

# GLASGOW & CLYDE VALLEY AREA WASTE PLAN REVIEW

## WASTE MANAGEMENT OPTIONS FOR NORTH AND SOUTH LANARKSHIRE COUNCILS

### STRATEGIC ENVIRONMENTAL ASSESSMENT – ENVIRONMENTAL REPORT - SUMMARY

#### 1. INTRODUCTION

- 1.1 This document is a draft interim Environmental Report summary which assesses the potential environmental effects of options for waste management for the North and South Lanarkshire Council areas. It assesses options for waste management in these areas that are currently being considered by the two authorities (as part of the Lanarkshire Waste Management Project - LWMP) and which will be set out in bids to the Scottish Executive for funding. It also assesses, and reports upon, what the significant environmental effects of each of the options may be and sets out mitigation actions to prevent, reduce or offset any adverse effects.
- 1.2 In 2003, 11 Area Waste Plans (AWP) covering the whole of Scotland were prepared by the Scottish Environment Protection Agency (SEPA), in partnership with the Scottish Executive, local authorities and other stakeholders. These set out a strategic framework for delivery of waste management facilities across Scotland in order to improve Scotland's rates of waste recycling and recovery and to reduce the amount of waste being disposed of in landfill sites.
- 1.3 The Glasgow and Clyde Valley (GCV) AWP covers the local authority areas of Glasgow City, North and South Lanarkshire, East and West Dunbartonshire, Inverclyde, Renfrewshire and East Renfrewshire.
- 1.4 In 2004/05 420,496 tonnes of municipal (or household) waste was generated in the Lanarkshire local authority areas. The amount of waste that was recycled in 2004/05 by North and South Lanarkshire was 17.4% and 28.4% respectively. This represents a significant improvement on previous years and is the result of considerable effort by all the authorities involved and by the public. It remains the case that a large proportion is still disposed to landfill. This is not a sustainable or desirable approach to manage waste and Scotland has set itself challenging targets to divert waste from landfill.
- 1.5 Landfill sites can have a number of environmental problems, including odour, noise, litter, potential to contaminate water through leaching of contaminants and emissions of methane, a powerful greenhouse that contributes to climate change. Moving away from landfill is therefore a key objective for the Area Waste Plan.
- 1.6 Since publication of the GCVAWP in 2003, the Scottish Executive has invited proposals from the local authorities for funding for residual waste management facilities<sup>1</sup>. The Glasgow and Clyde Valley Area has split into 2 strategic groups when developing these proposals :

Glasgow and Clyde Valley :	Glasgow City, East and West Dunbartonshire, Inverclyde, Renfrewshire and East Renfrewshire (also includes Helensburgh and Lomond area from Argyll & Bute).
Lanarkshires :	North and South Lanarkshire

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<sup>1</sup> Residual Waste – waste that remains after reduction, reuse, recycling and composting.

- 1.7 This draft Environmental Report covers options which have been prepared by North and South Lanarkshire Councils via the Lanarkshire Waste Management Project. Options have been prepared by the Glasgow and Clyde Valley strategic group but these are being reviewed in light of Scottish Executive direction for this group to work with the Ayrshires Strategic Option Group. These will be considered separately as they are developed.
- 1.8 Although preparation of the proposals for funding is the responsibility of the Local Authorities, SEPA considers that it is important to assess them to take account of their potential impact. Accordingly, SEPA has undertaken a draft Best Practical Environmental Option (BPEO) Assessment and this draft interim Strategic Environmental Assessment (SEA). Both of these are required when Area Waste Plans are reviewed and SEPA wants to ensure that consideration of the bids (once submitted to the Scottish Executive) is supported by evidence about the environmental effects of the options presented. This draft Environmental Report is the preliminary outcome of the SEA.
- 1.9 The funding proposal does not identify specific waste management technologies<sup>2</sup> nor does it identify sites. A separate site search process is currently being undertaken by the Lanarkshire Waste Management Project. Accordingly, the review has not identified areas where facilities should be sited and as a result, this SEA only considers the generic effects. SEPA anticipates that effects on specific areas will be identified through SEA of local authority development plans.
- 1.10 SEA of the Glasgow and Clyde Valley Area Waste Plan (as a whole, including bids from both the Lanarkshires and the rest of the waste plan area) as and when it is reviewed is a requirement under the Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004. SEA is a systematic method for assessing the potential environmental effects of plans during their preparation in order to make sure the plan considers environmental matters and so measures to address adverse effects can be identified and put into place early.
- 1.11 As details of the Lanarkshires options are only available at this time, a draft SEA of these options has been conducted. A formal SEA including options presented by the rest of the Area Waste Plan authorities will be completed when details of these are available. Accordingly, it should be noted that this draft Environmental Report is not compliant with the requirements of Schedule 2 of the Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004 at this time. A full Environmental Report which contains all the information required under the Act will be prepared when options for the rest of the Glasgow and Clyde Valley Area Waste Plan are presented.

## 2.0 The Lanarkshires – Options Presented

- 2.1 The Lanarkshire Waste Management Project has considered three possible options which are noted below. An initial funding proposal was submitted in December 2004 which appraised option 1a and 2a. A revised funding bid, submitted in December 2006, considered options 1a, 2b and 3a. A final bid is due to be submitted by the end of September 2007 which has modelled options 1b, 3b and 3c. The preferred option from the 2006 funding bid was option 3a. It should be noted these options are for the treatment of residual waste after maximising source segregated recycling and composting as far as practicable.

<b>Option 1</b>	<p><b>Do minimum (source segregated recycling and composting with no residual waste treatment)</b></p> <p>Option 1(a) - 40% recycling and composting by 2020 (2004 and 2006 option)</p>
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<sup>2</sup> A summary of the different types of waste management facilities is provided in Appendix B

	Option 1(b) - 52% recycling and composting by 2020 (2007 option)
<b>Option 2</b>	<b>Mechanical Biological Treatment</b> Option 2(a) - with Refuse Derived Fuel Production (2004 option) Option 2(b) - with no end market (treated waste to landfill) (2006 option)
<b>Option 3</b>	<b>Energy from Waste Facility</b> Option 3(a) - 40% recycling and composting with 250,000tpa facility (2006 option) Option 3(b) - 52% recycling and composting with 200,000tpa facility (2007 option) Option 3(c) - 52% recycling and composting and 300,000 capacity EfW facility (to treat all residual waste generated in final year of contract and which LWMP feel offers best value for money) (2007 option)

## 2.2 Option 1 – Do Minimum

With this option no residual waste treatment facility would be constructed and all residual waste would be disposed to landfill. Options 1(a) and 1(b) differ only in terms of the percentage of waste that is recycled or composted prior to residual waste being disposed to landfill.

## 2.3 Option 2 – Mechanical Biological Treatment

Mechanical Biological Treatment is a process which combines biological and mechanical techniques. The process takes post-collected un-sorted residual wastes from the domestic and commercial waste streams which is treated mechanically then biologically,(or vice versa) through various screening, conditioning and sanitising processes. This reduces the volume of waste and separates it into different waste types, extracting some of the recyclable materials and produces from the resulting organic-rich residual materials a stabilised 'biowaste'. The biodegradable fraction of the waste is treated in a managed biological process in which it is broken down by naturally occurring micro-organisms. Two options have been considered. Option (a) where a refused derived fuel is produced from the resultant organic mixture which is then incinerated (assumed with energy recovery) in a combustion plant and option (b) where there are no markets for the stabilised biowaste and it is landfilled.

## 2.4 Option 3 – Energy from Waste

Energy from waste may encompass a whole range of thermal treatment technologies such as incineration, gasification, pyrolysis, anaerobic digestion. For the purposes of this report incineration with subsequent recovery of energy has been profiled and used in the Life Cycle Analysis modelling. Incineration is the controlled combustion of waste. Heat released from the combustion can be recovered and used to generate electricity, heat, steam or hot water; this process is often known as Energy from Waste.

Incineration can significantly reduce the volume of waste and reduce the hazardousness of waste. Incineration can treat a wide range of waste types including Municipal Waste (MW), Commercial and Industrial Waste, and Refuse Derived Fuel (RDF). While large-scale plants can treat unsorted waste, small-scale plants can be specifically designed to take pre-sorted waste.

Waste is deposited in a bunker, mixed and is then fed into a furnace where it is burned. The unburned residue, known as bottom ash, is stabilised and is deposited into a tank. Magnets remove any ferrous metals from the ash for recycling, and the remaining ash can be recycled for

use in construction. The hot gases produced during combustion are then directed to a boiler where electricity can be generated and heat recovered. Gases are thoroughly cleaned using a range of emission control systems before they are emitted to the atmosphere. Filtered particles are collected and sent to special waste landfill as fly ash. Under the Waste Incineration (Scotland) Regulations 2003 all emissions are continuously monitored.

## 2.5 **Option 4 –Area Waste Plan BPEO**

This is the original option proposed for the Glasgow & Clyde Valley area in the 2003 Area Waste Plan. It consists of utilising clean material recycling facilities (MRF) and mixed waste processing facilities (which were based on Mechanical Biological Treatment options), composting facilities and 'other recovery technologies' (these could be pyrolysis, gasification, incineration, Refuse Derived Fuel, autoclave etc)<sup>3</sup>.

Note: this option is for the whole of the Glasgow & Clyde Valley Waste Strategy Area (WSA) and does not differentiate between the current two sub-groups (Lanarkshire Waste Management Project and the Glasgow & Clyde Valley Strategic Option Review Group) within the WSA.

### **Assessment Method**

2.6 An assessment of each of the options described above was undertaken. This assessment involved considering whether the options were working towards or away from a set of identified objectives or desired outcomes. This is a typical approach to completing an Environmental Report and reflects guidance published by the Scottish Executive.

2.7 The objectives used were:

- To increase the rates of reuse, recycling and recovery in the area in accordance with the waste hierarchy;
- To reduce landfilling of MW waste in the area;
- To manage waste in a way that reduces emissions to air;
- To manage waste in a way that reduces emissions to land and soil;
- To manage waste in a way that reduces emissions to water;
- To manage waste in a way that protects and enhances biodiversity;
- To manage waste in a way that reduces greenhouse gas emissions;
- To reduce energy use and support the development of renewable energy supplies;
- To reduce the movement of waste;
- To manage waste in a way that protects communities and their local environment;
- To manage waste in a way that protects and enhances cultural heritage;
- To manage waste in a way that protects and enhances landscape.

2.8 To undertake this assessment, a matrix was used which assesses each of the options put forward by the local authorities against the environmental objectives. The completed matrices are set out in Appendix A. The matrix is comprised of the following elements:

**A. SEA objectives** – the objectives were used to assess all options considered.

**B. Assessment** – this box considers the contribution each option may make towards achieving each environmental objective. The assessment was simple and high level and sets out whether each option may contribute to achieving the objective. The symbols used in the matrices are described below:

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<sup>3</sup> A summary of the different types of waste management facilities is provided in Appendix B

↑	is making a positive contribution to the objective	↓	is moving away from the desired objective
○	has no significant relationship with the objective	?	may have an effect on the objective, but its nature and extent are unknown

**C. Short, Medium and Long Term Effects** – This box records whether the effects are likely to be short, medium or long term. The following definitions and abbreviations were used:

**Short Term (S)** – up to 3 years from adoption of proposals resulting from the AWP review;

**Medium Term (M)** – 4 to 7 years from adoption of proposals resulting from the AWP review;

**Long Term (L)** – 8 or more years from adoption of proposals resulting from the AWP review.

Due to the long lead in time for the planning, licensing and construction of new waste management facilities, no short term effects were identified.

**D. Cumulative and Other Effects** – If cumulative effects or other types of effects may be likely, then this is identified with a tick in box D and a description of the potential effects in the comments box (F).

**E. Comments and Supporting Information** – This box is used to:

- record supporting information as required;
- justify the score given for box B;
- identify the nature of any cumulative or other effects in box D; and
- set out mitigation measures to address effects identified in the assessment.

**Summary** – This column summarises the overall effects of each option.

**Mitigation** – Actions to prevent, reduce or offset any adverse effects are recorded at the end of each assessment matrix.

2.9 One matrix has been completed for each group of options.

### Completing the Preliminary Assessment

2.10 The assessment and the preparation of the Environmental Report was conducted in three stages following the Scoping Report consultation. These stages are described below:

2.11 **Stage 1 – Preliminary SEPA Assessment** – An initial assessment of the options was undertaken internally by SEPA. This was achieved through a day workshop held on 15 August 2006, which included environmental experts from across the Agency, including water, ecology, air, waste, human health, soil and also included regulatory staff involved in the licensing of waste management facilities.

The workshop tested each option through the application of the assessment matrix and resulted in a preliminary assessment of the potential significant environmental effects of implementing the plan. This preliminary assessment was then presented to an external “expert group” comprising representatives from the Waste Strategy Area Group and an invited group of external stakeholders (see Stage 2 below).

2.12 **Stage 2 – External Input** – A workshop was held on 12 September 2006 with an external “expert group” comprising of an invited group of external stakeholders to consider SEPA’s preliminary

assessment. Workshop attendees were given the opportunity to comment on any part of the preliminary assessment and invited to make recommendations for changes or additions. The findings of this workshop were then considered by SEPA as Responsible Authority and, where appropriate, the preliminary assessment was changed.

- 2.13 **Stage 3 – External Validation** - To ensure robustness of the assessment and to secure an “independent” review of the findings, SEPA contracted external consultants (Envirocentre) to undertake an independent validation process of the assessment and the findings derived from it. Envirocentre were provided with the “final draft” assessment matrices following stages 1 and 2 above. These findings were then considered by SEPA and, where appropriate, the assessment was changed.

### **Assumptions and General Principles of the Assessment**

- 2.14 A number of general principles and assumptions were adopted in undertaking this assessment. A summary of these is provided below:

**1. Environmental Baseline** – All of the options considered have been scored in comparison with the current baseline conditions.

**2. Life Cycle Assessment (LCA)** - This was used to assess some of the potential environmental impacts of the options considered. LCA provides a way of assessing the environmental burdens associated with the whole life cycle of a product or service, from its cradle to its grave. In the context of waste management this includes not only the treatment and final disposal of the waste but all of the associated infrastructure as well. This helps the identification of significant potential environmental impacts and allows for remedial measures to be identified and built in from the outset. Accordingly, LCA data where appropriate have been used to help compile the assessment matrices. Life cycle models can only be considered indicative at this stage as no locations for the required infrastructure have been identified, and within any waste management technology there are a vast range of variations, each with their own advantages and problems. So LCA has been used in this assessment primarily to give a quantitative indication of the relative differences between the waste management options being assessed. These are described in the matrices and summarised in Part 3 of this Chapter. A full summary of the LCA findings are provided in the BPEO assessment forming part of the Consultation Pack.

**3. Weighting** – No weighting has been applied to the scores set out in box B. Rather, a simple indication of whether each option moves towards or away from an environmental objective is given.

**4. Assumptions** – It has been assumed that waste management facilities that may emerge from the options considered will:

- (a) be designed and constructed to modern, efficient standards;
- (b) that site specific environmental effects will be able to be managed through effective siting and design through statutory land use planning;
- (c) that site specific environmental effects arising from the operation of a facility will be able to be managed through effective Pollution Prevention & Control (PPC) regulation;
- (d) that any facility will be operated efficiently and in accordance with any planning or licence conditions applied.

## **3. PRELIMINARY ASSESSMENT FINDINGS - OVERVIEW**

- 3.1 The table below summarises the identified effects across the four options. This table shows whether it is considered each option will move towards or away from the stated objective.

3.2 In summary, all four options could potentially have a combination of positive and negative significant environmental effects. When considered together, the options tend to present more potentially positive effects, although it was difficult to identify the nature and extent of some effects due to the strategic nature of the options being considered by the Lanarkshires Councils and due to the fact that it does not identify specific technologies or locations.

Environmental Objective	Optn 1a	Optn 1b	Optn 2a	Optn 2b	Optn 3a	Optn 3b	Optn 3c	Optn 4	Summary
1. Increase rates of Recycling and Recovery	↑	↑	↑?	↑	↑	↑	↑	↑?	All options moving towards this objective. Option 2a has a question mark.
2. Reduce landfilling of municipal waste	↑	↑	↑	↑	↑	↑	↑	↑	All options moving towards this objective.
3. Reduce emissions to air	↑↓	↑↓	↑↓?	↑↓?	↑↓?	↑↓?	↑↓?	↑↓?	All options have both positive and negative effects although the extent of these is uncertain. Emissions to air require mitigation.
4. Reduce emissions to land	↑?	↑?	↑↓?	↑	↑↓	↑↓	↑↓	↑↓?	All options have both positive and negative effects. Some options have question marks. Emissions to land require mitigation
5. Reduce emissions to water	↑?	↑?	↑↓	↑↓	↑	↑	↑	↑↓?	Option 2 and 4 potential to have negative effects on water. Other options moving towards this objective
6. Protect and enhance biodiversity	?	?	?	?	?	?	?	?	Uncertain as effects on biodiversity dependent upon where facilities are sited. Need to assess effects at land use planning stage
7. Reduce GHG emissions	↑	↑	↑	↑	↑	↑	↑	↑	All options moving towards this objective.
8. Reduce energy use and support renewables	↑↓	↑↓	↑↓	↑↓	↑	↑	↑	↑↓?	All options moving towards this objective, except option 1 which is more energy intensive.
9. Reduce movement of waste	?	?	?	?	?	?	?	?	Uncertain as movement of waste dependent upon where facilities are sited. Need to assess effects at land use planning stage
10. Protect communities and the local environment	0	0	↑↓?	↓?	↑↓?	↑↓?	↑↓?	↑↓?	All options will have some negative effects on local environment and communities. These can be mitigated through good siting, design and effective regulation once sites are licensed. Positive impacts of EfW options.
11. Protect and enhance cultural heritage	0	0	?	?	?	?	?	?	Uncertain as effects on biodiversity dependent upon where facilities are sited. Need to assess effects at land use planning stage
12. Protect and enhance landscape	0	0	?	?	?	?	?	?	Uncertain as effects on biodiversity dependent upon where facilities are sited. Need to assess effects at land use planning stage

- 3.3 It is the case, however, that all waste management options have the potential to create adverse environmental effects that must be considered and where possible mitigated. The assessment process found that these adverse environmental effects were likely to be most prevalent in relation to impacts on local communities and upon air quality. Land quality was also potentially likely to be affected depending on how waste derived compost and other outputs were used. It is important the effects identified are addressed through effective mitigation, including further assessment, good design and planning, effective regulation and efficient operation of facilities.
- 3.4 There are uncertainties for all four options as to their potential effects on biodiversity, cultural heritage and landscape. This is because the environmental effects will depend on the type of facilities and where they are located.
- 3.5 All options should have a positive effect on reuse, recycling and recovery rates in Lanarkshire. This is particularly the case for options 1b, 3 and 4 as these aim to attain higher recycling and composting targets, although there is concern from the Local Authorities about whether these are achievable. All of the options are predicted to reduce the amount of waste going to landfill and therefore all score positive in relation to this objective.
- 3.6 Overall, while all options may result in both positive and negative effects with respect to the environmental objectives, it is likely to be the case that all will deliver significantly better outcomes than the current situation where rates of landfill of waste remain very high. It is also important to note that negative effects will need to be addressed through effective mitigation. In particular, all options and waste management technologies that may emerge under them will be subject to rigorous regulatory processes including planning, Pollution Prevention Control permitting and Waste Management Licensing which are designed to protect the environment.

### **Preliminary Objective Specific Findings**

- 3.7 The findings of the Environmental Report in respect of the objectives are summarised below:
- 3.8 *Objective 1 - Increase reuse, recycling and recovery* - All of the options will likely improve recycling and recovery rates and significantly reduce the amount of waste going to landfill.
- 3.9 *Objective 2 – Reduce landfill of municipal waste* - All of the options are predicted to reduce the amount of waste going to landfill and therefore all score positive in relation to this objective. Options 2a and 3 which utilise some form of thermal treatment and thus reduce the quantity of waste the most and perform best in this regard, but they still retain a proportion of waste that will go to landfill.
- 3.10 *Objective 3 – Reduce emissions to air* – All options have positive and negative effects with respect to emissions to air. The options scored positively as many of the waste treatment technologies will be undertaken within buildings therefore emissions such as odour and dust will be more easily controlled as opposed to the fugitive emissions<sup>4</sup> that can result from landfill. All options will also likely deliver a significant reduction in emissions of methane due to lower volumes of waste being sent to landfill. It is recognised that emissions to air will still occur eg from bio-aerosols<sup>5</sup> from the biostabilisation process and composting in options 2a,2b and 4 and green waste composting in all options and that there will be emissions from the thermal treatment options. All options will have air emissions which need to be properly managed and mitigated. Option 2a, 3 and 4 have the potential to increase NOx and SOx emissions (resulting from the combustion process) and potential for metals in emissions to air. There is also a potential for

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<sup>4</sup> Definition in Appendix B

<sup>5</sup> Definition in Appendix B



cumulative effects on air quality for all options if facilities are located in areas with existing air quality problems. These effects will require to be addressed through effective mitigation.

- 3.11 *Objective 4 – Reduce emissions to land and soil* - All options are likely to have a positive effect on land because there will be less waste going to landfill compared to the current levels. Option 2a and 3 are likely to deliver the greatest reduction in quantity of waste going to landfill due to the thermal treatment which will considerably reduce waste bulk. Any energy from waste facility will also generate ash which will require to be treated as required and disposed to landfill.
- 3.12 *Objective 5 – Reduce emissions to water* - All options are likely to have a positive effect on water because there is less waste going to landfill (landfill sites have the potential to cause harm to waterbodies and groundwater from leaching of contaminants). Options 4 may produce outputs like biostabilised waste and compost which could be applied to land and which could therefore affect waterbodies. Risk assessment is required for such activities.
- 3.13 *Objective 6 – Protect and enhance biodiversity* - The LWMP funding bid does not identify types of facilities or their locations. Accordingly, it is not possible to identify individual effects upon biodiversity from any of the options at this stage as this will be very dependent upon location. However, waste management facilities do have the potential to impact upon biodiversity – for example, where facilities are sited on or close to protected habitats or where protected habitats and species may be disturbed by activities and noise. The LWMP are currently undertaking a site search for potential locations for a waste treatment facility and biodiversity and environmental sensitivity criteria have been identified as factors for consideration in this process. It is important that a more detailed assessment is undertaken as and when sites are considered in order that significant effects on biodiversity can be identified and appropriate mitigation measures put in place.
- 3.14 *Objective 7 – Reduce greenhouse gas emissions* - All the considered options recorded a likely marked improvement in release of greenhouse gases. All options are designed to reduce levels of waste going to landfill, which will in the long term significantly reduce emissions of methane, a powerful greenhouse gas.
- 3.15 *Objective 8 – Reduce energy use and support renewables* – Option 2a and option 3 and 4 have the potential to generate energy from combustion of waste. This energy can be classified as renewable energy under the *Renewables Obligation (Scotland) Order*<sup>6</sup> and can qualify for Renewables Obligation Certificates. Accordingly, this source of energy will contribute to meeting Scotland's target of generating 40% of its energy needs from renewable sources by 2020. All the options except option 1 and 2b have the capability of producing energy and can, depending upon the technology, contribute to renewable energy generation. Options with thermal treatment (options 2a, 3 and 4) performed better in relation to this objective as they can generate electricity and heat. Option 4 is likely to be the most energy intensive and scored less well in relation to this option.
- 3.16 *Objective 9 – Reduce the movement of waste* - The significance of the impact of transport resulting from the movement of waste will depend on the location of the facilities. The uncertainties surrounding the site location will need to be dealt with through land use planning. Planning will also seek to ensure that facilities are sited to make best use of existing transport networks and keep treatment facilities close to source of the waste, by applying the proximity principle.
- 3.17 *Objective 10 – Protect local communities and their local environment* - SEPA has used a study by the Department for Environment, Food and Rural Affairs to guide its consideration of human

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<sup>6</sup> For legislation, go to: [www.opsi.gov.uk/legislation/scotland/ssi2007/20070267.htm#8](http://www.opsi.gov.uk/legislation/scotland/ssi2007/20070267.htm#8)

health as it is not possible at this stage to consider potential effects on individual areas as specific facilities and sites are not identified in the LWMP funding bid. A summary of the generic effects of waste management facilities on human health is provided in the box on the following page.

All of the options assessed could have impacts upon local communities, but the extent and nature of effects will depend upon where facilities are located. Generic effects which have been identified include the potential for noise, odour, visual impacts and increased traffic generated by facilities. All of these effects can be effectively mitigated through good siting, good design and effective operation of facilities. The assessment identified the potential for cumulative effects on local communities if new facilities are located on or adjacent to existing waste management sites. This is especially important where local communities are already living with the effects of existing waste management facilities. These factors do, however, have to be balanced with the benefits (e.g. reduced transport) that may accrue from co-location of waste management facilities.

### Potential Health Effects of Waste Management Facilities

There is concern that waste management facilities can lead to health problems for those working in them or living nearby. In 2004 the Department for Environment, Food and Rural Affairs (DEFRA) published a comprehensive UK review of the environment and health effects of waste management. This report represents the most authoritative and comprehensive information currently available and SEPA has used this as the basis for its consideration of human health in this Environmental Report. A full copy of the report is available on the DEFRA website <http://www.defra.gov.uk/environment/waste/research/health/pdf/health-report.pdf>. An extended summary is also available <http://www.defra.gov.uk/environment/waste/research/health/pdf/health-summary.pdf>.

The following summarises the findings for waste management technologies:

*Landfill* – Many studies have been carried out to investigate the health effects of landfill sites. One UK study identified a possible link between living close to a landfill site and occurrence of some birth defects although it was unable to say if the effects were causal or reflecting other factors. A more detailed study in Scotland on 61 sites did not find any significant risk. Other studies have found no evidence to suggest that living close to landfill sites increases the chance of cancer developing.

*Composting* - A few studies have shown that there may be an increased rate of certain health effects such as bronchitis, coughing and eye irritation as a result of particulates released from the process although there is no evidence of increased rates of asthma. A few studies have looked at emissions of volatile organic compounds (VOCs) and whether there is additional cancer risk due to emissions from composting sites. No additional risk of cancer in populations living close to composting facilities was found.

*Materials Recycling Facilities* - A few studies have been carried out in the workplace and these indicate that flu-like diseases, eye and skin problems, tiredness and sickness are higher in the workers than would be expected in other comparable groups. So far as we know, there are no studies of health effects in people living near MRFs. If there were any health effects, these would be expected to be similar in nature to those associated with composting facilities.

*Energy From Waste – Dioxins* – There has been concern about the release of dioxins from energy from waste plants. Exposure to dioxins has been linked to many human diseases including links to some cancers. Modern energy from waste facilities have reduced dioxin emissions by 99% over previous generation facilities and less than 1% of all UK dioxin emissions come from household waste incinerators (compared to 18% for domestic heating and cooking). This is due to the strict emission limits that are placed on all energy from waste facilities. The Government's independent expert advisory Committee on the Carcinogenicity of Chemicals in Food, Consumer Products and the Environment concluded that "any potential risk of cancer due to residency near to the MSW incinerators was exceedingly low and probably not measurable by the most modern techniques".

*Energy from Waste - Particle matter and SO<sub>2</sub>* - Other health concerns relate to respiratory disease associated with emissions of particle matter and SO<sub>2</sub>. The DEFRA review concluded that there is little evidence that emissions from energy from waste facilities make respiratory problems worse and that in most cases the facility contributes only a small proportion to the local level of pollutants. Such emissions can also be strictly controlled for example using filter systems.

- 3.18 *Objective 11 – Protect and enhance cultural heritage* - The LWMP funding bid does not identify types of facilities or their locations. Accordingly, it is not possible to identify individual environmental effects upon landscape from any of the options at this stage as this will be very dependent upon location. Therefore it is important that more detailed level assessment is undertaken as and when sites are considered in order that significant effects on cultural heritage can be identified and appropriate mitigation measures put in place.

3.19 *Objective 12 – Protect and enhance landscape* - The LWMP funding bid does not identify types of facilities or their locations. Accordingly, it is not possible to identify individual environmental effects upon landscape from any of the options at this stage as this will be very dependent upon location. Therefore it is important that more detailed level assessment is undertaken as and when sites are considered in order that significant effects on landscape can be identified and appropriate mitigation measures put in place.

#### **4. MITIGATION**

4.1 The following mitigation measures are identified and should be put into place as required following:

4.2 *Planning* - The land use planning system will need to ensure that facilities are sited and designed in a way that reduces impacts on the environment and local communities. Planning Authorities are also encouraged to provide a framework for delivery of waste management facilities by identifying suitable sites in Development Plans.

4.3 *Operation* – A range of regulatory controls exist to ensure that waste management facilities are designed and operated in a way that protects the environment and human health. As and when proposals for facilities come forward, these will be used to address potential effects identified in this assessment.

4.4 *Considering Funding Bids and Tendering for Proposals* - Further details about the environmental performance of some of the options could be sought as part of the Scottish Executive's decision making process on what proposals should go forward. Tenders for facilities should also seek highest environmental performance from bidders.

4.5 *Waste Outputs* - Ensure market testing undertaken before facilities are developed to ensure that there is a viable and environmentally acceptable market for outputs. In addition, risk assessment criteria must be applied prior to the application of outputs from treatment processes with respect to their impact on the air, soil and water environment.

4.6 *Thermal Efficiency* – Ensure that any Energy from Waste facility has maximum thermal efficiency to maximise generation of heat and electricity in line with SEPA guidance<sup>7</sup>.

4.7 *Engagement and Involvement* – Local communities potentially affected by waste management facilities should be given early and effective opportunities to involve themselves in decision making.

4.8 *Design* – Facilities should be designed to enhance the environment where possible.

4.9 *More detailed assessment in other Plans and Programmes* – This assessment is a strategic assessment that is consistent with the scale and nature of the Area Waste Plan. There will be a need for more detailed level assessment to take place as more detailed level plans and programmes are prepared. In particular, local authority Development Plans which identify locations or areas of search criteria for waste management facilities will need to consider the environmental implications of proposed locations.

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<sup>7</sup> SEPA has published Thermal Treatment Guidelines([www.sepa.org.uk/pdf/nws/guidance/thermal\\_treatment.pdf](http://www.sepa.org.uk/pdf/nws/guidance/thermal_treatment.pdf) ) and is also developing criteria for thermal efficiency of waste treatment facilities which will be available later in the year.

## 5. CONSULTATION

5.1 This Environmental Report and the AWP Review is out for consultation between 23<sup>rd</sup> July 2007 and 3<sup>rd</sup> September 2007. SEPA welcomes your comments.

5.2 Comments should be made in writing by 3<sup>rd</sup> September 2007 to either:

FREEPOST, Glasgow and Clyde Valley AWP Consultation, SEPA Glasgow Office, Law House Todd Campus, West of Scotland Science Park, Maryhill Road, Glasgow. G20 0XA

Or by email to: [glasgowandclydevalley.AWP@sepa.org.uk](mailto:glasgowandclydevalley.AWP@sepa.org.uk)

<b>Consultation Questions</b>
<b>Question A</b> Do you have any comments on the interim evaluation of the environmental effects of the options and the findings derived from them? If not, please explain which parts of the interim evaluation you disagree with
<b>Question B</b> Has the interim evaluation covered all of the environmental issues that you would like to see considered? If not, please tell us which environmental issues should also be included
<b>Question C</b> Do you think SEPA has identified appropriate mitigation actions to prevent, reduce as fully as possible or offset any significant adverse environmental effects of the Lanarkshires waste options on the environment?
<b>Question D</b> Are there any other points in respect of this interim Environmental Report that you would wish to make?