

Mitigations

Specific mitigations that would enhance the performance of prevention, recycling, reuse and composting options, including indirect, synergistic, secondary and cumulative impacts are:

- Optimising the design of collection and waste transport systems together with the use of local / regional markets and outlets for recyclables and waste outputs will help reduce transport impacts;
- Consideration of appropriate use of intermodal transport may enable greater movement of secondary resources derived from waste without significant increased carbon / local air quality impacts;
- Sensitive consideration and design of waste management services, combined with effective education, communications and enforcement/policing will help prevent or mitigate fly tipping;
- A focus on the top end of the waste hierarchy and through collecting recyclables that yield higher carbon returns would generate improved performance against the climate change objective;
- Ensure consideration of the waste hierarchy and wider economic / environmental issues in taking decisions on waste recycling services;
- Improved efficiency of waste management infrastructure / vehicles / energy recovery processes would enable improved performance against several objectives;
- The impact of waste prevention measures on businesses and community groups should be considered and, where appropriate, mitigating measures be introduced for any negative impacts;
- Encourage sustained community involvement in consideration of the waste hierarchy and making linkages with wider environmental protection issues (e.g. carbon, fly-tipping, energy);
- Facilitate comprehensive engagement and participation through targeted waste management systems that are accessible to all members of the community including 'hard to reach' areas, such as flats and multiple-occupancy dwellings;
- The planning system and associated good practice (e.g. in waste management facility design) in this area should ensure sites are sensitively considered to address any local concerns over visual / amenity impacts and appropriateness with regards to access / local environmental issues;
- The environmental permitting system should ensure that Best Available Techniques are adopted as regards emissions and plant processes are concerned, notably for the more significant and potentially polluting infrastructure;
- The procurement for new infrastructure should also consider 'future proofing' for improved emissions standards that may arise in future (e.g. through provision of space on sites for additional emissions control equipment);
- The procurement of new infrastructure should also consider stipulating best practice environmental standards to new facilities, where appropriate, including Environmental

Management Systems, Design Standards, high quality specifications for outputs, use of recycled materials in site construction, energy efficiency criteria etc;

- Monitor, consider and seek to continually improve health & safety performance through collection / waste treatment procurement activity for waste services.

10. Assessment of Service/Organisation Options

The 'Issues and Options' Study identified a number of other issues that should be considered as part of the delivery of the Strategy. These surround issues related to the provision of services and include joint working arrangements, optimisation of rounds and in-house activity including sustainable procurement policies and waste prevention and recycling activity.

The SEA considers the environmental impact of different proposed options and mitigation measures to avoid or reduce the negative impacts. The sustainability analysis identifies the anticipated nature of the environmental impact relevant to the SEA objectives are presented in Table 29. A summary discussion of the results is included after Table 29 with more detailed explanation of individual scores provided in Appendix 4.

A number of options in Table 29 have been grouped into activities with common themes, as follows:

- **In – house activity**
  18 - In-house waste prevention & recycling;
  20 - Sustainable procurement policies (in house)

- **Joint Working**
  19 - Joint Working;
  21 - Depot, facility sharing, modal transport

Table 29 Assessment of Service/Organisation Options

No	SEA Objective	In – house activity	Joint Working	22 - Collection round/route optimisation
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	+	++	+/?
2	To reduce municipal waste generation, including hazardous waste.	+/0	0	0
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	+/0	0	0
4	To minimise the adverse impacts of waste management activity on human health.	+/0	+/0	+
5	To engage with all the members of the community in the development and delivery of waste management services.	+/0	0	0
6	To lead by example in the provision of in-house waste management services.	++	0	0
7	To reduce the amount of litter or fly-tipping in local communities.	0	0	0
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	0	0	+/0
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	0	0	0
10	To protect, manage and restore land and soil quality.	0	0	0
11	To minimise adverse effects of waste management on air quality.	0	+/0	+/0
12	To encourage sustainable economic growth.	+	+/-	+/-
13	To encourage innovation as well as research and development together with knowledge transfer.	+/0	+	+/0
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	+/0	0	0
15	To reduce the environmental impacts of transportation associated with waste management.	+/-	+/++	+/++
16	To protect, manage and enhance biodiversity and geodiversity	+/0	+/0	+/0
17	To reduce the ecological footprint of waste management on Merseyside.	+/0	+/0	+/0
18	To use water and mineral resources prudently and efficiently.	+/0	+/0	0
19	To promote more sustainable means of energy generation and fuel usage.	+/0	+/0	+/0
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	0	+/++	+
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	0	0
22	To conserve and enhance the landscape as regards waste management activity/impacts.	0	+/0	0

The options proposed around organisation and waste service efficiencies were all assessed as having a positive or neutral effect against the SEA criteria with the exception of encouraging sustainable economic growth. This criteria was deemed to have a mixed effect as there is potential for a reduction in the number of employees required through reduced facility requirements and number of vehicles/used. Although there is potential for

such effects to be mitigated by other activities that may be delivered as a result of the strategy:

- Move waste up the hierarchy, which could provide increased opportunities to work with voluntary and community networks/schemes e.g. collections/processing opportunities and improve how resources and recyclables are dealt with; and
- use of local / regional markets and outlets for recyclables.

Joint working should allow for efficiencies in the number of depot and vehicle sharing/optimising of rounds which would lead to a decrease in road transportation and thus use of fossil fuels, creating a positive impact on SEA criteria for climate change and . reduction in environmental impact of transportation associated with waste management

In house activity options associated with in-house waste prevention & recycling activity and sustainable procurement policies provide opportunities to have a benefit on a number of SEA criteria through behaviour change and the results changing behaviour may have moving waste up the waste hierarchy.

11. Assessment of Residual Waste Treatment and Disposal Options

Merseyside has considered a range of technology options as part of the evolution of the waste management strategy. This work was considered in order to determine a "reference project" for submission of an Outline Business Case to Defra in support of an application for Private Finance Initiative (PFI) funding. The process was the first stage in the procurement of waste treatment infrastructure for Merseyside

In preparing the reference project a short list of technology options was produced and in order to maintain consistency with this process it is proposed that these short listed options are assessed in the SEA process. The proposed options are as follows:

- Base case – continue to landfill residual waste;
- Mechanical Biological Treatment & Energy from Waste;
- Energy from Waste.

Mechanical Biological Treatment (MBT) is a general term for a number of different mechanical sorting and separation technologies combined with biological treatment processes such as In-Vessel Composting (IVC) and Anaerobic Digestion (AD). MBT systems are designed to treat and separate out the waste into usable fractions for materials and/or energy recovery. The SEA assessment will consider a 'generic' MBT system with refused derived fuel (RDF) production. This fuel is sent to an energy recovery (combustion) process such as an energy from waste plant.

Energy from Waste (EfW) is also a general term for a range of combustion processes that involve any form of combustion and/or heat processing associated with the treatment of wastes to generate a return in the form of energy generation. Modern mass-burn EfW plant combine the combustion of wastes with recovery of energy (generally in the form of electricity) through a steam circuit, and with sophisticated stack gas clean up facilities to minimise emissions and ensure they remain within tolerances allowed for under EU emission standards.

These options were assessed; Table 31, against the sustainability criteria to determine if the preferred option is the most appropriate for Merseyside.

Table 31 Assessment of Residual Waste Treatment and Disposal Options

No	SEA Objective	23 - Base case – continue to landfill residual waste	24 - Mechanical Biological Treatment & Energy from Waste	25 - Energy from Waste
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	--	+/++	++
2	To reduce municipal waste generation, including hazardous waste.	0	0	0
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	--	+	+
4	To minimise the adverse impacts of waste management activity on human health.	0	+/0	+/0
5	To engage with all the members of the community in the development and delivery of waste management services.	0	0	0
6	To lead by example in the provision of in-house waste management services.	0	0	0
7	To reduce the amount of litter or fly-tipping in local communities.	0	0	0
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	-	+/0	+/0
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	-	+/0	+/0
10	To protect, manage and restore land and soil quality.	-	-/0	-/0
11	To minimise adverse effects of waste management on air quality.	-	-/0	-/0
12	To encourage sustainable economic growth.	0	+/0	+/0
13	To encourage innovation as well as research and development together with knowledge transfer.	0	+/0	+/0
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	0	0	0
15	To reduce the environmental impacts of transportation associated with waste management.	-	-/--	-/--
16	To protect, manage and enhance biodiversity and geodiversity	-	-/0	-/0
17	To reduce the ecological footprint of waste management on Merseyside.	-	+/0	+/0
18	To use water and mineral resources prudently and efficiently.	-	+/0	+/0
19	To promote more sustainable means of energy generation and fuel usage.	+/0	+/++	+/++
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	0	0	0
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0/-	+	+
22	To conserve and enhance the landscape as regards waste management activity/impacts.	-	+	+

Assessing the three residual waste treatment options against the SEA criteria, the MBT option and the EfW option in general perform notably better than the baseline (residual waste to landfill).

Landfill performs worse than the MBT and EfW options against objectives 1, 3, 4, 8, 9, 10,11, 12, 13, 16,17,18, 19, 21 and 22. This lower performance relates to issues such as:-

- the greater contribution of landfill to climate change from the production and fugitive release of methane (from landfill gas);
- a lower level of energy recovery relative to the two alternative treatment methods;
- the absence of any materials recycling of the residual waste compared to the other two options;
- the position of landfill in the waste hierarchy; and
- the impact of landfill sites on the landscape and the potential impact on land/soil and water quality.

The assessments of the MBT option and the EfW option have similar outcomes in terms of their environmental impact, apart from the assessment against Objective 1. Objective 1 relates to climate change impact and the reduction of greenhouse gas emissions from waste management services. Based on analysis of the EfW option and MBT option in WRATE[45], EfW scores better than MBT under this criteria with a higher level of equivalent carbon dioxide savings. The generation of electricity and/or heat will offset the carbon dioxide impacts associated with energy generation through fossil fuels. Combined heat and power (CHP) EfW facilities also offer a greater fossil fuel displacement than electricity generation only.

The main objective where MBT and EfW have potential to have a more negative impact on the environment is in relation to the environmental impact of transportation associated with waste management. Depending on the capacity of a MBT and EfW facility there is potential for less waste management facilities in comparison to the number of landfill sites and therefore an increase in vehicle movements, in addition the outputs (e.g. recyclates/incinerator bottom ash etc) from residual waste treatment processes such as MBT and EfW plant also have potential to increase vehicle movements.

All of the options assessed against the SEA Objectives have the potential to have negative impacts on the environment if not designed and operated appropriately. However all waste management facilities are operated within a strict environmental permitting system that controls emissions to air, land and water and sets requirements for dealing with both standard and emergency operating conditions. The likelihood of impacts on local air quality, water courses and landscape are therefore minimised. Site specific issues are also

[45] The Life Cycle Assessment tool developed for the Environment Agency.

considered through the planning system and the potential impacts presented by each facility will be rigorously assessed at this stage.

Both the MBT and EfW options will require new waste management facilities to be built within Merseyside (or outside if waste is to be bulked and transported to a facility outside of the Partnership area) which mean that development land will be required for the facility. Both options however require less land take than new landfill developments. Depending on the location of the site(s) patterns of waste movements may either increase or decrease in comparison to the current situation. Both MBT and EfW compare more favourably than continuing to landfill waste according to this analysis as both options seek to move waste up the waste management hierarchy, recovering value from waste and diverting waste from landfill.

Specific mitigations that would enhance the performance of residual waste treatment options, including indirect, synergistic, secondary and cumulative impacts are:

- A focus on extracting recyclables (from residual waste) that yield higher carbon returns (e.g. non ferrous metals) would generate improved performance against the climate change objective;
- Optimising the design of waste transport systems together with the use of local / regional markets and outlets for recyclables and waste outputs will help reduce transport impacts;
- Consideration of appropriate use of intermodal transport may enable greater movement of secondary resources derived from waste without significant increased carbon / local air quality impacts;
- Improved efficiency of waste management infrastructure / vehicles / energy recovery processes would enable improved performance against several objectives
- The planning system and associated good practice (e.g. in waste management facility design) in this area should ensure sites are sensitively considered to address any local concerns over visual / amenity impacts and appropriateness with regards to access / local environmental issues;
- The environmental permitting system should ensure that Best Available Techniques are adopted as regards emissions and plant processes are concerned, notably for the more significant and potentially polluting infrastructure;
- The procurement for new infrastructure should also consider 'future proofing' for improved emissions standards that may arise in future (e.g. through provision of space on sites for additional emissions control equipment);
- The procurement of new infrastructure should also consider stipulating best practice environmental standards to new facilities, where appropriate, including Environmental Management Systems, Design Standards, high quality specifications for outputs, use of recycled materials in site construction, energy efficiency criteria etc.

- Monitor, consider and seek to continually improve health & safety performance through waste treatment procurement activity for waste services.

12. Mitigation of Impacts

A range of mitigations have been highlighted by this analysis in order to address potential negative impacts and enhance potential positive impacts of the Strategy. Many of the mitigations concern impacts that are indirect / secondary / synergistic or may be exacerbated as a result of cumulative effects. A summary of the mitigations is included in this section of the Environmental Report.

The mitigations inform the draft JMWMS, associated action plans and monitoring requirement. The mitigations are as summarised below.

Mitigations associated with transport / collection and logistics:

- Optimising the design of collection and waste transport systems (including the use of alternatives such as biofuels) together with the use of local markets and outlets for recyclables and waste outputs will help reduce transport impacts.
- Consideration of appropriate use of intermodal transport (e.g. rail, water transport) may enable greater movement of secondary resources derived from waste without significant increased carbon / local air quality impacts

Mitigations associated with environmental nuisance / fly-tipping:

- Sensitive consideration and design of waste management services, combined with effective education, communications and enforcement/policing will help prevent or mitigate fly-tipping.

Mitigations associated with the waste hierarchy:

- A focus on the top end of the waste hierarchy and through collecting recyclables that yield higher carbon returns would generate improved performance against the climate change objective.
- Ensure consideration of the waste hierarchy and wider economic / environmental issues in taking decisions on waste recycling services.
- Make reference to the waste hierarchy as regards consideration for the renewable energy waste strategy objective.

Mitigations associated with efficiency (economic & environmental):

- Improved efficiency of waste management infrastructure / vehicles / energy recovery processes would enable improved performance against several objectives.

Mitigations associated with impacts to community groups / accessibility of services to the community:

- The impact of waste prevention measures on businesses and community groups should be considered and, where appropriate, mitigating measures be introduced for any negative impacts

- Encourage sustained community involvement in consideration of the waste hierarchy and making linkages with wider environmental protection issues (e.g. carbon, fly-tipping, energy).
- Facilitate comprehensive engagement and participation through targeted waste management systems that are accessible to all members of the community including 'hard to reach' areas, such as flats and multiple-occupancy dwellings.

Mitigations associated with planning, environmental permitting and site based issues:

- The planning system and associated good practice (e.g. in waste management facility design) in this area should ensure sites are sensitively considered to address any local concerns over visual / amenity impacts and appropriateness with regards to access / local environmental issues.
- The environmental permitting should ensure that Best Available Techniques are adopted as regards emissions and plant processes are concerned, notably for the more significant and potentially polluting infrastructure.
- The procurement for new infrastructure should also consider 'future proofing' for improved emissions standards that may arise in future (e.g. through provision of space on sites for additional emissions control equipment).
- The procurement of new infrastructure should also consider stipulating best practice environmental standards to new facilities, where appropriate, including Environmental Management Systems, Design Standards, high quality specifications for outputs, use of recycled materials in site construction, energy efficiency criteria etc.

Mitigations associated with health & safety issues:

- Monitor, consider and seek to continually improve health & safety performance through collection / waste treatment procurement (e.g. tender evaluations and performance monitoring) for waste services

12.1. Cumulative & Synergistic Impacts

It should be noted that most of the impacts and mitigations may be cumulative, such as the impacts of climate change, the impact on the ecological footprint etc. The mitigations and monitoring seek to address these impacts in addition to the direct, indirect and secondary impacts.

In areas such as resource use and environmental burdens in the form of emissions to land or water, there is often a cumulative effect and this Strategy seeks to address the causes of these burdens and either prevent the impacts occurring or mitigate impacts where they do occur.

In the case of energy generation and use, both the consumption and the production of (renewable) energy are addressed to seek to establish a more sustainable service across the Partnership.

There are social impacts that may be considered positive cumulative effects in the sense of behaviour change impacting on wider areas of environmental actions (beyond waste management), and the promotion of voluntary and community activity.

Interfaces between impacts and synergies occur across the waste hierarchy. There are usually several waste management options for most materials arising in the waste stream. The mitigations proposed in this SEA are designed to encourage sustainable thinking with regard to selection of waste management options. This is also supported by the Options Appraisal exercise that also informs the draft JMWMS.

13. Monitoring

The draft JMWMS includes supplementary reports (such as District Council Action Plans) covering short, medium and long timescales, with responsibilities identified and actions specified. This also includes specific targets and indicators for delivery of the Strategy. In addition there are several environmental monitoring criteria that arise from this SEA as key parameters to measure to ensure that no unforeseen adverse environmental outcomes arise from the Strategy implementation. Each criterion has some consideration of a 'trigger point' for where remedial action may be required, Table 32.

Table 32 Key Environmental Monitoring Criteria

Criteria	Unit of Measurement	Frequency of Measurement	Target / Comment	Trigger Point/s	Responsibility
Carbon Impact	Kg of CO_2 equiv.	Full WRATE analysis at strategy review (5 yearly) Quarterly checks against recycling contractor WRATE reporting	Full WRATE analysis will determine position relative to baseline (XXXX kg CO_2 equivalent). Quarterly checks against recycling contractor WRATE reporting provide an indication of direction of travel The five yearly review should show substantial improvement in carbon performance	Where 2 quarters in a row exhibit an increase in CO_2 (equivalent) emissions performance relative to the same two quarters of the preceding year in the contractors report, the causes of this should be investigated and where appropriate remedial action taken. Where the 5 yearly review does not show a reduction in carbon emissions from the baseline the strategy may not be progressing swiftly enough and remedial action is likely to be required	MWDA reporting to the Partnership. Responsibility for any remedial action will depend on the reason for the failure to meet carbon impacts ambitions
Ecological Footprint	Hectares per person	Full WRATE analysis at strategy review (5 yearly)	Full WRATE analysis will determine position relative to baseline	Where the 5 yearly review does not show a reduction in ecological footprint from the baseline the strategy may not be progressing swiftly enough and remedial action is likely to be required	MWDA reporting to the Partnership. Responsibility for any remedial action will depend on the reason for the failure to meet ecological footprint ambitions
Waste Arisings	Kg of hh waste / household / annum	Annually	Reduce the amount to 1064 kg / hh by 2020 and 1022 kg / hh by 2030 Benchmark against other Joint Waste Disposal Authorities to understand variations that occur.	Where waste arisings increase relative to the previous year and this is not a trend observed in the other Joint Waste Disposal Authorities over the same period, the reasons should be investigated and where necessary remedial action taken.	MWDA reporting to the Partnership. Responsibility for any remedial action will depend on the reason for the failure to meet waste arisings ambitions
Recycling / Composting	% household waste recycled / composted using EU	Annually	Deliver at least a 50% performance by 2020 Subsequent targets to be set	Where annual performance shows no increase relative to the preceding year. The causes of this should be investigated and where	Merseyside districts. Responsibility for any remedial action

Criteria	Unit of Measurement	Frequency of Measurement	Target / Comment	Trigger Point/s	Responsibility
	Waste Framework Directive definition of recycling		thereafter	appropriate remedial action taken.	will depend on the reason for the failure to meet recycling / reuse ambitions
Landfill - Diversion	% of municipal waste landfilled	Annually	Seek to continually reduce landfill with the target of 10% landfilled by 2020 and 2% by 2030	Where landfilling levels increase relative to the previous year (and in consideration of factors affecting overall waste arisings) the reasons for this should be investigated and where necessary remedial actions undertaken.	MWDA reporting to the Partnership. Responsibility for any remedial action will depend on the reason for the failure to meet landfill diversion ambitions
Landfill – Landfill Allowance Trading Scheme (LATS)	Landfill Allowances used / banked / borrowed / exceedances	Annually	Seek to ensure landfill diversion through the LATS (and any replacement system) to ensure compliance with the Landfill Directive	Where actual or projected landfill of biodegradable municipal waste is, or is likely to be, in excess of the permitted allowances held by the MWDA	MWDA
Fly-tipping	FlyCapture incidents	Ongoing, Annual reporting	Each Local Authority has a responsibility for fly-tipping. Incidents are recorded on ongoing basis	Where incidents increase in number or severity from the preceding year, the causes should be investigated and where appropriate, remedial action undertaken	Each district council, and reported to Partnership
Renewable Energy from Waste	MWh electrical MWh heat	Annually	Record the amount of renewable energy generated (gross) from municipal waste management service and where waste recovery facilities are used, request average parasitic load to enable net energy recovery figure to be calculated	Where the total net energy recovery falls, the reasons should be investigated, however it should be noted that energy recovery may fall in preference for options higher up the waste hierarchy.	MWDA
Behaviour Change	Yield of recycling / reuse services: kg / hh	Annually	Each local authority to provide information on yield from recycling & reuse services as a measure per household per	Where yield per household falls from the preceding year without adequate contributory factors (e.g. a change in service etc.)	

Criteria	Unit of Measurement	Frequency of Measurement	Target / Comment	Trigger Point/s	Responsibility
			annum, to determine improved materials capture. Interpretation of this figure should also consider wider influences such as changing waste composition,		
Recyclate destinations	Location + annual estimated mileage	Annually	Contractors to provide location details of reprocessors / plant accepting Merseyside waste & recyclate	Where recyclate transport increases. Investigate reasons and mitigate increases in partnership with contractor where viable.	MWDA and any individual contractual arrangements through Districts
Health & Safety performance	Number and severity of incidents	Annually or as required by contract	Contractors to supply information on number and severity of incidents and actions taken to remedy causes of incidents.	In response to specific incidents and where there is a failure to improve overall performance	Each Partner Authority, and reported to the Partnership

Appendix 1 Consultation Responses to the Scoping Report

Consultees	Respondent	Date Received	Comments	How addressed
GMWDA		14/02/2011	No significant issues, agreement regarding strategic objectives and delivery options being appropriate. Suggestion that reference to the Defra review of waste policies that is underway.	No response necessary This will be incorporated into the Headline Strategy
English Heritage	Judith Nelson	14/02/2011	▪ Review English Heritage guidance on SEA and the historic environment. ▪ Review PPS5 Planning for the Historic Environment as part of identifying significant effects on cultural heritage, including architectural and archaeological heritage. ▪ Baseline information on cultural heritage is available from Heritage Counts 2010 and the Heritage Risk Register 2010 ▪ Baseline landscape information is available from the Merseyside Urban Historic Landscape Characterisation ▪ Review objective 21 against EH guidance document on SEA. Would prefer wording relating to 'protect, manage and enhance' rather than 'minimising impact'. Suggested wording from PPS5 to be used. ▪ See a likely need for a review of strategy objectives and vision leading to an additional topic for table on p34 relating to the protection and enhancement of the natural, built and historic env. ▪ Environmental report should draw out impacts on the historic environment and set out what mitigation is required.	References noted and recorded in Environment Report Information added to Environment Report where applicable Reworded objective No separate objective required, waste management service requires delivery in a manner that protects the environment and public health. Agree, however the strategy is non site specific and therefore limited in this aspect.
Lancashire County Council	Paul Gingell, Planning Officer	18/02/2011	No issues identified	No response necessary
Natural England	Karen Gribbin, Planning &	25/02/2011	List of Relevant Plans, Policies & Programmes provided to cross check against the list provided in the Scoping Report	References noted and recorded in Environment Report

Consultees	Respondent	Date Received	Comments	How addressed
	Conservation Adviser		▪ Sources of Baseline information relevant to Natural England works provided and the point that key baseline messages need to address:- ▪ Conserve and enhance landscape (and townscape) character and quality ▪ Conserve and enhance biodiversity and geodiversity ▪ Conserve and enhance opportunities for public access to the countryside and coast ▪ Adopt a strategic approach to planning and provision of green infrastructure, and ▪ Ensure the natural environment can adapt and mitigate the effects of climate change	Information added to Environment Report where applicable, specific issues addressed below MWDA do undertake biodiversity improvements for closed landfills
			▪ NE note and concur with SEA Sustainability Assessment Objective "To reduce the environmental impacts of transportation associated with waste management, however would welcome a clear link into the Strategy Objectives	The Climate change objective covers transport in addition to other waste management activities as does the measurement tool
			▪ NE also identify the following issues as consistent with their objectives:- ▪ sustainable transport conservation and enhancement of the coast and countryside. ▪ enhancement of local landscape (and townscape) character and quality, and local distinctiveness; ▪ conserving and enhancing biodiversity and geodiversity; ▪ the necessity to provide, conserve, maintain and enhance green infrastructure for its wide ranging contribution to biodiversity, geodiversity, as a recreation resource for the benefit of the health and well-being of residents, and as a means of mitigation against the effects of climate change; ▪ visitor and development pressure affecting sites of biodiversity value; ▪ the necessity to provide, conserve and maintain access to green and open spaces; and rights of way; and the role that access to greenspace and the natural environment can play in combating	Noted, specific issues addressed below

Consultees	Respondent	Date Received	Comments	How addressed
			obesity and poor health". While all of these issues are environmental, they also (particularly in the case of sustainable transport, green infrastructure and greenspace) contribute towards economic and social objectives.	
			▪ NE note and concur with the statement made on from page 31, para 3.9.2, of the report that, "Any development carried out must respect the existing landscape and character". However, this vision has not been followed through into Table 20, Revised SEA Assessment Criteria under Objectives 21 and 22 nor the Draft JMWMS Strategic Objectives? NE would welcome reference to this vision within the objectives.	This is a planning issue and therefore within the scope of the Local Development Documents rather than the JMWMS
			▪ NE welcome the statement within the report that, "The impact on the overall ecological footprint will be tested through this SEA assessment and we are pleased that this has been followed through into the SEA assessment criteria no 17 and objective no 5, Ecological Footprint.	No response necessary
			▪ NE note from page 29 of the report that, "Local biodiversity issues have been considered in the SEA of the Waste Development Plan Document and will be considered at individual sites through the planning process.". Therefore, this has not been included as an objective within this scoping report.	No response necessary
			▪ NE identify a range of SEA objectives that may be relevant to consider whether to include within the SEA:-	
			▪ Conserving and enhancing landscape (and townscape) character and quality; and local distinctiveness; including historic landscape.	Related criteria already included
			▪ Protecting and enhancing biodiversity, including both habitats and species, and maintaining and enhancing internationally, nationally, regionally and locally designated wildlife sites and priority habitats.	Related criteria already included
			▪ Conserving and enhancing geodiversity; including conservation of the soil resource	Geodiversity added to Sustainability Criteria

Consultees	Respondent	Date Received	Comments	How addressed
			▪ Maintaining, creating, restoring and enhancing the quality of and opportunities for public access to good quality rights of way, open space, countryside and coast.	Not applicable to JMWMS
			▪ Maintaining and where possible improving the quality of air, reducing emissions and limiting air pollution to levels that do not damage natural systems, including human health.	Related criteria already included
			▪ Maintaining and where possible improving the quality of water, minimising water pollution, ensuring that water is used more efficiently and avoiding, promoting Sustainable Urban Drainage and reducing and managing flood risk.	Related criteria already included as regards water quality / pollution & also climate change
			▪ Conserving & protecting other natural resources.	Related criteria already included
			▪ Maintaining and enhancing human health, including enhanced health from access to green spaces and improved equitable access to a healthier, happier and more sustainable lifestyle.	This is a planning issue and therefore within the scope of the Local Development Documents rather than the JMWMS
			▪ Minimising the irreversible loss of undeveloped land and productive agricultural holdings.	Related criteria already included
			▪ Reducing the contribution to climate change and enabling adaptation to climate change which is already locked in.	Related criteria already included
			▪ Meeting an increased proportion of energy needs from renewable sources	Related criteria already included
			▪ Minimising waste, and promoting the re-use and recovery of waste through increased recycling and/or composting.	This is an issue already addressed in ongoing waste procurement exercises, using good practice in

Consultees	Respondent	Date Received	Comments	How addressed
			▪ Incorporating the highest standards of sustainable design and construction in both existing and new development.	sustainable design e.g. BREEAM standards. It is however also a planning issue and therefore within the scope of the Local Development Documents rather than the JMWMS, although some related criteria included
			▪ NE broadly concur with the options for appraisal, although it would be essential to ensure no negative effects on the natural environment.	No response necessary
			▪ "Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity". We expect to see a reference to this "Duty" in all relevant documents. Reference to the "Duty" alongside references to the NERC Act would be welcomed.	Reference will be added, where applicable.
Environment Agency	Chris Waring, Planning Technical Specialist	25/02/2011	▪ The EA acknowledge targets for landfill diversion and waste prevention within the draft Strategy objectives and would like to see targets ascribed to Resource efficiency, Reuse and recycling aspects Specific comments made for draft Strategy objectives as follows:- ▪ Climate Change: o Is there a risk that counting carbon reduction may overlook benefits of protecting virgin materials? (depends on what is counted). o Needs to look at the operation of their waste management infrastructure, vehicles & plant as well as the management options and closed loop resource management. ▪ Sustainable Economic Activity: o Are there some measurable targets for this e.g. [X]% recyclates in public sector procurement and supply chains?	See specific comments below Most of the carbon benefits will be derived through recycling, hence utilising secondary resources and protecting virgin materials The measure (using WRATE) will include all of these aspects. Will seek to identify targets with individual Authorities where applicable as part of their strategy action plans

Consultees	Respondent	Date Received	Comments	How addressed
			▪ Behavioural change: o Are there any targets for this?	Yield (e.g. kg / hh / year) in services will be measured. Indicator added.
			▪ Renewable Energy: o Presumably only where possibilities of reuse/recycling have been exhausted – it needs to be stated if this is the case.	The other objectives include measures to promote the waste hierarchy and there are targets to increase recycling and reduce arisings through prevention / reuse
			▪ Recycling performance: o Would this 50% be material recycled cradle to cradle or would it include EfW?	Definition of the EU Waste Framework Directive will be used
			▪ Resource efficiency: o How? Measurable targets? To take on the challenge of one planet living going for the low volume high value 'scarce resource' is not the means to this end – need to look at the whole carbon footprint issue, not just cherry pick the top end.	Whole carbon footprint (and ecological footprint) will be measured
			▪ Waste Management Capacity: o We can't visualise what this would involve – could examples be provided?	Explanation will be made in Headline Strategy.
			▪ Chapter 6 – some of these proposals may have implications for flytipping – Liverpool already has a problem with this (Flycapture Data). What proposals are in place to prevent/deal with this?	Flytipping is considered with appropriate mitigations through the SEA process
			▪ There does not appear to be a recognition of the forthcoming changes from municipal waste to local authority collected waste in the document but the draft objective 4 (sustainable economic activity) statement could be sufficiently broad to take this into consideration when it happens.	This aspect was explored in detail through a Future Resources study which has informed both the SEA and Headline Strategy documents
Merseyside Environment	Paul Knott	10/03/11	Q. Are the policies / plans / strategies / initiatives that have been reviewed appropriate?	

Consultees	Respondent	Date Received	Comments	How addressed
al Advisory Service (MEAS)			MEAS Response: Generally, yes. There is always a temptation to drill too wide or too deep and I think this assessment has struck the right balance. The only issue that concerns me a little is the extent to which housing growth is addressed. The adopted Regional Spatial Strategy (and its unadopted successor) have been reviewed. However I wonder whether you should make specific reference to housing build targets of the individual Districts since these will be the principal driver of any future growth in municipal waste arisings, if it occurs at all. Q. Do you know of any further baseline indicators that might provide useful information? If so please provide the information or a source for the data. MEAS response: The report does not present any indicators as such. It presents baseline evidence but not all of it will be relevant for monitoring the revised JMWMS, and the material that is has been presented is scattered throughout Section 3. This makes it difficult to identify what is background information and what are the key parameters that need to be monitored. This is one reason why I suggested that tabulating the baseline evidence is more logical. Our detailed comments in the attachment identify one additional parameter. Q. Are the sustainability problems and waste issues identified for Merseyside the correct ones? MEAS Response: Again, the report does not present this information, in effect omitting Stage A3 as defined by the relevant methodological guidance. This is a potentially significant oversight and I would be concerned if it provides scope for a procedural challenge to the SA/SEA which has implications for the JMWMS at a later date. Stage A3 provides an important logical 'stepping stone' between the evidence and the SA/SEA objectives and therefore the issues need to be made explicit. One consequence of omitting this stage from the report is that the SA/SEA objectives appear to materialise out of nowhere. That makes it more difficult to validate them, because it is not clear how they have been derived from the evidence in the baseline, or how they reflect the constraints and targets imposed by the review of policies, plans and programmes. Q. Do the SEA objectives encompass all the necessary issues? MEAS Response: There appear to be no significant omissions and 22 seems an appropriate and manageable number in terms of the later stages of the assessment. However I would encourage you to look at ways of defining the	Housing figures will be reviewed for the final Environment Report Monitoring Indicators included in the Environment Report. Stage A3 was conducted through the scoping process and the review of the baseline and setting of the SEA objectives, but we agree this should have been made clearer within the Scoping Report. This will be made explicit in the Environment Report so it is clear how the process has progressed from baseline through to SEA objectives.

Consultees	Respondent	Date Received	Comments	How addressed
			objectives more precisely, for example: Objective 16 - “contributing to biodiversity enhancements” rather than “enhancing biodiversity” as there must be only a limited number of ways in which the JMWMS can deliver enhancements directly; Objective 2 - making clear that efforts to minimise hazardous materials refer only to municipal waste (waste solvents, batteries, etc.); Objective 11 – recognising the different ways in which air quality improvements or impacts can occur. With regard to the last point above, I would also encourage you to define one or more sub-objectives for each high-level objective which will be used to test the options in the subsequent assessment and which also identify the appropriate baseline / monitoring indicators. For example, waste management can affect air quality in several ways, including the distribution of waste management facilities and their effect on contractors’ and householders’ vehicle movements as well as technology-specific measures relating to stack emissions from waste treatment plants. I feel this extra detail will help to direct the later assessment so you can show why “option X” has a “++” rating whereas “option Y” has a “-“ rating. The current approach does not prevent this but it will require a lengthier justification for each rating in order for the assessment results to be transparent. Q. Are the options for appraisal appropriate?	Existing objective consistent with Natural England response The objective already refers to municipal waste Air quality is measured by different monitoring criteria in the analysis. Several of the objectives have more than one monitoring aspect in the analysis, for example as regards emissions to air from waste management processes these will be recorded through the climate change objective as regards carbon and carbon equivalent emissions, the air quality and public health criteria as regards acidification and human toxicity emissions values. The distribution of facilities is not explored in this (non site specific) strategy. The options do relate to

Consultees	Respondent	Date Received	Comments	How addressed
			They look acceptable though we have two suggestions relating to Section 6.3: It is not clear whether the first two options only consider differences based on the composting technology. There is also an issue of whether composting would be done centrally or left to the individual districts to organise, as is currently the case for green waste composting; A similar issue applies to the management of dry recyclables collected from the kerbside. Some authorities have private sorting contracts but MWDA is investing in centralised Materials Recycling Facilities which do the same job. This leads to apparent duplication of infrastructure which has sustainability and economic (financial) implications. I would like to make two other observations about the approach that has been adopted which do not fall logically in the answers to the five preceding questions. First, there is very little detail on the timing and scope of consultation to date on the SA/SEA objectives. My understanding is that best practice normally involves holding at least one workshop with appropriate stakeholders, including the three statutory consultees, to review the evidence, define the key sustainability problems, and identify the draft SA/SEA objectives. This would normally occur relatively early in, or midway through, preparation of the Scoping Report. Unfortunately my two colleagues who sit on the JMWMS Steering Group were unable to attend the meeting last October when the objectives were agreed, so I do not know what level of consensus was achieved, and by whom. Nevertheless, currently the document lacks transparency on this matter, and much of the specific detail in the SEA Regulations refers to consultation requirements. Second, Section 5 refers to the cross-checking of JMWMS Strategic Objectives and those for the SA/SEA. I recognise the procedural guidance places this in Stage B1, which follows consultation on the Scoping Report. However my experience of best practice is that it is advisable to do a preliminary cross-check during Stage A as a means of 'proofing' the SA/SEA objectives. Clearly there may be instances where an economic objective cannot be reconciled with an environmental one. Nevertheless, an early check identifies these clashes and can prompt consideration of whether either objective can be modified to improve the 'fit'. Specific points identified from review of the Scoping Report	changes in composting technology alone. The same issue occurs for the recycling contracts, in some instances centrally based contracts may confer some environmental and economic benefits and in other cases the converse may occur. Decisions related to these aspects are part of the existing procurement constraints and not stipulated by this Strategy Consultation aspects will be made clear in the Environment Report The Strategy Objectives were defined through a consultation process commencing with an 'issues and options study'. This involved two workshops in advance of the Scoping report process and this will be explained in the Environment Report.

Consultees	Respondent	Date Received	Comments	How addressed
			Section 1.3.4 Was the original JMWMS done so long ago that SEA was not required. If one was done, why are the SA/SEA Objectives being re-defined from scratch? (Of course this suggests no SEA was done previously).	Yes, there was no SEA for the original JMWMS as it was written prior to the associated Regulations coming into effect.
			Section 2 A comprehensive list of key themes which could do with a bit more structure. Only one I can think of that might be missing is landfill bans and similar changes which could restrict future waste management options, however I would not insist on this.	This is considered in the Environment Report.
			Section 2.1 It is not clear why the Welsh and Scottish strategies are included. Wales might be explained by the shared border with Wirral (if you ignore the Dee estuary). The only relevance of Scotland is, presumably, their proposal to start looking at carbon-reduction rather than weight-reduction targets.	The carbon metric (of the Scottish Strategy) is an aspect of interest to the authorities, and it is felt that both the Welsh and Scottish Strategies are pushing the boundaries further as regards Resource Management than the (older) Waste Strategy for England.
			Section 2.2 It is also not clear what consideration has been given to housing policy, especially as the 2010 Regional Strategy does not give any targets but housing growth will continue to impact household waste arisings. It may have been considered in which case it might be prudent to make it clearer. I feel the section also needs to explain why there is virtually no consideration of local documents. Apart from the issue referred to above, I do not think this is an issue other than one of transparency.	See earlier response on housing data.
			Section 3.1 Generally acceptable, but I think the final statistics on p.7 are somewhat misleading. It would be more accurate if the proportions also took into account	Additional commentary will be added around this

Consultees	Respondent	Date Received	Comments	How addressed
			the respective quantities of waste managed in each way. The quantity sent to incinerators is still small alongside what goes to landfill so it's no surprise the latter is a much larger CO2 contributor. Section 3.3.1 Health impacts could make specific reference to accident and injury rates involving Council or contractors' vehicles and operatives. Comments about lack of evidence of a relationship between waste facilities and general public health are not questioned and I would expect this conclusion given Enviros's previous work for Defra on this issue! Section 3.3.2 Contents of Table 16 could be usefully cross-checked against the Cambridge Econometrics report which was prepared for the Mersey Partnership which was also published in 200746. I think it forecasts very slight increases in population in 3 boroughs (though one may be Halton and is therefore outside the scope of this SA). I would also have thought a key issue was the nature of the housing coming forward. The coalition has moderated the previous government's push for higher housing densities to some extent. However there are clear economic pressures and incentives that encourage developers to build a greater proportion of multi-storey, multi-tenant properties and this may present a challenge for designing-in waste facilities which could support further increase in recycling rates. Section 3.4.1 Would it be helpful to also indicate the quantity involved per incident and how much the Councils spend cleaning it up? At a time of public spending pressures this is a hidden cost of managing waste which is too easily hidden from public scrutiny. Section 3.4.2	aspect in the Environmental Report. Data on this aspect will be sought for the Environment Report. This will be cross checked as part of the Environment Report. This aspect will be explored as part of the Environment report review into housing data and issues, referenced earlier. Data on this aspect will be sought for the Environment Report.

[46] http://www.newheartlands.co.uk/assets/_files/documents/oct_07/nh__1193825300_Cambridge_Econometrics._Revisi.pdf - Table 4.5. This may be the document referred to in the Scoping Report, but under a different name.

Consultees	Respondent	Date Received	Comments	How addressed
			I did not find the section on water quality easy to follow although the new-format statistics are not very helpful. A basic flood risk map (small-scale) might have been useful to show the extent of constraints. Section 3.5 These basic demographic parameters have to be included in the baseline but it would help if there was a clearer indication of how the JMWMS might affect or be affected by them. If there is no direct linkage (even a weak one) then it is not clear why they should be included. Is there an unstated link to job-creation? Section 4 (SA Criteria) Objective 2 should be reworded to make clear this refers to hazardous municipal waste, though it is not clear to me how the JMWMS can do this directly. Otherwise I cannot see anything obvious that is missing though I would suggest some rewording is necessary to make the objectives less generic. (This has been referred to in the covering letter already.) Section 5 Re-stating a comment in the covering letter, it would be helpful if there was an initial grid or matrix showing how well the JMWMS and SA/SEA objectives “map” onto one another. Section 6 No comments other than we endorse the approach that the SA/SEA will also look at residual waste management options. Appendix 1 Thorough and well presented.	A map will be added to the Environment Report. Links will be made explicit in the Environment Report. The existing objective refers to municipal waste and this may be influenced by LAs as regards behaviour change measures and some prevention / reuse activity The JMWMS objectives are all assessed against the SEA objectives in the Environment Report. This includes a matrix and detailed comment No Action Necessary No Action Necessary

Appendix 2 Policy Context

A review of current policies and strategies impacting on the way that waste is managed and is likely to be managed in Merseyside up to 2030 has been undertaken. This has been carried out at both a national, regional and local level and has covered strategic economic, planning policy and waste documentation. This review was carried out during the period government is reviewing waste policy. Findings of the waste review are expected to be announced in June 2011 and due to timings have not been considered as part of this review.

The selected policy documents were reviewed for common themes and a long list of thirty three themes was identified for consideration, see Table 1. This long list reflects the range of topics driving policy and strategy related to waste management at the national, regional and local level. Details of the documents reviewed are provided below along with a cross reference to the themes identified in Table 1. A full list of the documents is set out in this Appendix.

Table 1 Summary of Key Themes

Number	Theme	Number	Theme
1	Resource efficiency	18	Innovation
2	Sustainable consumption and production	19	Energy efficiency
3	Reduction of climate change/carbon impacts	20	Renewable energy generation
4	Low carbon economic activity	21	Reducing transport Impacts
5	Protection of natural resources	22	Reducing the ecological footprint
6	Sustainable communities	23	Importance of partnership working & working together
7	Sustainable waste management	24	Provision of sufficient capacity for waste management activity
8	De-coupling of economic growth and waste growth/impacts	25	Promotion of key waste messages & awareness raising
9	Reduce the carbon impacts of waste management	26	Provision of efficient services
10	The waste hierarchy	27	Promoting behavioural/cultural change
11	Waste prevention	28	Self sufficiency and the proximity principle
12	Waste re-use and remanufacturing	29	Sustainable procurement
13	Zero waste	30	Leading by example
14	High recycling = 60-70%	31	Market development
15	High recycling = 50-55%	32	Healthy, safe and prosperous communities
16	Landfill diversion/ recovery of residual waste	33	Value for money
17	Consideration of all waste streams (MSW, C&I, C&DE)		

National Level Policy Drivers

Policy Document	Securing the Future – UK Government Sustainable Development Strategy, Defra 2005 And Sustainable Development Action Plan 2009-2011
Key Policies/ Objectives	The document contains five key principles: ■ Living Within Environmental Limits; ■ Ensuring a Strong Healthy and Just Society; ■ Achieving a Sustainable Economy; ■ Promoting Good Governance; and ■ Using Sound Science Responsibly. Its four Priorities are: ■ Sustainable consumption and production - towards a one plane economy; ■ Climate change and energy; ■ National resource protection and environmental enhancement; and ■ Sustainable communities. Promotion of resource efficiency and sustainable consumption and production (SCP) are key. The reduction of resource use and wastage in product manufacture is very important. The overall objective for waste policy is the protection of human health and the environment by producing less waste and by using it as a resource wherever possible. The government aims to break the link between economic growth and the environmental impact of waste through more sustainable waste management. Sustainable waste management is defined as reduction, re-use, recycling, composting and using waste as a source of energy. The waste hierarchy is a good guide to the relative environmental benefits of waste management options, combined with life-cycle analysis and SCP.
Targets	Reference to the UK emission targets: ■ to reduce carbon dioxide (CO_2) emissions by 60 per cent by about 2050 with real progress by 2020; ■ the Kyoto Protocol target to reduce UK GHG emissions by 12.5 per cent below base year levels over the period 2008-12; and ■ the national goal to reduce CO_2 emissions by 20 per cent below 1990 levels by 2010.
Key Document Themes	1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Policy Document	Waste Strategy for England 2007
Key Policies/ Objectives	WS2007 sets out five key objectives: ■ to decouple waste growth (in all sectors) from economic growth and put more emphasis on waste prevention and reuse; ■ to meet and exceed the Landfill Directive diversion targets for BMW in 2010, 2013 and 2020; ■ to increase diversion from landfill of non-municipal waste and secure better integration of treatment for municipal and non-municipal waste; ■ to secure the investment in infrastructure needed to divert waste from landfill and for the management of hazardous waste; and ■ to get the most environmental benefit from that investment, through increased recycling of resources and recovery of energy from residual waste using a mix of technologies. There are a range of other measures proposed, including: ■ setting new national targets for the reduction of commercial and industrial waste being sent to landfill; ■ providing incentives to encourage activities higher up the waste hierarchy including increasing the landfill tax escalator (see Section 3.4.1) and potentially removing the ban on local authorities introducing household financial incentives for waste reduction and recycling; ■ targeting paper, food, glass, aluminium, wood, plastic and textiles as key materials to be diverted from landfill; ■ implementing product policies that increase resource efficiency and the ability to reuse materials and reduce the quantities of waste produced; ■ encouraging a variety of energy-recovery technologies (including anaerobic digestion) resulting in 25% of municipal waste being managed through energy-from-waste facilities by 2020; ■ strengthening the ability of local authorities in two-tier areas to work together and encouraging partnership working between local authorities; ■ promoting cultural change in how we deal with our waste through campaigns aimed at individuals and businesses (e.g. promotion of third sector expertise, providing recycling bins in public places; and ■ Government taking action to reduce its own waste. The challenge of the strategy is 'One Planet Living'- using the planet's resources within the limits of its eco system (current estimates equivalent to 3 planet living in the UK). This can be achieved through reducing use of natural resources, recycling materials and recovering energy from those we do use. The strategy highlights that what we do about waste impacts on: ■ Climate change; ■ Resource efficiency; ■ Sustainable consumption and production; and has a global environmental impact.
Targets	Annual GHG emissions: ■ A net reduction of at least 10 million tonnes of CO_2 equivalent per year by 2020 A reduction in the amount of household waste not reused, recycled or composted to: ■ 15.8Mt in 2010 (29% reduction compared to the 22.2Mt landfilled in 2000); ■ 14.3Mt in 2015 (35% reduction compared to 2000); and ■ 12.2Mt in 2020 (45% reduction compared to 2000).

	This is equivalent to a fall of 59% per person (from 450kg per person in 2000 to 225kg in 2020). Higher national targets for recovery, recycling and composting: ■ recycling and composting of household waste – at least 40% by 2010, 45% by 2015 and 50% by 2020; and ■ recovery of municipal waste – 53% by 2010, 67% by 2015 and 75% by 2020. Commercial and industrial waste landfilled: by 2010 an expected 20% reduction from 2004 levels.
Key Document Themes	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 15, 16, 17, 20, 21, 23, 24, 25, 27, 31

Policy Document	Low Carbon Transition Plan (LCTP), National Strategy for Climate and Energy, 2009
Key Policies/ Objectives	The Climate Change Act 2008 is the principal driver for action on climate change. It introduced the legally binding target for GHG reduction which is to cut emissions by 80% by 2050 and a set of five year carbon budgets to 2022 to keep the UK on track to deliver the target. The Act also introduced a carbon budgeting systems which caps GHG emission from a range of sectors over 5 year periods. The waste sector is included. The LCTP sets out the UK transition plan for becoming a low carbon country; cutting emissions, maintaining secure energy supplies, maximising economic opportunities and protecting the most vulnerable. The LCTP also sets out how the five year carbon budgets will be met. The key areas of focus include power and heavy industry, transport, homes and communities, workplaces and jobs, farming, land and waste. All Government Departments have been allocated their own carbon budget and must produce own plan for meeting the budget. A key way in which the UK will achieve its carbon budgets is though a commitment to get 15% of all energy – for electricity, heat and transport – from renewable sources by 2020. This is set out in an associated Renewable Energy Strategy. In the waste sector activity is primarily around reducing the amount of waste sent to landfills and better capture of landfill emissions. There is also support for anaerobic digestion. The overall goals of the Plan are to: ■ Drive decarbonisation, by providing a carbon price, supporting the new technologies and infrastructure we need and helping households and businesses overcome barriers to low carbon choices; ■ Secure energy supplies by ensuring a supportive climate for the substantial new investment needed to bring forward low carbon infrastructure, and maximise the economic production of oil and gas from the North Sea to help secure the continued fossil fuel supplies needed during the transition; ■ Help UK low carbon and energy businesses to grow; ■ Protect consumers, in particular the most vulnerable; ■ Help businesses manage the costs of tackling climate change and help everyone adapt to climate impacts; and Protect the environment by making the most of measures which bring wider environmental benefits and minimising impacts where they are unavoidable.
Targets	The Act has targets to reduce greenhouse gas emissions by 34% by 2020 and by 80% by 2050. UK will keep track through a set of five-year “carbon budgets” to 2022. The

	first three budgets cover the period to 2022: Reduction in GHG emissions below 1990 levels: ■ 2008-12 – 22% reduction; ■ 2013-17 – 28% reduction; ■ 2018-22 – 34% reduction. Other sector specific targets include – Sourcing 40% of electricity from low carbon sources by 2020, including producing around 30% of our electricity from renewable by 2020, transforming transport by cutting average CO_2 emissions from new cars across the EU by 40% on 2007 levels ■ The plan to 2020 will cut emissions from farming and waste by 6% on 2008 levels. Cut England's yearly waste emissions by the equivalent of one million tonnes of CO_2 by 2020, on top of reductions already predicted. This will reduce UK waste emissions to 13% below today's levels. Energy and Transport targets and policies set out in Renewable Energy Strategy and Low Carbon Transport Strategy.
Key Document Themes	1, 2, 3, 4, 5, 9, 18, 19, 21

Policy Document	Low Carbon Industrial Strategy, 2009 Department for Business, Innovation and Skills and Department for Energy and Climate Change
Key Policies/ Objectives	The core strategy objective is to ensure that business and workers in Britain are equipped to maximise the economic opportunities and minimise the costs of moving to a low carbon economy. The programme of government action is set out in the document. There are three principles for low carbon business: ■ A long term strategic approach which sets a stable framework for business and consumers; ■ A pragmatic approach to the role of markets and government in making a quick transition at the same time as increasing the costs of carbon, encouraging low carbon innovation, remove market barriers to low carbon technologies; and ■ Government is responsible for ensuring that companies and people are equipped to compete. The strategy sets out where the opportunities are greatest and the action that will be taken to address market failures and barriers for British firms. The sectors identified are those with greatest potential for Britain to take a leading role. This strategy is based around four key areas of activity: ■ Energy efficiency to save businesses, consumers and the taxpayer money; ■ Energy infrastructure, focusing on the trinity of low carbon generation sources, renewables, nuclear power and clean coal, supported by a "smart" grid; ■ Making Britain a global leader in the development and production of low carbon vehicles; and ■ Making Britain the best place to locate and develop a low carbon business. Since March the government has invested in the areas of energy efficiency (£375 million), energy infrastructure (£90 million), low carbon vehicles (£400 million), making Britain the best place to develop low carbon business (£405 million). This strategy brings all these strands together into one document. Britain's waste management infrastructure will also play a critical role in enabling the shift to a more resource efficient society and economy. The Government has made £2 billion in new funding available over the period 2008-11, to support local authority waste

	infrastructure.
Targets	Britain's climate change target: reduce GHG emissions by at least 80% below 1990 levels by 2050
Key Document Themes	2, 3, 4, 7, 19

Policy Document	Low Carbon Transport: A Greener Future, Department for Transport, July 2009
Key Policies/ Objectives	This strategy is a key component in the Low Carbon Transition Plan and sets out how the sector targets will be met. All forms of transport will be considered covering cars, vans, road freight, buses, rail, aviation and shipping. Sustainable biofuels is a key part of the strategy. Activity will focus on: ■ Providing low carbon public transport; ■ Promoting the integration of transport modes; ■ Promoting other sustainable modes of transport, e.g. cycling; ■ Supporting Local Transport Plan development; ■ Providing better information to help people make transport choices; ■ Reduce CO_2 from business travel and the distribution of goods. The strategy aims to achieve an additional saving of 17.7 million tonnes of CO_2 in 2020, equating to 85 million tonnes of CO_2 over the third carbon budget period from 2018-2022. Some specific measures include: ■ Supporting a shift to new technologies and fuels; ■ Promoting lower carbon transport choices; ■ Using market-based measures to encourage a shift to lower carbon transport; ■ Investing up to £30 million over the next two years to deliver several hundred low carbon buses; ■ Demonstrating 340 new electric and lower carbon cars; ■ Putting a cap on emissions from all flights arriving at or leaving from European airports by including them in the EU Emissions Trading System from 2012; ■ Providing help worth about £2,000 to £5,000 per vehicle towards reducing the price of ultra-low carbon cars, from 2011, and up to £30 million to support the installation of electric vehicle charging infrastructure in six or so cities across the UK.
Targets	Central government departments and their agencies to procure new cars that average 130g CO_2/km by 2011. Set a new target later 2010. Targets of 130g CO_2/km from 2012, with full compliance by 2015, and 95g CO_2/km by 2020 have been set. The plan to 2020 will cut emissions from transport by 14% on 2008 levels and secure the oil supplies needed during the transition to a low carbon country. Setting targets for government departments and their agencies to procure new cars for administrative purposes that meet the EU standard for 2015 in 2011. Cutting average carbon dioxide emissions from new cars across the EU to 95g/km by 2020, a 40% reduction from 2007 levels. Committing to source 10% of UK transport energy from sustainable renewable sources by 2020. Investing £140 million in promoting cycling in England in 2008-11, and a new £5 million investment in improving cycle storage at rail stations.

	Transforming transport by cutting average carbon dioxide emissions from new cars across the EU by 40% on 2007 levels, supporting the largest demonstration project in the world for new electric cars, and sourcing 10% of UK transport energy from sustainable renewable sources by 2020. Launching a competition for the country's first Sustainable Travel City, building on projects in towns which saw reported car trips fall by 9%, walking increase by 14% and cycling increase by 12%. Introducing a target to limit UK aviation emissions to below 2005 levels by 2050.
Key Document Themes	2, 3, 4, 21

Policy Document	UK Renewable Energy Strategy, 2009
Key Policies/ Objectives	The strategy sets out how the use of renewable electricity, heat and transport will be achieved in the UK and also how the legally binding target of ensuring that 15% of energy comes from renewable sources by 2020 will be achieved. The strategy is related to the Low Carbon Transition Plan. Mechanisms to achieve this will include: ■ Expand and extend the Renewables Obligation for large scale renewable generation (current end date 2027, expand to 2037); ■ Amend or replace the Renewable Transport Fuel Obligation to increase the use of biofuels; ■ Introduce new Renewable Heat Incentive and Feed in Tariffs to provide payments for renewable heat and small scale electricity; ■ Increase investment in emerging technologies and pursue new sources of supply; ■ Put in place the mechanisms to provide financial support for renewable electricity and heat worth around £30 billion between now and 2020; ■ Create new opportunities for individuals, communities and business to harness renewable energy. ■ Some specific activities include: ■ Fund up to four demonstrations of capturing and storing emissions from coal power stations; ■ Facilitate the building of new nuclear power stations; ■ Piloting "pay as you save" ways to help people make their whole house greener – the savings made on energy bills will be used to repay the upfront costs; ■ Introducing clean energy cash-back schemes; ■ Opening a competition for 15 towns, cities and villages to be at the forefront of pioneering green innovation; ■ Helping the most vulnerable by creating mandated social price support, piloting a community-based approach to delivering green homes in low income areas (90,000 homes), increasing level of Warm Front grants; ■ Helping make the UK a centre of green industry by supporting the development and use of clean technologies, including up to £120 million investment in offshore wind and an additional £60 million; ■ Producing a longer term roadmap for the transition to a low carbon UK for the period 2020 to 2050 by spring 2010 and a vision for a smart grid; ■ Secure energy supplies by ensuring a supportive climate for the substantial new investment needed to bring forward low carbon infrastructure, and maximise the economic production of oil and gas from the North Sea; ■ Help businesses manage the costs of tackling climate change and help everyone adapt to climate impacts; ■ Launching a new personal carbon challenge with rewards and incentives for saving energy;

	■ More proactive services from the Energy Savings Trust; ■ Consultation on requiring energy performance ratings for rented property to be put on property advertisements; ■ Regional strategies: regions to set targets for renewable energy capacity in line with national targets, or better where possible.
Targets	The key strategy target is to ensure that 15% of energy comes from renewable sources by 2020. This equates to almost a seven fold increase in the share of renewable in a decade, from about 2.25% in 2008. This target will be delivered by a balance of fuels and technologies (e.g. on and offshore wind, hydro, sustainable bioenergy (biomass, biogas, solar and heat pumps), marine sources and small scale technologies)
Key Document Themes	3, 4, 5, 6, 18, 19, 20

Policy Document	Towards Zero Waste – One Wales One Planet, A Consultation Strategy for Wales, April 2009
Key Policies/ Objectives	Long term aim of zero waste by 2050 – by reducing the ecological footprint of Wales to 'one Wales: one planet' levels by 2050. Waste reduction is the key to achieving this. A medium term aim of a high recycling society by 2025, which requires a 70% recycling rate across all sectors by 2025 and supported by closed loop recycling. The strategy defines zero waste as *"A concept based on the understanding that all the materials we use are resources and only become waste as a result of poor management, bad design and out-dated attitudes to sorting and disposal. It is therefore a way of thinking - a path to travel that defines waste as something that is not acceptable. It sets a new paradigm with a target of a 100% resource-efficient economy where material flows are cyclical and everything is reused or recycled harmlessly back into society or nature. 'Waste' as we think of it today will cease to exist because everything will be viewed as a resource."* Other key ideas include: ■ Develop 'closed loop recycling' systems (used directly in Welsh manufacturing processes). 'Joined up' recycling infrastructure and market development for recyclates; ■ Develop opportunities for social enterprise; ■ Focus on priority materials - food, paper and card, wood, metals and plastic; ■ Work closely with the UK and EU Governments on ways to ensure producers take more responsibility for products and their product design ■ Make producers more responsible for waste they produce, or cause others to produce; ■ Generating renewable energy from biowastes; ■ Phasing out landfill sites and developing high efficiency energy from waste plants; ■ Municipal waste sector plan will encourage reuse through by supporting and promoting existing schemes and improving collection methods for larger reusable items; ■ Sustainable public sector procurement and working with Green Jobs Strategy; ■ Grants provided to businesses and other organisations need to include sustainable waste management conditions; and ■ Voluntary agreements and targets with industry sectors are important to achieve outcomes. Through proposed sector plans targets will be set to reduce growth in waste streams in line with business as usual trends. Also opportunities to promote zero waste strategies and develop sector specific reuse targets.
Targets	Max level of residual household waste per person per annum: ■ 295 kg by 2013;

	■ 258 kg by 2016; ■ 210 kg by 2020; ■ 150 kg by 2025; and Zero waste by 2050 Recycling target rate across all sectors: ■ 40% by 2010; ■ 52% by 2013; ■ 58% by 2016; ■ 64% by 2020; and 0% by 2025 A minimum of 80% of reuse/recycling and composting must come from source separation from now until 2025. Maximum level to landfill: 10% by 2020 and 5% by 2025. Maximum level of energy from waste: 42% by 2016, 36% by 2020 and 305 by 2025. Target for the minimum level of reuse 1% by 2025. Ecological footprint reduction targets measured through waste reduction activities. Focus on the materials with a higher impact will reduce the ecological footprint of waste more quickly. Ecological footprint targets: ■ Option 1 based on an absolute reduction of 1.8% a year; or ■ Option 2 based on 3.2% reduction based on the previous year's waste total. The consultation relates to two different recycling rates for commercial waste. Highest feasible recycling rate of 77% or a 70% recycling rate.
Key Document Themes	1, 3, 5, 7, 8, 9, 10, 11, 12, 13, 14, 16 ,17, 18, 19, 20, 29, 31

Policy Document	Consultation on Scotland's Zero Waste Plan
Key Policies/ Objectives	The vision for Scotland is based around delivering Zero Waste: ■ Promotes sustainable design; ■ Prevents waste; ■ Has high levels of recycling and composting; ■ Reduces landfill to a minimum; and ■ Has effective and coordinated delivery. Waste Prevention: ■ All businesses are aware of and participate in resource efficiency; ■ Every person is aware of and participates in waste prevention; ■ The amount of waste falls and continues to fall; ■ Government and the public sector lead by example on resource efficiency and waste prevention. Recycling and Composting: ■ High recycling at home at work and in public places; ■ Has more recyclate reprocessed in Scotland; ■ Business and householders recycle a wider range of materials and dramatically recued the amount sent to landfill; ■ Produce high quality recyclate with sustainable end use markets; ■ Business and householders use recylate or products containing recycled content. Other Recovery: ■ Only uses energy from waste after all efforts have been made to prevent waste, re-use material and recycle;

	■ Has high efficiency energy from waste facilities (including head recovery where possible); ■ Has facilities taking single stream material where possible, rather than mixed waste. Disposal: ■ Landfill reduced to a minimum. ■ Zero Waste for the Scottish Strategy means "eliminating the unnecessary use of raw material; sustainable design;, resource efficiency and waste prevention; re0using products where possible; and recovering value from products when they reach the end of their lives either through recycling, composting or energy recovery in accordance with the waste hierarchy. Zero waste is about how we can reduce unnecessary consumption and improve recycling rates....and is part of the wider picture of environmental sustainability."
Targets	Recycling of municipal waste targets: • 40% by 2010; • 50% by 2013; • 60% by 2020; and • 70% by 2025. Landfill Directive target: ■ Reduce BMW landfill to 1.32 million tonnes by 2010; ■ 880 thousand tonnes by 2013; ■ 620 thousand tonnes by 2020. No growth in the amount of municipal waste produced from 2010. No more than 25% of municipal waste going to energy from waste facilities. No more than 5% of waste being landfilled by 2025. Separate collections for at least paper, metals, plastic and glass where environmentally and economically practicable by 2015. Proposed target – reduce waste by 1% each year. Proposed target - reduce the amount of commercial and industrial waste sent to landfill by 150,000 tonnes a year. By 2020 increase by 50% of weight the reuse and recycling of paper, metal, plastic glass from households and possibly other sources similar in nature of materials.
Key Document Themes	1, 3, 5, 7, 8, 9, 10, 11, 12, 13, 14, 16 ,17, 18

Policy Document	EU Waste Framework Directive (2008/98/EC)
Key Policies/ Objectives	The old Waste Framework Directive set legal requirements across the EU including the need for waste facility permitting and national waste strategies and the need to use the European Waste catalogue to help track wastes. The Waste Framework Directive was revised in 2008 and is far more wide reaching than its predecessor. The amended Directive sets the EU's first waste recycling targets for household and non-hazardous construction and demolition waste. It also enshrines the five-step waste hierarchy into EU law and introduces a definition of by-products that will allow some materials currently defined as waste to become non-wastes. The Directive will require countries to take "necessary measures designed to achieve" a

	target to recycle 50% of waste from households by 2020. This is in line with the English waste strategy, while Scotland and Wales have recently proposed higher targets for 2020. The wording allows waste "from other origins… similar to waste from households" to count towards the target, suggesting that trade waste could be used to meet the target. By 2015 member states must set up separate collections for at least paper, metals, plastics and glass provided they are technically, environmentally and economically feasible. Member states must also "take measures to encourage" the separate collection of biowaste. The Directive's wording with respect to collections of recyclates implies that co-mingled collections would not be allowed to continue post-2015. Article 11(1) of the Directive states that member states shall establish separate collections for paper, metal, plastic and glass by 2015 "where technically, environmentally and economically practical and appropriate" to "promote high-quality recycling". DEFRA has stated that while the UK intends to encourage separate collections, it will allow co-mingled collections to continue after 2015 "where this is the most effective means of increasing recycling rates in the local circumstance." The UK has since received written confirmation from the European Commission that it has "agreed with the UK's interpretation of these provisions, while making clear that in the final analysis this was a matter for the European Court of Justice." There is also a target for member states to reuse, recycle or recover 70% of non-hazardous construction and demolition waste by 2020. But as with the recycling target, the obligation on member states is "to take necessary measures designed to achieve" the target. No target for commercial and industrial waste was agreed. If these targets are not met by 2020, the Commission can take member states to court for non-compliance. No waste prevention targets were set. Instead, the Directive obliges member states to establish waste prevention programmes within five years of its entry into force. The Commission is required to set "waste prevention and decoupling objectives for 2020" in 2014, but only if these are deemed "appropriate". There is also a requirement for the Commission to draw up eco-design policies by 2014 aimed at promoting recyclable and reusable products and limiting waste. Other measures in the directive include: ■ Incineration: The Directive will "re-brand" incinerators meeting certain efficiency thresholds as methods of recovery rather than disposal. ■ Definition of waste: The Directive will include a definition of "by-products" that will place some materials outside waste controls if certain criteria are met. There is a provision committing the Commission to develop "end-of-waste" criteria for materials such as aggregates, paper, glass, metal, tyres and textiles. ■ Producer responsibility: The concept of extended producer responsibility was also introduced into the Directive for the first time, allowing member states to make manufacturers, importers or retailers of products responsible for the costs of their treatment or disposal. The Waste Framework Directive should be transposed into national legislation by 12th December 2010. Defra commenced a consultation on the revisions to the Directive in September 2009 and consultation responses were published in March 2010.
Targets	Recycle a minimum of 50% of waste from households by 2020 Re-use, recycle or recover 70% of non-hazardous construction and demolition waste by 2020. The obligation for both targets is to take the necessary measures designed to achieve these targets. No targets for commercial and industrial waste recycling or waste prevention were agreed.
Key Document Themes	10, 11, 15, 16, 17,

Regional and Merseyside Policy Documents

Policy Document	Joint Municipal Waste Management Strategy for Merseyside (JMWMS), Headline Strategy 2008
Key Aims, Objectives and Policies	Aim: ■ To improve the sustainability of municipal waste produced on Merseyside using the waste hierarch; ■ To continuously improve the services we provide in terms of efficiency, effectiveness and economy. Objective: ■ To provide services and facilities which directly contribute to the implementation of the JMWMS; ■ To optimise waste REDUCTION; ■ To optimise waste RE-USE; where reduction is not possible ■ To optimise waste RECYCLING and COMPOSTING where re-use is not possible; ■ To optimise waste RECOVERY where actions higher up the waste hierarchy are not practicable; ■ To landfill waste only where actions higher up the waste hierarchy are not possible; ■ MWDA to lead in the development of a JMWMS for Merseyside; ■ To deliver waste services to the required performance levels. Work together to: ■ Deliver sustainable waste management; ■ Increase resource efficiency; ■ Reduce the carbon impact of waste management; and ■ Deliver high standard of service. The strategy also contains 29 key recommendations for action in relation to: ■ Working together – as a Partnership, with Stakeholders, including community groups; ■ Produce a Joint Communication Strategy; ■ Develop an Education and Awareness plan to support the Communication Plan; ■ Enforcement will support the delivery of the strategy, e.g. at Household Waste Recycling Centres (HWRCs) and develop an action plan for enforcement; ■ Wider wastes to be addressed and regional self sufficiency considered; ■ Procurement of new waste infrastructure; ■ Improve recycling performance by the separate collection of dry recyclable waste, and biodegradable waste.
Targets	To reduce municipal waste arising in Merseyside through a comprehensive innovative and sustained programme of waste prevention activities.
Key Document Themes	1, 3, 7, 9, 26, 10, 11, 16, 17, 23, 24, 25, 27, 29, 30

Policy Document	JMWMS for Merseyside Waste Prevention Strategy
Key Aims, Objectives and Policies	■ The MHWP to work together to ensure that waste prevention activities compliment and support delivery of the JMWMS; ■ Develop partnerships with public, private, and third sector organisations to support the promotion and delivery of waste prevention; ■ Increase understanding of residents and businesses of the need to prevent the generation of waste; and ■ Deliver a range of waste prevention activities that will generate behavioural change amongst residents and businesses.
Targets	Limit municipal waste growth to +0.4% per year by 2010, to +0.2% per year by 2015 and to 0% per year by 2020. A wide range of targets and actions are set linked to various waste prevention activity such as composting and junk mail.
Key Document Themes	11, 12, 16, 25, 27

Policy Document	Municipal Waste Management Strategy for Halton, 2008

Key Aims, Objectives and Policies	The main aim of the strategy is for Halton to provide a framework for the management and planning for its waste services and achieve the following objectives:
	■ Reduce landfill in line with European and UK Legislation;
	■ Maximise recycling and recovery of waste;
	■ Increase public awareness on waste issues;
	■ Strive for best value in all aspects of waste management; and
	■ Manage waste in a way that takes account of Haltons six strategic priorities:
	  ■ A Healthy Halton;
	  ■ Haltons Urban Renewal;
	  ■ Employment Learning & Skills in Halton;
	  ■ Children and Young People in Halton;
	  ■ A Safer Halton;
	  ■ Corporate Effectiveness and Efficient Service Delivery.
	Key Themes
	Working Together as the Local Strategic Partnership to deliver the Community Strategy and Haltons' Urban Renewal. Relevant issues for waste are:
	■ Improving environmental assets and how the borough looks;
	■ Minimising waste /increasing recycling/brining efficiencies in waste disposal; and
	■ Planning services efficiently.
	To also work with the regional stakeholders, Merseyside Partners, local community groups in Halton.

	Wider Waste – provide help and support to business to improve management of their waste. Responsible waste management is important – enforcement activity will focus on illegal activity such as fly tipping, littering.
Targets	30% of household waste recycled or composted by 2010 and at least 40% by 2020. To ensure 100% of households have kerbside collections for at least two recyclables by 2010, (It is planned that all households will receive a multi-material kerbside recycling collection, including plastic bottles, cans, glass bottles and jars, and card (in addition to paper) by 2010). Maintain a 60% recycling and composting rate at the HRWCs. Awareness raising campaign delivered to all residents during 2008-2010. Limit municipal waste growth to 1% per year by 2010, to 0.75% per year by 2015 and to 0% per year by 2020. A wide range of targets are set linked to various topics such as composting and junk mail.
Key Document Themes	6, 7, 32, 11, 16, 17, 24, 25, 33

Policy Document	North West Regional Waste Strategy, Draft Updated, Jan 2010
Key Aims, Objectives and Policies	The key aim is: ■ To contribute to sustainable development in the North West by supporting waste management systems that reduce waste generation, lessen the environmental impacts of waste production, improve resource efficiency, stimulate investment and maximise economic opportunities arising from waste management. Objectives relate to ensuring that waste management is developed in line with sustainable development principles, the low carbon agenda and integrated waste management that makes a maximum contribution to reducing environmental impacts at acceptable cost. This is achieved by: ■ Preventing and avoiding the amount of waste produced in the region; ■ Reducing waste disposed to landfill; ■ Maximising reuse of waste products; ■ Increasing the proportion of recycling and composting of waste; ■ Recovering value (in the form of energy) from waste not recycled; ■ Provision of treatment and disposal capacity; ■ Maintaining sufficient landfill capacity for final residues; ■ Providing a clear framework for stakeholders; ■ Delivering waste planning policy in the north west; ■ Optimising opportunities for north west business from sustainable waste management; ■ Ensure that the strategy is clear, transparent and informative; and Ensure sufficient flexibility in the strategy to incorporate change. Key Messages: ■ Sustainable Consumption and Production is central to the strategy and growth for

	the waste industry in the north west; ■ The North West Sustainable Consumption and Production Plan is central to this ■ There is a need to maximise value from C&I and C&D resources in the region; ■ Markets must be developed to support the use of waste as a resource; ■ Without markets there is a risk of not meeting LATS diverson, this will be achieved by working together. Waste will be a fuel source in meeting the regions energy needs; ■ Reducing waste to landfill is the start of market development work. Sector specific regional targets for this will be required; ■ Integration of waste facilities into other types of development is crucial, e.g. provision of storage containers in new residential and commercial developments, use of recyclable and renewable construction materials in developments; ■ High levels of skill are required by the industry to support change; ■ Sustainable Procurement is essential along with education of and communication with communities and stakeholders; ■ Effective local solutions are important as well as engaging with the community sector and effective waste partnerships. The above messages are accompanied by 19 Policy Statements: 1- Regular review of MWMS; 2- Preparation of Development Plan Documents(DPDs); 3- Waste prevention and zero growth target; 4- Encourage Waste Reuse and Remanufacturing 5- Targets for recycling and composting of household waste; 6- Encourage the separate collection and processing of biodegradable waste; 7- Commercial and Industrial waste recycling targets; 8- Targets to recover value from municipal waste; 9- Target to recover value from C&I waste; 10- Maintain regional landfill capacity; 11- Use of recycled C&D material in Construction projects; 12- Market development in secondary materials markets is important; 13- Public Sector exemplar status in sustainable procurement; 14- Facilities for segregation of recyclable materials should be sited following the proximity principle; 15- WDAs should meet their waste needs within their own boundaries and form partnerships with neighbouring authorities where necessary; 16- Future reprocessing and recycling capacity should be developed to meet capacity gaps; 17- The strategy is supportive of integrated waste processing parks; 18- The strategy supports the development of new waste treatment technologies; 19- Promotes the role of 4NW in the delivery of the strategy.
Targets	■ Achieve a year on year target of 0% growth in waste for all waste streams ■ Recycle and or compost 40% of household waste by 2010, 45% by 2015 and 55% by 2020 ■ Recycle 55% of all commercial and industrial waste by 2020

	■ Recover value from 45% of MSW by 2010, 67% by 2015 and 75% by 2020 ■ Recover value (including recycling) from at least 70% of all C&I wastes by 2020
Key Document Themes	1-4, 5,9-13, 15, 16, 17, 19, 20, 23, 24, 28, 29, 30, 31

Policy Document	Sustainable Consumption and Production Plan for the North West 2010-2012
Key Aims, Objectives and Policies	Vision for 2020 – To achieve a more sustainable, resource efficient, low carbon north west by 2020 through continuous economic and social progress that makes best use of resources to meet the needs and aspirations of the north west for a better quality of life. Five Key Outcomes: ■ Transformation of resources use with the region consuming sustainably – focus on food, chemicals, construction and water; ■ The public sector leading the way – transform the use of resources and purchase resource efficient, low carbon products; ■ Business are sustainable and provide resource efficient, low carbon products; ■ Waste, when unavoidably produced is seen as a valuable resource – zero waste sent to landfill and commercial recycling rates improved; ■ North West Low Carbon and Environmental Goods and Services sector capitalising on growth opportunities in SCP Each of the five outcomes discussed have related actions to ensure delivery. Maximising Waste as a Resource: The waste private and public sector should work together towards zero waste to landfill: ■ That improves infrastructure for all the region's waste ■ Promotes best practice in waste prevention; ■ Prioritises waste re-use/treatment options in terms of resource value, resource impact and embodied carbon; ■ Reduces embodied energy and resource loss by recycling more paper, textiles, glass, tyres, plastics, cathode ray tubes, WEEE; ■ Increase recycling rates from public sector and SMEs. Key Actions; ■ Delivery of Zero Waste – that includes low resource, low carbon infrastructure for the NW's waste, promote exemplar practice in cost efficient waste prevention and management, evolve Multi Area Agreements for waste prevention; ■ Increase commercial and industrial waste arising – set targets for C&I recycling, identify collection/infrastructure needs/build capacity, involve public, third sector organisations and private organisations. Indicators of Success: ■ Reduction in tonnes of CO2 emissions per GVA against a 2006 baseline; ■ Reduction in waste produced per unit of GVA against a 2006 baseline.
Targets	Support the RWS to recycle 50% of commercial and industrial waste by 2020 Recover value from 70% of all commercial and industrial waste by 2020 2012 Targets: ■ NWDA Recycling Rate of 80%, green travel plan and sustainable procurement plan; ■ Environment Agency zero waste to landfill, 80% of office waste recycled and a sustainable procurement policy;

	■ GONW will have made progress towards a target of 30% reduction in carbon budget by 2020, reduced waste arising by 25%, recycling 75of waste and reducing water use by 25%; ■ 4NW to have a green travel policy by 2012.
Key Document Themes	1, 2, 3, 4, 5, 7, 9, 11, 13, 15, 16,17, 30

Policy Document	Climate Change Action Plan for England's Northwest 2010-2012 'Rising to the Challenge'
Key Aims, Objectives and Policies	VISION – A low carbon and well adapted North West by 2020. In the short term, the focus is on reducing GHG emissions by influencing attitude and behaviour change to increase energy efficiency, reduce energy demand and promote low carbon technologies, whilst also putting in place mechanisms to adapt to future climate change. The Action Plan focuses on the ability of regional organisations to enable, encourage and engage individuals, groups, communities, partnerships and businesses in the move towards a low-carbon and well adapted region, recognising that regional organisations must exemplify good practice and catalyse action (key behaviour in bold). A table of actions are allocated to key organisations in the North West, including the EA, NWDA, Envirolink, etc.
Key Document Themes	3, 4, 19, 30

Policy Document	The North West of England Plan Regional Spatial Strategy to 2021
Key Aims, Objectives and Policies	Chapter 9 relates to minerals, waste and energy management Application of waste management principles should follow the waste hierarchy. All development should: ■ Promote the minimisation of waste in site development such as the separation of different waste materials for recycling and reuse; ■ Maximise the use of recycled materials in construction and encourage developers and contractors to specify these materials wherever possible; ■ Provide infrastructure that facilitates and meet the needs of local residents, business and industry for segregated storage, collection and recycling of waste materials; ■ Incorporate sufficient space to separate and store segregated waste streams waste and enable kerbside collection of materials; ■ Adopt best practice techniques to prevent and minimise waste during the design and construction phases of development; and Promote the use of site waste management plans.
Key Document Themes	1, 11, 12, 17, 19, 24, 29

Policy Document	RS2010 Regional Strategy for England's Northwest , Part 1 Consultation (closed 26th February 2010)
Key Aims, Objectives and Policies	The Vision for the strategy is to ensure that - "*The quality of life for the people of the Northwest will be excellent and the region will become more prosperous, more equitable and produce less carbon: by 2030 it will be a better place to live, learn, work, visit, and invest".* The RS2010 is being prepared in two parts; Part 1 - the high level strategic framework Part 2 – Detailed supporting policies A draft Part proposed high level strategic priorities and where working together can maximise opportunities and address challenges. Four key strands for the document are proposed: ■ Capitalise on the opportunities of moving to a low carbon economy and address climate change; ■ Build our sources of international competitive advantage and regional distinctiveness; ■ Release the potential of our people and tackle poverty; ■ Ensure the right housing and infrastructure for sustainable growth.
Key Document Themes	3, 4, 6, 29, 32

Policy Document	Liverpool City Region (LCR) Mini-Stern Review 2009

Key Aims, Objectives and Policies	The review has considered and costed climate change as an economic problem. Key issues arising from the review are as follows;
	■ The economy faces a major challenge to become a low carbon economy.
	■ The cost to business and the public sector of not adjusting could be approximately 1% of the area's GVA. There are 90,000 jobs that could be significantly affected.
	■ Also a potential to exploit 6-7,000 new jobs in energy and environmental technology and the service sector.
	■ Strong leadership is required.
	■ Significant change to the structure and organisation of economic activity is required.
	■ LCR has a CO_2 footprint of 7.6 tonnes per head of population, this is 8.6 for the north west and 8.7 for the UK. Related to lower economic activity and high public transport use.
	■ The 11.2 Million tonnes of CO_2 in 2006; one half produced by business, a fifth by transport and a third by domestic use of power and fuel.
	■ Opportunities relate to;
	  ■ Existing natural assets (tidal and on shore/off shore wind)
	  ■ Renewable energy generation (energy from waste and biomass potential)
	  ■ Environmental technologies and services
	  ■ Local R&D expertise

Key Document Themes	3, 4, 18, 20

Policy Document	Liverpool City Region Multi-Area Agreement (MAA) 2009

Key Aims, Objectives and Policies	A number of key performance indicators are identified relating to the key aims. The vision for the LCR is to establish the region as a thriving international city region by 2030. The aims are to: ■ Maximise potential; ■ Develop our cultural offer; ■ Tackle deprivation; ■ Improve our housing; ■ Improve transport; ■ Maximise connectivity: multi-modal freight and logistics infrastructure including Liverpool Super Port; Become a low carbon economy; including becoming energy self sufficiency and net energy exporter. To become the biggest low carbon goods and services city region.
Key Document Themes	3, 4, 21, 28

Policy Document	Making it Happen in Halton – A Community Strategy for a Sustainable Halton
Key Aims, Objectives and Policies	Halton has six strategic priorities; ■ A Healthy Halton – to create a healthier community and work to promote well being and a positive experience of life with good health, not simply the absence of disease and offer opportunities for people to take responsibility for their health with the necessary support available. ■ Haltons Urban Renewal – to transform the urban fabric and infrastructure, to develop exciting places and spaces and to create a vibrant and accessible borough that makes Halton a place where people are proud to live and see a promising future for themselves and their families; ■ Targets around CO_2 reduction per capita related to NI186 ■ Waste recycling target linked to NI192, 34% by 2010/11 ■ Employment Learning & Skills in Halton - to create an economically prosperous borough that encourages investment, enterprise and business growth, and improves the opportunities for learning and development together with the skills and employment prospects of both residents and workforce so that they are able to feel included socially and financially. ■ Children and Young People in Halton – to build stronger, safer communities which are able to support the development and learning of children and young people so they grow up feeling safe, secure, happy and healthy and are ready to by Halton's present and Halton's future. ■ A Safer Halton - to ensure pleasant, safe and secure neighbourhood environments, with attractive, safe surroundings, good quality local amenities, and the ability of people to enjoy life where they live. ■ Corporate Effectiveness and Efficient Service Delivery. A further six cross cutting themes of reducing social exclusion, the impacts of the economic climate, climate change impacts, sustainable development, equality and diversity, and population and housing needs. Five Strategic Partnerships have been set up to design and deliver strategies and action plans to deliver these priorities.
Targets	LAA Targets are; NI 191 – 848kg in 09/10, 811kg in 10/11, 799kg in 11/12, and 787kg in 12/13 NI 192 – 31% in 09/10, 34% in 10/11, 35% in 11/12, and 36% in 12/13

	NI 193 – 66% in 09/10, 63% in 10/11, 62% in 11/12, and 61% in 12/13
Key Document Themes	3, 6,11,16, 32

Policy Document	A Vision for Sefton, Community Strategy 2006-2011
Key Aims, Objectives and Policies	Our commitment is in 'Creating the right environment for: ■ Children and Young People - to achieve their full potential, with a specific focus on children in the pre-school stages of their life, those who are looked after and 14-19 year olds. ■ Safer, Stronger Communities - safer communities and building stronger communities by increasing the levels of social capital and local guardianship. ■ Healthier Communities and Older People - everyone to have opportunity to maximise their independence, health and life expectancy. ■ Economic Development - reducing unemployment, increasing skills and improving enterprise. ■ Equality and Diversity - understanding and valuing diversity, increasing participation and ensuring equality of opportunity for all Sefton's communities. ■ Improving our Performance - by sharing ideas, identifying different and improved ways of delivering services, which lead to greater efficiency and improved outcomes. Also important are Neighbourhood renewal; and Sustainable development and the cross cutting themes of community cohesion and e-Sefton.
Targets	LAA Targets are; NI 192 – 34% in 09/10, 36% in 10/11 NI 193 – 60% in 09/10, 55% in 10/11
Key Document Themes	6, 16, 32

Policy Document	Sustainable Community Strategy 2008- 2023 Knowsley The Borough of Choice
Key Aims, Objectives and Policies	The vision is for a sustainable and diverse population. By the year 2023, Knowsley will have: ■ Attractive, sustainable neighbourhoods with a wide choice of housing and excellent community facilities; ■ Vibrant and welcoming town centres; ■ Residents and local communities who are able to make positive lifestyle choices; ■ High quality employment areas which help to drive economic growth in the Liverpool City Region; and ■ Narrowed the gap in deprivation levels, both between different parts of the borough and between Knowsley and elsewhere. The key drivers for achieving this change are: ■ Increasing economic activity at all levels; ■ A diverse and prosperous economy; ■ Unlocking the potential and raising aspiration; ■ Raising attainment and skills; ■ A well connected Knowsley; ■ Safer, more cohesive communities; and ■ Improving the offer and quality of place.
Targets	LAA Targets are; NI 192 – 30% in 09/10, 35% in 10/11
Key Document Themes	6, 32

Policy Document	A Sustainable Community Strategy for Wirral; Wirral 2025 – More Equal More Prosperous
Key Aims, Objectives and Policies	The vision is of a more prosperous and equal Wirral, enabling all communities and people to thrive and achieve their full potential. The Strategy plans to deliver: ■ A strong local economy for Wirral; ■ Safer, stronger communities in all parts of the borough; ■ The best possible health and well-being for all families and individuals; ■ Excellent life chances for children and young people; ■ A high quality living and working environment; and ■ Sustainable, appropriate housing for all. It will also involve planning for and taking action to ensure that the increased prosperity resulting from a strong local economy is accessible to all, and to narrow the gap between Wirral's most affluent and most deprived communities in relation to issues such as health, educational attainment and crime. The Strategic Partnership is also committed to: ■ Living within environmental limits, for example in recognising the importance of climate change; ■ A strong, cohesive and fair Wirral, for example by continuing to address the health

	inequalities that characterise the borough; ■ Developing sustainable solutions to tackling our strategic aims, for example by working with partners and the community to develop the right skills; ■ Support continued growth in Wirral; ■ Involving communities in developing strategies and making decisions at the local level; Ensuring that our services are accessible, working together to develop collaborative approaches to delivering services and ensuring that those who need to use them can do so.
Targets	LAA Targets are; NI 191 – 570kg in 09/10, 555kg in 10/11 and 550kg in 11/12 NI 192 – 35.5% in 09/10, 37% in 10/11 and 39% in 11/12 NI 193 – 58% in 09/10, 57% in 10/11
Key Document Themes	6, 11, 16, 32

Policy Document	St Helens Sustainable Community Plan 2008-2018
Key Aims, Objectives and Policies	The Vision is to make St Helens a modern, distinctive, economically prosperous and vibrant Borough. The Objectives are: ■ *Economic Development and Enterprise* - A diverse, modern economy, offering a wide range of job opportunities and releasing the productivity and economic potential of our most deprived local areas and their residents. ■ *Healthier Communities and Older People* - Improve health and wellbeing particularly in priority groups, reduce health inequalities and increase independence. ■ *Communities and Neighbourhoods* - Stronger, more inclusive communities with better opportunities for disadvantaged groups. A healthy, attractive and rich built and natural environment offering quality choices in transport, homes, leisure and sport facilities and a vibrant cultural life. ■ *Safer Communities* - Reduced crime and fear of crime. ■ *Children and Young People* - For our children and young people to be healthy, enjoy their childhood, achieve as young people and succeed as adults, in a community which values and respects them, and supports them as they seek to achieve their aspirations and deliver the promise of their youth. The commitment in the Sustainable Community Plan is followed through in to the Local Area Agreement.
Targets	LAA Targets are; NI 191 – 670kg in 09/10, 660kg in 10/11 and 657kg in 11/12 NI 192 – 32% in 09/10, 34% in 10/11 and 36% in 11/12 NI 193 – 68% in 09/10, 66% in 10/11 and 64% in 11/12
Key Document Themes	6, 11, 16, 32

Policy Document	Liverpool's Sustainable Community Strategy - Liverpool 2024: A thriving international city

Key Aims, Objectives and Policies	The Community Strategy has five key drivers for change; ■ *Competitiveness* - By 2024, Liverpool will be competitive on the world stage with a sustainable business sector and strong knowledge economy, supported by a workforce drawn from citizens who have lifelong learning ambition and competitive levels of aptitude and skills. ■ *Connectivity* - By 2024, Liverpool will be Connected, by high quality transport and communications links to international, national and regional markets, enabling the flow of goods, people and information. ■ *Distinctive Sense of Place* - By 2024, Liverpool will be Distinctive from our overseas competitors, harnessing the diversity and creativity of our people and of our cultural and physical fabric. ■ *Thriving Neighbourhoods* - By 2024, Liverpool will be thriving, with a dynamic third sector and neighbourhoods that are clean, safe and sustainable and that embrace the global challenge of climate change. ■ *Health and Wellbeing* - By 2024, Liverpool will be healthy, with reduced inequalities, improved wellbeing and opportunities for all to live positive independent lives.
Targets	Targets of relevance to waste management in the strategy include: ■ Aim to send less than 1% of residual waste to landfill by 2024 (it also refers to 10% in the climate change strategy) ■ Maintain Liverpool's position above the national score in respect of an environment for a thriving third sector as measured by the Office of the Third Sector ■ Ensure that Liverpool will be in the top quartile UK cities for its ecological footprint ranking by 2024 ■ Target a minimum 35% reduction in the city's carbon emissions LAA Targets are; ■ NI 192 - 30% in 09/10 and 35% in 10/11 ■ NI 193 - 71.9% in 09/10 and 67.7% in 10/11
Key Document Themes	3, 4, 6, 16, 22, 32

Policy Document	City of Liverpool Climate Change Strategic Framework: A Prospectus for Action
Key Aims, Objectives and Policies	The framework was produced by Liverpool First in order to minimise the environmental and climate change impact of activity and is the framework for action in achieving the carbon targets within the Sustainable Communities Strategy (to reduce the city's carbon emissions by 35% by 2024) in line with the Governments target to reduce GHG emissions by 80% by 2050. The Liverpool First Partnership has initially selected NI188 (adapting to climate change) as a priority indicator for the city and Liverpool is one of the first UK cities to agree to developing and implementing a Climate Change Adaptation Framework.
Targets	Proposed Priority Action for the waste sector in this document are: ■ Target net carbon savings from municipal waste management across Merseyside of 100,000 tonnes per annum by 2020; ■ Maximise the installation of renewable resources at waste management sites and facilities; ■ Recycle and compost 44% of household waste on Merseyside by 2020; ■ Reduce household waste to landfill on Merseyside by 90% by 2027; ■ Feedback annually on progress. Responsibility for these actions is with Merseyside Waste Disposal Authority.
Key Document Themes	3,4,9, 11, 12, 20

Policy Document	Towards a Climate Change Strategy and Action Plan for the Knowsley Partnership
Key Aims, Objectives and Policies	A climate change strategy is currently being developed by the Knowsley Partnership and a consultation document was published in December 2009. The proposed Vision is to make Knowsley the borough of choice for low carbon inward investment, working, visiting and living. There are 10 Catalytic Objectives relating to a reduction in CO_2 emissions from efficiency in energy use, waste and water in domestic properties, reduced transport emissions, increased renewable energy generation, reduce emissions from council estates and services, low carbon supply chains.
Targets	NI188 – Adapting to Climate Change is the main indicator with a plan to achieve Level 2 status. Links are made to the NI191 as a measurement of waste reduction.
Key Document Themes	3, 4, 5, 6, 9

Policy Document	Wirral Climate Change Strategy
Key Aims, Objectives and Policies	The strategy is based on four key themes: ■ Awareness (raising); ■ Energy (reduced dependence on fossil fuels); ■ Transport (increase sustainable modes of transport); and ■ Adaptation (identifying impacts of climate change for Wirral).
Targets	The purpose of the strategy is to achieve a 20% reduction in Wirral Council's carbon emissions by 2010.
Key Document Themes	3, 6, 9

Policy Document	St Helen's Climate Change Action Plan, March 2009
Key Aims, Objectives and Policies	The plan is structured around four key themes: Home, Business, Transport and Public and Third Sector. Specific objectives relating to waste management activity include: ■ Providing an efficient waste collection service, encouraging waste minimisation, increasing recycling and diverting waste from landfill. A key action is to implement the JMWMS. ■ Review current operations and minimise CO_2 emissions from operation. Promoting home composting and education on waste through the Eco-schools programme. Ensuring planning applications for large developments include space for community recycling facilities. Target waste reduction, recycling advice at business.
Key Document Themes	3, 4, 6, 9

Appendix 3 Information Used to Support the SEA Assessment

WRATE Results for carbon dioxide analysis

Scenario	Impact Assessment	Unit	Total	Collection	Transport	Intermediate Facilities	Recycling	Treatment and Recovery	Landfill	Difference to baseline	CO_2 tonnes
Business as Usual	climate change: GWP 100a	kg CO2-Eq	33,383,874	2,481,825	4,549,096	2,396,720	-71,975,792	2,185,300	93,746,725	0	0
Business as Usual	acidification potential: average European	kg SO2-Eq	-320,604	8,510	22,899	8,681	-366,683	9,004	-3,015		
Business as Usual	eutrophication potential: generic	kg PO4-Eq	144,296	854	4,327	1,397	-15,925	2,380	151,264		
Business as Usual	freshwater aquatic ecotoxicity: FAETP infinite	kg 1,4-DCB-Eq	-6,012,411	209,378	283,170	280,929	-7,656,517	60,039	810,591		
Business as Usual	human toxicity: HTP infinite	kg 1,4-DCB-Eq	-96,473,816	709,759	1,439,061	949,107	-98,127,806	235,706	-1,679,642		
Business as Usual	resources: depletion of abiotic resources	kg antimony-Eq	-825,748	38,339	38,376	21,188	-571,931	7,689	-359,410		
AWC	climate change: GWP 100a	kg CO2-Eq	20,075,210	2,481,825	4,336,994	2,388,887	-80,400,316	2,168,186	89,099,634	-13,308,664	- 13,309
AWC	acidification potential: average European	kg SO2-Eq	-370,170	8,510	21,757	8,629	-415,600	8,933	-2,399		
AWC	eutrophication potential: generic	kg PO4-Eq	137,303	854	4,110	1,388	-20,390	2,361	148,980		
AWC	freshwater aquatic ecotoxicity: FAETP infinite	kg 1,4-DCB-Eq	-6,488,806	209,378	262,196	279,409	-8,088,613	59,563	789,260		
AWC	human toxicity: HTP infinite	kg 1,4-DCB-Eq	-102,348,331	709,759	1,338,510	943,961	-103,987,654	233,840	-1,586,745		
AWC	resources: depletion of abiotic resources	kg antimony-Eq	-909,660	38,339	36,558	21,080	-671,944	7,629	-341,322		
Bulky	climate change: GWP 100a	kg CO2-Eq	21,303,994	2,481,825	4,570,703	2,385,246	-77,809,671	2,185,300	87,490,591	-12,079,880	-12,080
Bulky	acidification potential: average European	kg SO2-Eq	-354,261	8,510	22,995	8,633	-401,674	9,004	-1,729		
Bulky	eutrophication potential:	kg PO4-Eq	140,077	854	4,345	1,389	-19,027	2,380	150,137		

Scenario	Impact Assessment	Unit	Total	Collection	Transport	Intermediate Facilities	Recycling	Treatment and Recovery	Landfill	Difference to baseline	CO_2 tonnes
	generic										
Bulky	freshwater aquatic ecotoxicity: FAETP infinite	kg 1,4-DCB-Eq	-6,006,789	209,378	283,667	279,426	-7,667,057	60,039	827,758		
Bulky	human toxicity: HTP infinite	kg 1,4-DCB-Eq	-96,929,792	709,759	1,441,807	944,028	-98,741,172	235,706	-1,519,919		
Bulky	resources: depletion of abiotic resources	kg antimony-Eq	-875,206	38,339	38,537	21,077	-646,611	7,689	-334,237		
Food IVC	acidification potential: average European	kg SO2-Eq	-354,542	8,510	23,753	7,795	-408,037	17,209	-3,772	-33,738,416	-33,738
Food IVC	eutrophication potential: generic	kg PO4-Eq	109,140	854	4,491	1,252	-9,512	4,232	107,824		
Food IVC	freshwater aquatic ecotoxicity: FAETP infinite	kg 1,4-DCB-Eq	-5,891,266	209,378	297,379	253,108	-7,689,593	146,314	892,148		
Food IVC	human toxicity: HTP infinite	kg 1,4-DCB-Eq	-92,556,838	709,759	1,507,306	855,048	-94,904,716	558,279	-1,282,514		
Food IVC	resources: depletion of abiotic resources	kg antimony-Eq	-834,256	38,339	39,721	19,120	-651,858	11,288	-290,865		
Food AD	climate change: GWP 100a	kg CO2-Eq	5,316,712	2,481,825	4,706,559	2,184,238	-79,343,602	-1,006,142	76,293,833	-38,700,586	-38,701
Food AD	acidification potential: average European	kg SO2-Eq	-323,805	8,510	23,753	7,795	-406,105	46,013	-3,772		
Food AD	eutrophication potential: generic	kg PO4-Eq	114,199	854	4,491	1,252	-10,312	10,091	107,824		
Food AD	freshwater aquatic ecotoxicity: FAETP infinite	kg 1,4-DCB-Eq	-5,592,251	209,378	297,379	253,108	-7,327,151	82,887	892,148		
Food AD	human toxicity: HTP infinite	kg 1,4-DCB-Eq	-94,357,446	709,759	1,507,306	855,048	-96,246,342	99,297	-1,282,514		
Food AD	resources: depletion of abiotic resources	kg antimony-Eq	-868,334	38,339	39,721	19,120	-650,014	-24,635	-290,865		
Common	climate change: GWP 100a	kg CO2-Eq	-13,197,827	2,481,825	4,678,379	2,782,045	-105,673,769	2,185,300	80,348,392	-46,581,701	-46,582
Common	acidification potential:	kg SO2-Eq	-493,823	8,510	23,602	9,680	-544,070	9,004	-549		

Scenario	Impact Assessment	Unit	Total	Collection	Transport	Intermediate Facilities	Recycling	Treatment and Recovery	Landfill	Difference to baseline	CO_2 tonnes
	average European										
Common	eutrophication potential: generic	kg PO4-Eq	127,684	854	4,465	1,550	-30,730	2,380	149,165		
Common	freshwater aquatic ecotoxicity: FAETP infinite	kg 1,4-DCB-Eq	-9,485,065	209,378	288,663	316,140	-11,123,202	60,039	763,916		
Common	human toxicity: HTP infinite	kg 1,4-DCB-Eq	-144,713,625	709,759	1,467,771	1,067,835	-146,796,900	235,706	-1,397,796		
Common	resources: depletion of abiotic resources	kg antimony-Eq	-1,090,159	38,339	39,474	23,945	-892,963	7,689	-306,643		
Common + f	climate change: GWP 100a	kg CO2-Eq	-32,691,520	2,481,825	4,876,685	2,519,453	-109,006,926	3,537,726	62,899,717	-66,075,394	- 66,075
Common + f	acidification potential: average European	kg SO2-Eq	-493,239	8,510	24,672	8,586	-551,958	19,052	-2,100		
Common + f	eutrophication potential: generic	kg PO4-Eq	89,231	854	4,670	1,371	-18,931	4,656	96,611		
Common + f	freshwater aquatic ecotoxicity: FAETP infinite	kg 1,4-DCB-Eq	-9,310,506	209,378	307,029	281,759	-11,149,589	164,948	875,969		
Common + f	human toxicity: HTP infinite	kg 1,4-DCB-Eq	-139,191,551	709,759	1,556,098	951,594	-142,045,388	628,193	-991,806		
Common + f	resources: depletion of abiotic resources	kg antimony-Eq	-1,024,476	38,339	41,171	21,389	-899,492	12,177	-238,060		
Same mat.	climate change: GWP 100a	kg CO2-Eq	23,524,787	2,481,825	4,547,968	2,407,811	-78,504,301	2,185,300	90,406,183	-9,859,087	-9,859
Same mat.	acidification potential: average European	kg SO2-Eq	-357,911	8,510	22,897	8,710	-404,500	9,004	-2,533		
Same mat.	eutrophication potential: generic	kg PO4-Eq	140,310	854	4,327	1,401	-18,991	2,380	150,339		
Same mat.	freshwater aquatic ecotoxicity: FAETP infinite	kg 1,4-DCB-Eq	-6,037,723	209,378	282,605	281,963	-7,669,087	60,039	797,380		
Same mat.	human toxicity: HTP infinite	kg 1,4-DCB-Eq	-97,026,584	709,759	1,436,284	952,594	-98,748,333	235,706	-1,612,594		
Same mat.	resources: depletion of abiotic resources	kg antimony-	-901,757	38,339	38,364	21,269	-661,025	7,689	-346,393		

Scenario	Impact Assessment	Unit	Total	Collection	Transport	Intermediate Facilities	Recycling	Treatment and Recovery	Landfill	Difference to baseline	CO_2 tonnes
		Eq									
Trade waste	climate change: GWP 100a	kg CO2-Eq	23,575,437	2,481,825	4,546,080	2,401,147	-78,102,397	2,213,215	90,035,568	-9,808,437	- 9,808
Trade waste	acidification potential: average European	kg SO2-Eq	-356,389	8,510	22,887	8,694	-403,089	9,137	-2,529		
Trade waste	eutrophication potential: generic	kg PO4-Eq	139,496	854	4,325	1,399	-18,919	2,414	149,423		
Trade waste	freshwater aquatic ecotoxicity: FAETP infinite	kg 1,4-DCB-Eq	-6,066,120	209,378	282,517	281,383	-7,703,923	61,077	803,447		
Trade waste	human toxicity: HTP infinite	kg 1,4-DCB-Eq	-97,404,935	709,759	1,435,828	950,642	-99,138,738	239,704	-1,602,129		
Trade waste	resources: depletion of abiotic resources	kg antimony-Eq	-887,711	38,339	38,348	21,223	-648,532	7,786	-344,875		
Street sweep	climate change: GWP 100a	kg CO2-Eq	12,366,670	2,481,825	4,546,080	2,396,720	-83,652,579	-69,733	86,664,357	-21,017,204	-21,017
Street sweep	acidification potential: average European	kg SO2-Eq	-376,790	8,510	22,887	8,681	-427,473	12,959	-2,355		
Street sweep	eutrophication potential: generic	kg PO4-Eq	136,350	854	4,325	1,397	-18,465	4,067	144,172		
Street sweep	freshwater aquatic ecotoxicity: FAETP infinite	kg 1,4-DCB-Eq	-8,050,683	209,378	282,517	280,929	-9,676,422	52,637	800,278		
Street sweep	human toxicity: HTP infinite	kg 1,4-DCB-Eq	-120,794,213	709,759	1,435,828	949,107	-122,418,970	57,181	-1,527,117		
Street sweep	resources: depletion of abiotic resources	kg antimony-Eq	-927,200	38,339	38,348	21,188	-680,505	-12,949	-331,621		
Reduce bin	climate change: GWP 100a	kg CO2-Eq	24,151,030	2,481,825	4,537,598	2,375,495	-77,112,228	2,165,646	89,702,694	-9,232,844	-9232.8
Reduce bin	acidification potential: average European	kg SO2-Eq	-351,690	8,510	22,843	8,604	-398,072	8,923	-2,498		
Reduce bin	eutrophication potential: generic	kg PO4-Eq	139,178	854	4,317	1,384	-18,857	2,359	149,121		
Reduce bin	freshwater aquatic ecotoxicity: FAETP infinite	kg 1,4-DCB-Eq	-5,973,391	209,378	282,003	278,445	-7,598,186	59,499	795,471		

Scenario	Impact Assessment	Unit	Total	Collection	Transport	Intermediate Facilities	Recycling	Treatment and Recovery	Landfill	Difference to baseline	CO_2 tonnes
Reduce bin	human toxicity: HTP infinite	kg 1,4-DCB-Eq	-96,135,150	709,759	1,433,226	940,716	-97,854,248	233,586	-1,598,188		
Reduce bin	resources: depletion of abiotic resources	kg antimony-Eq	-879,218	38,339	38,276	21,001	-640,817	7,620	-343,636		
50% Recycling	climate change: GWP 100a	kg CO2-Eq	-10,614,422	2,481,825	4,821,348	2,292,612	-99,627,863	3,289,249	76,128,406	-43,998,296	- 43,998
50% Recycling	acidification potential: average European	kg SO2-Eq	-435,833	8,510	24,373	8,042	-489,711	17,117	-4,164		
50% Recycling	eutrophication potential: generic	kg PO4-Eq	105,297	854	4,612	1,289	-13,179	4,222	107,499		
50% Recycling	freshwater aquatic ecotoxicity: FAETP infinite	kg 1,4-DCB-Eq	-9,555,535	209,378	302,741	262,156	-11,257,872	144,327	783,735		
50% Recycling	human toxicity: HTP infinite	kg 1,4-DCB-Eq	-133,638,142	709,759	1,535,150	885,532	-135,989,623	551,183	-1,330,143		
50% Recycling	resources: depletion of abiotic resources	kg antimony-Eq	-1,086,432	38,339	40,698	19,839	-905,155	11,358	-291,512		

WRATE Results for ecological footprint analysis

	Unit	Business as ususal	AWC	Bulky	Food IVC	Food AD	Trade waste	Street sw.	Same materials	Reduce bin	50% Recycling
CO_2	m2a	-256,858,728	-271,370,586	-262,775,340	-255,118,057	-263,177,157	-266,716,974	-280,874,650	-268,019,460	-264,139,983	-295,800,533
Nuclear	m2a	-62,605,202	-68,487,504	-66,471,707	-66,539,311	-64,910,850	-66,741,152	-68,812,046	-66,797,762	-65,867,522	-75,059,257
Land occupation	m2a	-190,548,255	-201,485,910	-198,231,400	-208,697,772	-204,101,380	-199,074,167	-200,459,878	-198,145,380	-196,498,467	-207,491,144
Total	**m2a**	**-510,012,185**	**-541,344,000**	**-527,478,446**	**-530,355,141**	**-532,189,386**	**-532,532,293**	**-550,146,573**	**-532,962,602**	**-526,505,971**	**-578,350,934**
Difference to Baseline	**m2a**		-31,331,815	-17,466,261	-20,342,956	-22,177,201	-22,520,108	-40,134,388	-22,950,417	-16,493,786	-68,338,749
	Ha		- 3,133	-1,747	-2,034	-2,218	-2,252	-4,013	-2,295	-1,649	-6,834

Appendix 4 SEA – assessment of options detail

No	SEA Objective	Restricting residual capacity 1 - AWC; 9 - Reduced residual bin size/max recyclable; 11 - No side waste - common policy	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	+	Restricting the amount of residual waste collected diverts material from landfill and reduces greenhouse gas emissions. Plus additional benefits of recycling
2	To reduce municipal waste generation, including hazardous waste.	+	Restricting the amount of residual waste capacity potentially reduces overall levels of municipal waste generated. Waste potentially moves to recycling/composting
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	++	Restricting the amount of residual waste capacity potentially reduces overall levels of municipal waste generated and increases levels of material sent for recycling/composting.
4	To minimise the adverse impacts of waste management activity on human health.	++/-	No significant direct impacts on human health from waste management have been found. Potential impact from increase in road transportation due to increased recycling/composting. Bio aerosols for operatives (WRAP report on health effect of AWC)
5	To engage with all the members of the community in the development and delivery of waste management services.	+/-	Householders may engage with improved recycling services. Nature of residual services often met with resistance. Appropriate engagement required
6	To lead by example in the provision of in-house waste management services.	0	No impact anticipated
7	To reduce the amount of litter or fly-tipping in local communities.	0/--	Potential for short term, temporary fly-tipping incidents based on collection measures implemented. Education and enforcement required
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	+/-	AWC has potential to reduce road transportation and thus road traffic impacts e.g. noise. Restricting waste capacity and increasing recycling/composting of materials reduces the need to provide new landfill sites and increases the life of existing sites. Potential odour and dust impacts from composting sites. Poor advice on management of AWC could cause odour and vermin issues.
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	+/-	Restricting the amount of residual waste collected diverts material from landfill and risk of leaching into waste courses. Eutrophication and freshwater aquatic ecotoxicity improved from base scenario. Potential for increase in fly tipping which could impact on water quality.
10	To protect, manage and restore land and soil quality.	0	No impact anticipated
11	To minimise adverse effects of waste management on air quality.	+	AWC has potential to reduce road transportation and thus road traffic impacts thus impact on local air quality through decreased fuel usage. Human toxicity and acidification improved. Extra recycling contributes to improved air quality, Potential for polluting emissions from waste processing and composting however the likelihood is low as facilities will be required to operate within strict permit conditions.
12	To encourage sustainable economic growth.	+	Provision of collection services to meet recycling and composting targets present employment opportunities. Provision of processing facilities for recyclates also present local opportunities.
13	To encourage innovation as well as research and development together with knowledge transfer.	0	No impact anticipated

No	SEA Objective	Restricting residual capacity 1 - AWC; 9 - Reduced residual bin size/max recyclable; 11 - No side waste - common policy	
		Appraisal Score	Notes
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	+	Provision of collection services to meet recycling and composting targets present opportunities for scheme/networks. Provision of processing facilities for recyclates also present local opportunities.
15	To reduce the environmental impacts of transportation associated with waste management.	+/-	Potential reduction in number of residual vehicle movements. However, potential increased quantity of materials for recycling/composting may lead to an increase in vehicles.
16	To protect, manage and enhance biodiversity and geodiversity	+	Restricting the amount of residual waste capacity potentially increases levels of material sent for recycling/composting and reduces need for virgin material Evidence on land take and ecological footprint
17	To reduce the ecological footprint of waste management on Merseyside.	+	Minor reduction (0 - 2,000ha) in ecological footprint from base
18	To use water and mineral resources prudently and efficiently.	+	Restricting the amount of residual waste capacity potentially increases levels of material sent for recycling/composting and reduces need for virgin material/mining activity Improved abiotic resource depletion score in WRATE (less use of finite resource).
19	To promote more sustainable means of energy generation and fuel usage.	+/0	Potential reduction in number of residual vehicle movements. However, potential increased quantity of materials for recycling/composting may lead to an increase in fuel usage.
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	+/-	Increased recycling reduces the need for fossil fuels to be used in product manufacture. Potential impact from increase in road transportation and hence fuel usage due to increased recycling/composting
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	No impact anticipated visual impact from increased provision of containers for recycling/composing such as wheelie bins and boxes at sites of cultural/historic importance considered under enhanced recycling measures
22	To conserve and enhance the landscape as regards waste management activity/impacts.	0/-	Potential for short term, temporary fly-tipping incidents based on collection measures implemented. Education and enforcement required

No	SEA Objective	Reuse activity 2 - Bulky waste reuse; 14 - Reuse campaigns; 16 -Reuse/ Refurbishment support;	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	+	Increased material reused diverts material from landfill and reduces greenhouse gas emissions. Level of impact will depend on the proportion of biodegradable materials diverted. Increased reuse reduces the need for virgin materials to be used in products. Increased collection of materials for reuse more than off sets the increase in the road transportation and thus use of fossil fuels.
2	To reduce municipal waste generation, including hazardous waste.	+	Increased reuse activity will reduce overall levels of municipal waste generated
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	++	Increased reuse activity will reduce overall levels of municipal waste generated and move waste up the hierarchy
4	To minimise the adverse impacts of waste management activity on human health.	0	No significant direct impacts on human health from waste management have been found. Potential impact from increase in road transportation.
5	To engage with all the members of the community in the development and delivery of waste management services.	+/++	Provision of reuse services requires local communities to be actively involved in waste management activities. Opportunities to involve community group in reuse collection, impact will depend on extent of involvement.
6	To lead by example in the provision of in-house waste management services.	+/0	In house 'championing' of issues can help promote reuse activity
7	To reduce the amount of litter or fly-tipping in local communities.	+	Potential for reduction in fly-tipping incidents based on increase awareness of reuse/associated services
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	0	No impact anticipated
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	+/0	Reducing the amount of residual waste collected diverts material from landfill and risk of leaching into waste courses
10	To protect, manage and restore land and soil quality.	0	No impact anticipated
11	To minimise adverse effects of waste management on air quality.	+/0	Collection of increased materials for reuse may lead to an increase in requirement for road transportation and thus impact on local air quality through increased fuel usage.
12	To encourage sustainable economic growth.	+	Provision of reuse collection services may present employment opportunities. Provision of facilities for handling reuse items may also present local opportunities.
13	To encourage innovation as well as research and development together with knowledge transfer.	+/0	Potential for innovation/knowledge transfer to increase reuse/range of materials collected for reuse
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	+	Provision of reuse collection services may present employment opportunities. Provision of facilities for handling reuse items may also present local opportunities.
15	To reduce the environmental impacts of transportation associated with waste management.	+/-	Potential reduction in number of residual vehicle movements. However, potential increased quantity of materials collected through reuse collections may lead to an increase in vehicles.
16	To protect, manage and enhance biodiversity and geodiversity	+/0	Increased levels of material reused reduces need for virgin material
17	To reduce the ecological footprint of waste management on Merseyside.	+	Minor reduction (0 - 2,000ha) in ecological footprint from base
18	To use water and mineral resources prudently and efficiently.	+	Increased levels of material reused, reduces need for virgin material/mining activity. Reduced water usage associated with reduced processing of waste
19	To promote more sustainable	0	No impact anticipated

No	SEA Objective	Reuse activity 2 - Bulky waste reuse; 14 - Reuse campaigns; 16 -Reuse/ Refurbishment support;	
		Appraisal Score	Notes
	means of energy generation and fuel usage.		
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	+/-	Increased reuse reduces the need for fossil fuels to be used in product manufacture. Potential impact from increase in road transportation and hence fuel usage due to increased reuse activity
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	No impact anticipated
22	To conserve and enhance the landscape as regards waste management activity/impacts.	0	No impact anticipated

No	SEA Objective	Enhanced Recycling measures 4 - Common recycling systems all authorities; 5 - All WCAs collect same materials for recycling; 6 - Trade waste recycling; 7 - Street sweepings recycling; 15 - Recycling campaigns	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	+	Increased recycling and composting diverts material from landfill and reduces greenhouse gas emissions. Level of impact will depend on the proportion of biodegradable materials diverted. Increased recycling reduces the need for virgin materials to be used in products and often saves energy in the production process.
2	To reduce municipal waste generation, including hazardous waste.	+/0	No impact anticipated. Potential benefit through behaviour change
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	+/++	Encourage movement of waste up the hierarchy by increasing levels of material sent for recycling/composting Extent will depend on take up of schemes
4	To minimise the adverse impacts of waste management activity on human health.	+/++	No significant direct impacts on human health from waste management have been found. Potential impact from increase in road transportation. Positive impact from enhanced recycling full extent will depend on nature and quantity of materials
5	To engage with all the members of the community in the development and delivery of waste management services.	+/++	Provision of collection services to meet recycling and composting targets requires local communities to be actively involved in waste management activities Opportunities to involve community group in recycling collection, impact will depend on extent of involvement.
6	To lead by example in the provision of in-house waste management services.	+/0	In house 'championing' of issues can help promote recycling
7	To reduce the amount of litter or fly-tipping in local communities.	+/0	No change anticipated
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	0/-	The collection of materials for recycling and composting could lead to an increase in road transportation and thus road traffic impacts e.g. noise. Number of kerbside recycling bins may be an issue in an urban environment Recycling/composting of materials reduces the need to provide new landfill sites. Potential odour and dust impacts from composting sites.
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	+/++	Reducing the amount of residual waste collected diverts material from landfill and risk of leaching into waste courses. Eutrophication and freshwater aquatic ecotoxicity improved from baseline. Avoided burden from use of secondary raw materials as opposed to virgin extraction.
10	To protect, manage and restore land and soil quality.	0	No impact anticipated
11	To minimise adverse effects of waste management on air quality.	+/++	Collection of increased materials for recycling/composting may lead to an increase in requirement for road transportation and thus impact on local air quality through increased fuel usage. Potential for polluting emissions from waste processing and composting however the likelihood is low as facilities will be required to operate within strict permit conditions. Human toxicity and acidification WRATE score improved.
12	To encourage sustainable economic growth.	+	Provision of collection services to meet recycling and composting targets present employment opportunities. Provision of processing facilities for recyclates also present local opportunities.
13	To encourage innovation as well as research and development together with knowledge transfer.	+/0	Potential for innovation/knowledge transfer to increase quantity and range of materials collected for recycling
14	To encourage the formation,	+	Provision of collection services to meet recycling and

No	SEA Objective	Enhanced Recycling measures 4 - Common recycling systems all authorities; 5 - All WCAs collect same materials for recycling; 6 - Trade waste recycling; 7 - Street sweepings recycling; 15 - Recycling campaigns	
		Appraisal Score	Notes
	sustaining and growth of social / community enterprise schemes, voluntary and community networks.		composting targets present opportunities for scheme/networks. Provision of processing facilities for recyclates also present local opportunities.
15	To reduce the environmental impacts of transportation associated with waste management.	+/-	Potential reduction in number of residual vehicle movements. However, potential increased quantity of materials for recycling/composting may lead to an increase in vehicles.
16	To protect, manage and enhance biodiversity and geodiversity	+	Increased levels of material sent for recycling/composting reduces need for virgin material
17	To reduce the ecological footprint of waste management on Merseyside.	++	Medium reduction (2,000 - 10,000ha) in ecological footprint from base
18	To use water and mineral resources prudently and efficiently.	++	Increased levels of material recycled reduces need for virgin material/mining activity.
19	To promote more sustainable means of energy generation and fuel usage.	+/0	No impact anticipated
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	+/-	Increased recycling reduces the need for fossil fuels to be used in product manufacture. Potential impact from increase in road transportation and hence fuel usage due to increased recycling/composting
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	No significant impact anticipated. Potential visual impact from increased provision of containers for recycling/composting such as wheelie bins and boxes at sites of cultural/historic importance.
22	To conserve and enhance the landscape as regards waste management activity/impacts.	0	No impact anticipated

No	SEA Objective	3 - Food waste plus In-Vessel Composting (IVC);	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	++	Collecting food waste for composting diverts material from landfill and reduces greenhouse gas emissions.
2	To reduce municipal waste generation, including hazardous waste.	+/0	No impact anticipated. Potential benefit through behaviour change (may exhibit some waste reduction)
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	+/++	Encourage movement of waste up the hierarchy by increasing levels of material sent for composting Extent will depend on take up of schemes
4	To minimise the adverse impacts of waste management activity on human health.	0/-	No significant direct impacts on human health from waste management have been found. Potential impact from increase in road transportation. Higher human toxicity score than baseline from WRATE due to IVC treatment process and potential bioaerosols.
5	To engage with all the members of the community in the development and delivery of waste management services.	+/0	Provision of collection services to meet recycling and composting targets requires local communities to be actively involved in waste management activities Community scale IVC
6	To lead by example in the provision of in-house waste management services.	+/0	In house 'championing' of issues can help promote recycling
7	To reduce the amount of litter or fly-tipping in local communities.	0	No impact anticipated
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	+/-	The collection of food waste could lead to an increase in road transportation and thus road traffic impacts e.g. noise. Inappropriate storage / collection could cause vermin issues Composting of food waste reduces the need to provide new landfill sites.
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	+/-	Restricting the amount of residual waste collected diverts material from landfill and risk of leaching into waste courses. Potential run off from use of compost and digestate
10	To protect, manage and restore land and soil quality.	+/++	Potential to use outputs from IVC as soil conditioner - subject to meeting appropriate standard e.g. PAS 100 Extent will depend on range of variables related to soil quality
11	To minimise adverse effects of waste management on air quality.	+/-	WRATE scores higher than the baseline for Human toxicity and acidification due to emissions from IVC process
12	To encourage sustainable economic growth.	+	Safeguarding / additional collection and treatment employment opportunities
13	To encourage innovation as well as research and development together with knowledge transfer.	0	No impact anticipated
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	+/0	Provision of collection services to meet recycling and composting targets requires local communities to be actively involved in waste management activities Community scale IVC
15	To reduce the environmental impacts of transportation associated with waste management.	-	Weekly collection of food waste materials for composting may lead to an increase in vehicles.
16	To protect, manage and enhance	++	Medium reduction (2,000 - 10,000ha) in ecological

No	SEA Objective	3 - Food waste plus In-Vessel Composting (IVC);	
		Appraisal Score	Notes
	biodiversity and geodiversity		footprint from base
17	To reduce the ecological footprint of waste management on Merseyside.	++	Medium reduction (2,000 - 10,000ha) in ecological footprint from base
18	To use water and mineral resources prudently and efficiently.	+/0	Application of compost to land
19	To promote more sustainable means of energy generation and fuel usage.	0	No impact anticipated
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	0/-	A minor energy burden from composting process
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	No impact anticipated Locational issues addressed through planning
22	To conserve and enhance the landscape as regards waste management activity/impacts.	0	No impact anticipated

No	SEA Objective	3a - Food waste plus Anerobic Digestion (AD)	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	++	Collecting food waste for composting diverts material from landfill and significantly reduces greenhouse gas emissions.
2	To reduce municipal waste generation, including hazardous waste.	+/0	No impact anticipated. Potential benefit through behaviour change
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	+/++	Encourage movement of waste up the hierarchy by increasing levels of material sent for composting Extent will depend on take up of schemes
4	To minimise the adverse impacts of waste management activity on human health.	0/-	No significant direct impacts on human health from waste management have been found. Potential impact from increase in road transportation.
5	To engage with all the members of the community in the development and delivery of waste management services.	+/0	Provision of collection services to meet recycling and composting targets requires local communities to be actively involved in waste management activities. Community scale AD
6	To lead by example in the provision of in-house waste management services.	+/0	In house 'championing' of issues can help promote recycling
7	To reduce the amount of litter or fly-tipping in local communities.	0	No impact anticipated
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	+/-	The collection of food waste could lead to an increase in road transportation and thus road traffic impacts e.g. noise. Composting of food waste reduces the need to provide new landfill sites.
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	+/-	Restricting the amount of residual waste collected diverts material from landfill and risk of leaching into waste courses. Potential run off from use of compost and digestate
10	To protect, manage and restore land and soil quality.	+/++	Potential to use outputs from IVC as soil conditioner - subject to meeting appropriate standard e.g. PAS 100 Extent will depend on range of variables related to soil quality
11	To minimise adverse effects of waste management on air quality.	+/-	WRATE scores at variance from the baseline for Human toxicity and acidification
12	To encourage sustainable economic growth.	++	Additional collection and treatment employment opportunities & energy generation
13	To encourage innovation as well as research and development together with knowledge transfer.	+/0	Potential for innovation/knowledge transfer
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	+/0	Provision of collection services to meet recycling and composting targets requires local communities to be actively involved in waste management activities. Community scale AD
15	To reduce the environmental impacts of transportation associated with waste management.	-	Weekly collection of food waste materials for composting may lead to an increase in vehicles.
16	To protect, manage and enhance biodiversity and geodiversity	++	Medium reduction (2,000 - 10,000ha) in ecological footprint from base
17	To reduce the ecological footprint of waste management on Merseyside.	++	Medium reduction (2,000 - 10,000ha) in ecological footprint from base
18	To use water and mineral resources	+	Improved Abiotic resource depletion score in WRATE due

No	SEA Objective	3a - Food waste plus Anerobic Digestion (AD)	
	prudently and efficiently.		to less use of finite resources.
19	To promote more sustainable means of energy generation and fuel usage.	++	Biogas from ad process can be used a fuel.
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	++/-	Potential impact from increase in road transportation and hence fuel usage due to increased composting. Heat from AD can be used back in the AD process.
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	No impact anticipated Locational issues addressed through planning
22	To conserve and enhance the landscape as regards waste management activity/impacts.	0	No impact anticipated.

No	SEA Objective	Household Waste Recycling Centre (HWRC) Recycling/Reuse Sites Only	
		8 - HWRC Recycling/Reuse Sites Only;	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	+	Increased material reused diverts material from landfill and reduces greenhouse gas emissions. Level of impact will depend on the proportion of biodegradable materials diverted. Increased reuse reduces the need for virgin materials to be used in products.
2	To reduce municipal waste generation, including hazardous waste.	0	No impact anticipated.
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	+	HWRC recycling/reuse sites potentially reduces overall levels of municipal waste collected and moves waste up the waste hierarchy
4	To minimise the adverse impacts of waste management activity on human health.	0	No significant direct impacts on human health from waste management have been found.
5	To engage with all the members of the community in the development and delivery of waste management services.	+/-	Potential resistance from householders when change introduced. Appropriate engagement and communications required as to rationale and promote use. Community group could get involved in accepting good from HWRC/Swap shop for reuse etc
6	To lead by example in the provision of in-house waste management services.	0	No impact anticipated
7	To reduce the amount of litter or fly-tipping in local communities.	0/-	Potential for short term, temporary fly-tipping incidents based on measures implemented at HWRCs. Education and enforcement required
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	+	No residual going to HWRC less littering.
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	?	Unknown impact - depend on factors such as vehicle movements to site, recycling/reuse performance and any other unintended consequences e.g. Fly tipping
10	To protect, manage and restore land and soil quality.	0	No impact anticipated
11	To minimise adverse effects of waste management on air quality.	+/-	Potential benefit from increased recycling. Potential negative from need to use more sites.
12	To encourage sustainable economic growth.	+	Enhanced opportunities for enhanced reuse and refurbishment businesses
13	To encourage innovation as well as research and development together with knowledge transfer.	0	No impact anticipated
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	+/0	Third sector could potentially get involved in accepting good from HWRC/Swap shop for reuse etc
15	To reduce the environmental impacts of transportation associated with waste management.	0/-	Potential additional household journeys if have to dispose of residual waste as well as recycling/reuse

No	SEA Objective	Household Waste Recycling Centre (HWRC) Recycling/Reuse Sites Only	
		8 - HWRC Recycling/Reuse Sites Only;	
		Appraisal Score	Notes
16	To protect, manage and enhance biodiversity and geodiversity	+	Increased levels of material sent for recycling/composting reduces need for virgin material
17	To reduce the ecological footprint of waste management on Merseyside.	+	Minor reduction (0 - 2,000ha) in ecological footprint from base
18	To use water and mineral resources prudently and efficiently.	+	Increased levels of material recycled reduces need for virgin material/mining activity.
19	To promote more sustainable means of energy generation and fuel usage.	0	No impact anticipated
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	+/0	Potential benefits from redesign/refurbishment of HWRCs. Impact will depend on extent of changes.
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	No impact anticipated
22	To conserve and enhance the landscape as regards waste management activity/impacts.	0/-	Potential for short term, temporary fly-tipping incidents based on measures implemented at HWRCs. Education and enforcement required

No	SEA Objective	Green waste charging	
		10 - Green waste charging;	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	+/?	Reduction in material collected for composting may lead to an decrease in road transportation and thus use of fossil fuels. Small potential for increased material to landfill and increase in greenhouse gas emissions. Level of impact will depend on the uptake of charged service and alternative options available to household e.g.home composting
2	To reduce municipal waste generation, including hazardous waste.	+	Charging for garden waste potentially reduces overall levels of municipal waste collected as householders home compost more.
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	+	Charging for garden waste potentially reduces overall levels of municipal waste collected as householders home compost more.
4	To minimise the adverse impacts of waste management activity on human health.	+/0	No significant direct impacts on human health from waste management have been found. Potential slight reduction in vehicle movements
5	To engage with all the members of the community in the development and delivery of waste management services.	+/-	Potential resistance from householders when charge introduced. Appropriate engagement required as to rationale. Opportunities for home composting advisors in community
6	To lead by example in the provision of in-house waste management services.	0	No impact anticipated
7	To reduce the amount of litter or fly-tipping in local communities.	0/-	Potential for short term, temporary fly-tipping incidents based on collection measures implemented.
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	0/-	Maybe some amenity loss as a result of fly tipping -see objective 7
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	0	Less central composting but potentially more home composting/residual treatment
10	To protect, manage and restore land and soil quality.	0	No impact anticipated
11	To minimise adverse effects of waste management on air quality.	+/0	Charging for garden waste could lead to a decrease in quantity of green waste collected and therefore decrease in road transportation and thus impact on local air quality through decreased fuel usage. Potential for reduction in polluting emissions from composting due to lower quantities.
12	To encourage sustainable economic growth.	+/0	Income from charged garden waste potentially allows for investment in wider waste management services
13	To encourage innovation as well as research and development together with knowledge transfer.	+/0	Potential for transfer of knowledge/learning from authorities operating charged garden waste schemes
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	+/0	Opportunities for home composting advisors
15	To reduce the environmental impacts of transportation associated with waste management.	+/0	Potential reduction in number of garden waste vehicles/ movements when charge implemented

No	SEA Objective	Green waste charging	
		10 - Green waste charging;	
		Appraisal Score	Notes
16	To protect, manage and enhance biodiversity and geodiversity	+	No impact anticipated
17	To reduce the ecological footprint of waste management on Merseyside.	+	Minor reduction (0 - 2,000ha) in ecological footprint from base
18	To use water and mineral resources prudently and efficiently.	0	No impact anticipated
19	To promote more sustainable means of energy generation and fuel usage.	0	No impact anticipated
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	+/0	Potential decrease in road transportation and hence fuel usage due to less households subscribing to charged garden waste services than free service
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	No impact anticipated
22	To conserve and enhance the landscape as regards waste management activity/impacts.	0/-	Potential for short term, temporary fly-tipping incidents based on collection measures implemented.

No	SEA Objective	12 - Bulky waste charging;	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	+	Reduction in bulky waste material collected may lead to an decrease in road transportation and thus use of fossil fuels. Small potential for increased material to landfill and increase in greenhouse gas emissions. Level of impact will depend on the uptake of charged service and alternative options available to household e.g. community reuse schemes
2	To reduce municipal waste generation, including hazardous waste.	+	Charging for bulky waste potentially reduces overall levels of municipal waste entering the waste stream
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	+/-	Charging for bulky waste potentially reduces overall levels of municipal waste entering the waste stream The impact will depend on the design of the existing scheme. If bulky waste is currently landfilled it may reduce waste to landfill & encourage reuse of material through other schemes. If existing free bulky waste collection reuse material introducing a charge may potentially move waste down the hierarchy e.g. disposal of material at HWRC
4	To minimise the adverse impacts of waste management activity on human health.	0	No impact anticipated
5	To engage with all the members of the community in the development and delivery of waste management services.	+/-	Charging for bulky waste could encourage wider community reuse schemes. The impact will depend on the design of the existing scheme. If bulky waste is currently landfilled, when a charge is introduced it may reduce waste to landfill & encourage reuse of material through other schemes.
6	To lead by example in the provision of in-house waste management services.	0	No impact anticipated
7	To reduce the amount of litter or fly-tipping in local communities.	0/-	Potential for short term, temporary fly-tipping incidents based on collection measures implemented.
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	0/-	Maybe some amenity loss as a result of fly tipping -see objective 7
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	0	No impact anticipated
10	To protect, manage and restore land and soil quality.	0	No impact anticipated
11	To minimise adverse effects of waste management on air quality.	0	No impact anticipated
12	To encourage sustainable economic growth.	+/0	Income from charged bulky waste potentially allows for investment in wider waste management services. Encourage wider community reuse schemes
13	To encourage innovation as well as research and development together with knowledge transfer.	0	No impact anticipated
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	+/-	Charging for bulky waste is an incentive for developing/using community based services for reuse
15	To reduce the environmental impacts of transportation associated with waste management.	+/0	Potential reduction in number of bulky waste vehicles/ movements when charge implemented

No	SEA Objective	12 - Bulky waste charging;	
		Appraisal Score	Notes
16	To protect, manage and enhance biodiversity and geodiversity	+	Minor reduction (0 - 2,000ha) in ecological footprint from base
17	To reduce the ecological footprint of waste management on Merseyside.	+	Minor reduction (0 - 2,000ha) in ecological footprint from base
18	To use water and mineral resources prudently and efficiently.	+/0	Potential increase in levels of material reused if community reuse schemes used as alternative, reduces need for virgin material/mining activity. Reduced water usage associated with reduced processing of waste
19	To promote more sustainable means of energy generation and fuel usage.	0	No impact anticipated
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	+/0	Decrease in road transportation and hence fuel usage due to less households using charged bulky waste services than free service
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	No impact anticipated
22	To conserve and enhance the landscape as regards waste management activity/impacts.	0/-	Potential for short term, temporary fly-tipping incidents based on collection measures implemented.

No	SEA Objective	13 - Waste prevention campaigns;	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	+	Restricting the amount of residual waste collected diverts material from landfill and reduces greenhouse gas emissions
2	To reduce municipal waste generation, including hazardous waste.	+	Waste Prevention Campaigns should help to reduce overall levels of municipal waste generated Waste prevention campaigns are an integral part of a number of the other waste prevention options (and other behavioural change elements such as recycling and re-use campaigns) and should therefore be a priority activity
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	+	Waste Prevention Campaigns should help to actively promote the reduction of municipal waste
4	To minimise the adverse impacts of waste management activity on human health.	+/0	Potential benefits from less waste being managed
5	To engage with all the members of the community in the development and delivery of waste management services.	+/0	Provision of campaigns to reduce waste generated requires local communities to be actively involved in waste management activities
6	To lead by example in the provision of in-house waste management services.	+/0	In house 'championing' of issues can help promote waste prevention message
7	To reduce the amount of litter or fly-tipping in local communities.	0	No impact anticipated
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	0	No impact anticipated
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	0	No impact anticipated
10	To protect, manage and restore land and soil quality.	0	No impact anticipated
11	To minimise adverse effects of waste management on air quality.	0	No impact anticipated
12	To encourage sustainable economic growth.	0	No impact anticipated
13	To encourage innovation as well as research and development together with knowledge transfer.	+	Opportunities for innovative approaches to address waste prevention
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	+/0	Scope to involve community groups in awareness raising and activities
15	To reduce the environmental impacts of transportation associated with waste management.	+/0	Limited impact anticipated in terms of vehicle reduction
16	To protect, manage and enhance biodiversity and geodiversity	+	No impact anticipated
17	To reduce the ecological footprint of waste management on Merseyside.	+	Minor reduction (0 - 2,000ha) in ecological footprint from base
18	To use water and mineral resources prudently and efficiently.	+	Reduction in levels of waste arising means reduced water usage associated with reduced processing of

No	SEA Objective	13 - Waste prevention campaigns;	
		Appraisal Score	Notes
			waste and use of virgin materials
19	To promote more sustainable means of energy generation and fuel usage.	0	No impact anticipated
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	+/0	Potential impact from decrease in road transportation and hence fuel usage due to decreased collection activity
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	No impact anticipated
22	To conserve and enhance the landscape as regards waste management activity/impacts.	+/0	Potential reduction in facilities may reduce impact of waste management activities on landscape

No	SEA Objective	In – house activity	
		18 - In-house waste prevention & recycling; 20 - Sustainable procurement policies (in house)	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	+	Increased recycling, re-use & prevention in house
2	To reduce municipal waste generation, including hazardous waste.	+/0	No impact anticipated. Potential benefit through behaviour change
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	+/0	No impact anticipated. Potential benefit through behaviour change
4	To minimise the adverse impacts of waste management activity on human health.	+/0	No significant direct impacts on human health from waste management have been found. Potential benefits from less waste being managed
5	To engage with all the members of the community in the development and delivery of waste management services.	+/0	No impact anticipated. Potential benefit through behaviour change
6	To lead by example in the provision of in-house waste management services.	++	This is the focus of these initiatives
7	To reduce the amount of litter or fly-tipping in local communities.	0	No impact anticipated
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	0	No impact anticipated
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	0	No impact anticipated
10	To protect, manage and restore land and soil quality.	0	No impact anticipated
11	To minimise adverse effects of waste management on air quality.	0	No impact anticipated
12	To encourage sustainable economic growth.	+	Behaviour change & use of local supply chain
13	To encourage innovation as well as research and development together with knowledge transfer.	+/0	Potential for innovation and knowledge transfer as regards sustainable procurement
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	+/0	sustainable procurement policies could target community groups
15	To reduce the environmental impacts of transportation associated with waste management.	+/-	May be positive or negative impacts from increased recycling in particular.
16	To protect, manage and enhance biodiversity and geodiversity	+/0	Assumed potential benefit from recycling & prevention
17	To reduce the ecological footprint of waste management on Merseyside.	+/0	Assumed potential benefit from recycling & prevention
18	To use water and mineral resources prudently and efficiently.	+/0	behaviour change
19	To promote more sustainable means of energy generation and fuel usage.	+/0	purchasing of renewable energy
20	To minimise the energy usage and maximise energy efficiency in delivery of	0	Negligible impact anticipated

No	SEA Objective	In – house activity	
		18 - In-house waste prevention & recycling; 20 - Sustainable procurement policies (in house)	
		Appraisal Score	Notes
	the waste management service.		
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	No impact anticipated
22	To conserve and enhance the landscape as regards waste management activity/impacts.	0	No impact anticipated

No	SEA Objective	Joint Working	
		19 - Joint Working; 21 - Depot, facility sharing, modal transport	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	++	Joint working should allow for efficiencies in number of depot and vehicle sharing/optimising of rounds etc which will lead to a decrease in road transportation and thus use of fossil fuels.
2	To reduce municipal waste generation, including hazardous waste.	0	No impact anticipated
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	0	No impact anticipated
4	To minimise the adverse impacts of waste management activity on human health.	+/0	No significant direct impacts on human health from waste management have been found. Potential benefits from decreased road transportation
5	To engage with all the members of the community in the development and delivery of waste management services.	0	No impact anticipated
6	To lead by example in the provision of in-house waste management services.	0	No impact anticipated
7	To reduce the amount of litter or fly-tipping in local communities.	0	No impact anticipated
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	0	No impact anticipated Minor benefit from potential reduced vehicles on road
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	0	No impact anticipated
10	To protect, manage and restore land and soil quality.	0	No impact anticipated
11	To minimise adverse effects of waste management on air quality.	+/0	May lead to an decrease in road travel and thus impact on local air quality through decreased fuel usage. Extent will depend on level of optimisation across Merseyside
12	To encourage sustainable economic growth.	+/-	Cost Saving. Potential reduction in number of employees required through reduced facility requirements and number of vehicles/usage
13	To encourage innovation as well as research and development together with knowledge transfer.	+	Opportunities for innovative approaches to joint working/depot sharing
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	0	No impact anticipated
15	To reduce the environmental impacts of transportation associated with waste management.	+/++	Reduced number of vehicles/usage will reduce impact of transportation on environment Extent will depend on level of optimisation across Merseyside
16	To protect, manage and enhance biodiversity and geodiversity	+/0	No impact anticipated
17	To reduce the ecological footprint of waste management on Merseyside.	+/0	Reduction in footprint due to decreased transport/fuel usage

No	SEA Objective	Joint Working	
		19 - Joint Working; 21 - Depot, facility sharing, modal transport	
		Appraisal Score	Notes
18	To use water and mineral resources prudently and efficiently.	+/0	Potential reduction in facilities may reduce water consumption
19	To promote more sustainable means of energy generation and fuel usage.	+/0	Reduced number of depots and vehicles/usage will reduce fuel usage
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	+/++	Reduced number of depots and vehicles/usage will reduce fuel usage
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	No impact anticipated
22	To conserve and enhance the landscape as regards waste management activity/impacts.	+/0	Potential reduction in facilities may reduce impact of waste management activities on landscape

No	SEA Objective	Optimising rounds / routes	
		22 - Collection round/route optimisation	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	+/?	Optimising rounds will lead to a decrease in road transportation and thus use of fossil fuels. Extent will depend on level of optimisation across Merseyside
2	To reduce municipal waste generation, including hazardous waste.	0	No impact anticipated
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	0	No impact anticipated
4	To minimise the adverse impacts of waste management activity on human health.	+	No significant direct impacts on human health from waste management have been found. Potential benefits from decreased road transportation Extent will depend on level of optimisation across Merseyside
5	To engage with all the members of the community in the development and delivery of waste management services.	0	No impact anticipated
6	To lead by example in the provision of in-house waste management services.	0	No impact anticipated
7	To reduce the amount of litter or fly-tipping in local communities.	0	No impact anticipated
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	+/0	Minor benefit from potential reduced vehicles on road including a reduction in noise and dust
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	0	No impact anticipated
10	To protect, manage and restore land and soil quality.	0	No impact anticipated
11	To minimise adverse effects of waste management on air quality.	+/0	May lead to an decrease in road travel and thus impact on local air quality through decreased fuel usage. Extent will depend on level of optimisation across Merseyside
12	To encourage sustainable economic growth.	+/-	Cost Saving. Potential reduction in number of employees required through reduced number of vehicles/usage
13	To encourage innovation as well as research and development together with knowledge transfer.	+/0	Opportunities for innovative approaches to optimising rounds
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	0	No impact anticipated
15	To reduce the environmental impacts of transportation associated with waste management.	+/++	Reduced number of vehicles/usage will reduce impact of transportation on environment Extent will depend on level of optimisation across Merseyside
16	To protect, manage and enhance biodiversity and geodiversity	+/0	No impact anticipated
17	To reduce the ecological footprint of waste management on Merseyside.	+/0	Reduction in footprint due to decreased transport/fuel usage

No	SEA Objective	Optimising rounds / routes	
		22 - Collection round/route optimisation	
		Appraisal Score	Notes
18	To use water and mineral resources prudently and efficiently.	0	No impact anticipated
19	To promote more sustainable means of energy generation and fuel usage.	+/0	Reduced number of vehicles/usage will reduce fuel usage
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	+	Reduced number of vehicles/usage will reduce fuel usage
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0	No impact anticipated
22	To conserve and enhance the landscape as regards waste management activity/impacts.	0	No significant impact anticipated

No	SEA Objective	Residual waste – Baseline	
		23 - Base case – continue to landfill residual waste	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	--	Landfill contributes to greenhouse gas emissions, for example through methane emissions.
2	To reduce municipal waste generation, including hazardous waste.	0	No impact anticipated
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	--	Landfill is bottom of the waste hierarchy
4	To minimise the adverse impacts of waste management activity on human health.	0	No change from current
5	To engage with all the members of the community in the development and delivery of waste management services.	0	No impact anticipated
6	To lead by example in the provision of in-house waste management services.	0	No impact anticipated
7	To reduce the amount of litter or fly-tipping in local communities.	0	No impact anticipated
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	-	Potential for nuisance impacts from noise, odour and litter impacts adjacent to landfill sites. Potential for impacts from traffic movements taking waste to landfill sites.
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	-	Potential for surface run-off / groundwater to enter local water courses. Likelihood is low as landfill site operation is controlled by standards set in waste management licences and permits.
10	To protect, manage and restore land and soil quality.	-	Long term reliance on landfill may involve additional land take
11	To minimise adverse effects of waste management on air quality.	-	Potential effects from gas engine/gas flare emissions (NOx, SOx, metals) or Volatile Organic Compounds(VOC) from fugitive emissions. Likelihood low as landfill site operation controlled by standards set in waste management permits.
12	To encourage sustainable economic growth.	0	No impact anticipated
13	To encourage innovation as well as research and development together with knowledge transfer.	0	No impact anticipated
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	0	No impact anticipated
15	To reduce the environmental impacts of transportation associated with waste management.	-	The transfer of waste for disposal requires transport movements.
16	To protect, manage and enhance biodiversity and geodiversity	-	Long term reliance on landfill may involve land take from land of natural habitat/geological importance.
17	To reduce the ecological footprint of waste management on Merseyside.	-	Low score for ecological footprint in WRATE
18	To use water and mineral resources	-	Some mineral resources sent to landfill

No	SEA Objective	Residual waste – Baseline	
		23 - Base case – continue to landfill residual waste	
		Appraisal Score	Notes
	prudently and efficiently.		
19	To promote more sustainable means of energy generation and fuel usage.	+/0	Potential for energy generation through landfill gas produced on site. Levels will be small compared to other options.
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	0	No impact anticipated
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	0/-	Potential for atmospheric emissions of gases such as SOx and NOx to contribute to acid precipitation that can contribute to building weathering. Likelihood low as landfill site operation will be controlled by standards set in waste management licences and permits.
22	To conserve and enhance the landscape as regards waste management activity/impacts.	-	Visual impairment of landscape

No	SEA Objective	Residual waste – MBT with EFW	
		24 - Mechanical Biological Treatment & Energy from Waste	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	+/++	Treatment of waste in a method alternative to landfill reduces the emissions of greenhouse gases by avoidance of the generation of methane. Generation of a Refuse Derived Fuel (RDF) for power use could offset the carbon dioxide impacts associated with energy generation from fossil fuels. The overall net impact of the MBT system will depend on the process configuration, the final outlet for the RDF and the level of up-front recycling achieved.
2	To reduce municipal waste generation, including hazardous waste.	0	No impact anticipated
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	+	This option is higher up the waste hierarchy than landfill. Some residual outputs still to landfill but increase recycling.
4	To minimise the adverse impacts of waste management activity on human health.	+/0	Improvement in human toxicity figures compared to landfill
5	To engage with all the members of the community in the development and delivery of waste management services.	0	No impact anticipated
6	To lead by example in the provision of in-house waste management services.	0	No impact anticipated
7	To reduce the amount of litter or fly-tipping in local communities.	0	No impact anticipated
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	+/0	Greater control over waste, the majority of activities are enclosed . Therefore, reduction in noise, dust, vermin and odour impacts.
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	+/0	Eutrophication and freshwater aquatic ecotoxicity improved from landfill
10	To protect, manage and restore land and soil quality.	-/0	Less risk of land contamination. Provided MBT compost like output is used appropriately
11	To minimise adverse effects of waste management on air quality.	-/0	Human toxicity and acidification WRATE score improved.
12	To encourage sustainable economic growth.	+/0	Potential for some job creation & increase material recovery
13	To encourage innovation as well as research and development together with knowledge transfer.	+/0	The potential for some innovation in MBT with EfW systems
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	0	No impact anticipated
15	To reduce the environmental impacts of transportation associated with waste management.	-/--	Potential for less facilities and therefore increase in vehicle movements and outputs
16	To protect, manage and enhance biodiversity and geodiversity	-/0	Potential impact but mitigated by site selection/management
17	To reduce the ecological footprint of waste management on Merseyside.	+/0	Potential reduction in ecological footprint through increased recycling and energy recovery
18	To use water and mineral resources	+/0	Greater level of materials & energy recovery than

No	SEA Objective	Residual waste – MBT with EFW	
		24 - Mechanical Biological Treatment & Energy from Waste	
		Appraisal Score	Notes
	prudently and efficiently.		landfill
19	To promote more sustainable means of energy generation and fuel usage.	+/++	Use of the refuse derive fuel (RDF) output to generate energy avoids the use of energy from non-renewable sources.
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	0	No impact anticipated
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	+	MBT h with EfW as a lower land take than a new landfill site. There is potential for good design to be incorporated into new facility that will minimise visual impacts. Planning applications address potential for negative impacts at specific locations
22	To conserve and enhance the landscape as regards waste management activity/impacts.	+	MBT with EfW has a lower land take than a new landfill site. There is potential for good design to be incorporated into new facility that will minimise visual impacts. Planning applications address potential for negative impacts at specific locations

No	SEA Objective	Residual waste – EFW	
		25 - Energy from Waste	
		Appraisal Score	Notes
1	To reduce greenhouse gas emissions from waste management services and mitigate climate change impacts.	++	Treatment of waste in a method alternative to landfill reduces the emissions of greenhouse gases by avoidance of the generation of methane. Generation of electricity and/or heat will offset the carbon dioxide impacts associated with energy generation through fossil fuels. Combined heat and power (CHP) offers a greater fossil fuel displacement than electricity generation only.
2	To reduce municipal waste generation, including hazardous waste.	0	No impact anticipated
3	To abide by the waste hierarchy to prevent the production of waste whilst increasing reuse, recycling, composting and recovery of waste, reducing the amount sent to landfill.	+	This option is higher up the waste hierarchy than landfill. Includes recovery of metal and use of bottom ash. Recovery of heat and power contributes to overall recovery rates.
4	To minimise the adverse impacts of waste management activity on human health.	+/0	Improvement in human toxicity figures compared to landfill
5	To engage with all the members of the community in the development and delivery of waste management services.	0	No impact anticipated
6	To lead by example in the provision of in-house waste management services.	0	No impact anticipated
7	To reduce the amount of litter or fly-tipping in local communities.	0	No impact anticipated
8	To minimise the impact on local amenity (noise, dust, light, vermin, odour).	+/0	Greater control over waste, the majority of activities are enclosed . Therefore, reduction in noise, dust, vermin and odour impacts.
9	To protect, improve and where necessary restore the quality of inland, estuarine and ground waters.	+/0	Eutrophication and freshwater aquatic ecotoxicity improved from landfill
10	To protect, manage and restore land and soil quality.	-/0	Less risk of land contamination. Provided incinerator bottom ash is used appropriately.
11	To minimise adverse effects of waste management on air quality.	-/0	Human toxicity and acidification WRATE score improved.
12	To encourage sustainable economic growth.	+/0	Potential for some job creation & increase material recovery
13	To encourage innovation as well as research and development together with knowledge transfer.	+/0	The potential for some innovation in EfW systems including CHP applications
14	To encourage the formation, sustaining and growth of social / community enterprise schemes, voluntary and community networks.	0	No impact anticipated
15	To reduce the environmental impacts of transportation associated with waste management.	-/--	Potential for less facilities and therefore increase in vehicle movements and outputs
16	To protect, manage and enhance biodiversity and geodiversity	-/0	Potential impact but mitigated by site selection
17	To reduce the ecological footprint of waste management on Merseyside.	+/0	Potential reduction in ecological footprint through increased recycling and energy recovery
18	To use water and mineral resources prudently and efficiently.	+/0	Greater level of materials & energy recovery than landfill

No	SEA Objective	Residual waste – EFW	
		25 - Energy from Waste	
		Appraisal Score	Notes
19	To promote more sustainable means of energy generation and fuel usage.	+/++	Treatment of waste via incineration can generate both heat and power as a result of the combustion process.
20	To minimise the energy usage and maximise energy efficiency in delivery of the waste management service.	0	No impact anticipated
21	To protect, manage and enhance places, features and buildings of historic, cultural and archaeological importance.	+	EfW has a lower land take than a new landfill site. There is potential for good design to be incorporated into new facility that will minimise visual impacts. Planning applications address potential for negative impacts at specific locations
22	To conserve and enhance the landscape as regards waste management activity/impacts.	+	EfW has a lower land take than a new landfill site. There is potential for good design to be incorporated into new facility that will minimise visual impacts. Planning applications address potential for negative impacts at specific locations

Appendix 5 Glossary of Terms

Abiotic resource depletion	Non-living finite resources, such as metals and other inorganic materials and fossil fuels. that will eventually be used up at current rates of consumption.
Acidification	Emissions to air, water and land of acidifying compounds to such as sulphur dioxide (SO_2) and nitrogen oxides (NO_X) can contribute to the destruction of plants and acidify the soil, which can result in changes to ecosystems.
Anaerobic	In the absence of oxygen
Best Value Performance Indicators (BVPIs)	A set of mandatory targets, including recycling and composting rates, set by the UK government.
Biodegradable Municipal Waste (BMW)	Waste which is able to decompose through the action of bacteria or other microbes. This includes material such as paper, food waste and green garden waste.
Biogas	Gas resulting from the fermentation of waste in the absence of air (methane/carbon dioxide).
Composting	The degradation of organic wastes in the presence of oxygen to produce a fertiliser or soil conditioner.
Defra	The UK government department responsible for the environment, food and rural affairs
Digestate	Solid and/or liquid product resulting from Anaerobic Digestion.
Ecotoxicity	Toxic effects on ecosystems can be either chronic (causing prolonged illness) or acute (short term/immediate effects). "Ecotoxicity" indicators for land, water and air represent these environmental impacts in WRATE.
EU Directive	A European Union (formerly EC-European Community) legal instruction, binding on all Member States but which must be implemented through national legislation within a prescribed time-scale.
Energy from Waste (EfW)	Central processing facilities, primarily incineration, whereby energy may be recovered from waste. The resultant energy can be used to create power, heat or combined heat and power.
Energy Recovery	The recovery of useful energy in the form of heat and/or power from burning waste or other combustible materials. Generally applied to incineration, but can also include the combustion of landfill gas and gas produced during anaerobic digestion.
Eutrophication	Emission of nitrogenous compounds, especially ammonia (NH_3) and nitrogen oxides (NO_X) and phosphates, can stimulate increased growth due to a fertilisation effect, leading to altered species in nutrient-poor ecosystems. In water, algal blooms can occur, replacing other species or using up all the oxygen in the water.
Fugitive Emissions	Emissions not caught by a capture system which are often due to equipment leaks, evaporative processes and windblown disturbances.
Greenhouse Gas	A term given to those gas compounds in the atmosphere that reflect heat back toward earth rather than letting it escape freely into space. Several gases are involved, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_20), ozone, water vapour and some of the chlorofluorocarbons.
Green waste	Organic waste such as grass cuttings, tree cuttings, leaves which arise from gardens, parks or landscaping activities.
Household Waste	Household waste includes all mixed waste that is collected from

	households; all materials taken to local 'bring banks or collected at the doorstep or kerbside for recycling and composting; all waste (apart from rubble) that is taken to the County Council operated Household Waste Recycling Centres; litter and street sweepings.
Household Waste Recycling Centre (HWRC)	A facility where members of the public can take household waste for recycling or disposal
Human Toxicity potential	Persistent toxic substances can slowly accumulate in living organisms (e.g. when exposed through the lungs, skin from food, etc.), increasing the risk that toxic concentrations will be reached.
Joint Municipal Waste Management Strategy (JMWMS)	Sets out the guiding principles for the delivery of sustainable waste management in Merseyside between 2008-2020 and is the agreed view of the Merseyside and Halton Waste Partnership (MHWP).
Landfill Allowance Trading Scheme (LATS)	An initiative by the UK government that assigns an allowance to each Waste Disposal Authority for the amount of BMW it can dispose of to landfill.
Material Recovery Facility (MRF)	A facility which is designed to process source separated/co-mingled dry recyclables is sometimes referred to as a 'clean MRF' (as distinct from a 'dirty MRF', which handles co-mingled wastes including putrescible materials).
Mechanical Biological Treatment (MBT)	A generic term for an integration of several processes commonly found in other waste management technologies such as Materials Recovery Facilities (MRFs), sorting and composting plants.
Municipal Solid Waste (MSW)	Household waste and other wastes collected by a waste collection/disposal authority or its contractors, such as municipal parks and gardens waste, beach cleansing waste fly-tipped waste and trade waste.
NOx	Oxides of nitrogen
Private Finance Initiative (PFI)	A method of providing financial support for capital projects between the public and private sectors, administered by the UK government.
Recycling	Involves the reprocessing of wastes, either into the same material (closed-loop) or a different material (open-loop recycling). Commonly applied to non-hazardous wastes such as paper, glass, cardboard, plastics and metals. However, hazardous wastes (e.g. solvents) can also be recycled by specialist companies, or by in-house equipment.
Refuse Derived Fuel (RDF)	A fuel produced from municipal solid waste, primarily consisting of paper, card, plastic, and some dried organics that can be used to produce heat and/or power.
Residual Waste	Waste that is not separated out for recycling or composting or sent for reprocessing.
Re-use	Using materials or products again, for the same or a different purpose, without reprocessing the material.
Strategic Environmental Assessment (SEA)	Structured evaluation process for assessing the environmental impacts of plans and programmes.
Sustainable Waste Management	Using material resources efficiently to cut down on the amount of waste produced. And, where waste is generated, dealing with it in a way that contributes to the economic, social and environmental goals of sustainable development.
SOx	Oxides of sulphur
Transfer	The deposition and separation or bulking up of waste before it

	is removed for recovery or disposal.
Treatment	Involves the physical, chemical or biological processing of waste to reduce their volume or harmfulness.
VOCs	Volatile Organic Compounds
Waste Hierarchy	The waste hierarchy is a useful framework that has become a cornerstone of sustainable waste management, setting out the order in which options for waste management should be considered based on environmental impact. Waste prevention sits at the top followed by re-use, recycling and composting, energy recovery and finally disposal.
WRATE	Waste and Resources Assessment Tool for the Environment developed by the Environment Agency. The tool can be used for evaluating the environmental aspects of waste management activities during their whole life.