

**ENVIRONMENT PLANNING AND COUNTRYSIDE COMMITTEE
8 MARCH 2006**

**DRAFT GUIDANCE TO LOCAL AUTHORITIES ON THE CHOICE OF
TECHNOLOGIES FOR RESIDUAL MUNICIPAL WASTE MANAGEMENT**

Purpose

1. This paper identifies the approach that the Welsh Assembly Government is taking to ensure that local authorities have adequate guidance and information on the choice of technologies for the management of residual municipal waste. The paper includes for the Committee's consideration an outline draft of a guidance document that will be provided to local authorities.

Background

2. Local authorities have been set strict targets to reduce substantially the amount of biodegradable municipal waste that is landfilled. The targets have been set in the EU Landfill Directive and implemented in Wales via the Waste and Emissions Trading Act 1993 and Landfill Allowances Scheme (Wales) Regulations 2004. The first target is for 2010, with later targets in 2013 and 2020.

3. Local authorities should be able to meet the 2010 target largely by diverting biodegradable municipal wastes for recycling and composting. Guidance on the waste streams that should be targeted is already provided in Wise about Waste, the National Waste Strategy for Wales. In particular, local authorities will need to invest additionally in the collection and composting of source separated kitchen waste in order to meet the 2010 targets. The 2013 and 2020 landfill reduction targets cannot be met by recycling and composting alone; a substantial proportion of the residual waste that cannot, for the foreseeable future, feasibly be separated for recycling and composting will need to be treated or beneficially used to ensure that sufficient biodegradable municipal waste is diverted from landfill.

3. The reduction in the landfill of residual biodegradable municipal waste can be achieved through treatment and/or beneficial use by using one or more of the following techniques:

- mechanical biological treatment (MBT) to produce a stabilised waste with a low biodegradability content that can then be landfilled without exceeding targets;
- MBT to produce a refuse derived fuel (RDF) that can then be used in a power generating plant to produce electricity;
- MBT to produce a residual waste stream that could be spread on non-agricultural land under an exemption from the Waste Management Licensing Regulations (subject to the approval of the Environment Agency);
- mechanical thermal treatment (e.g. autoclaving) to produce a residual waste that can be beneficially used (often in a power generating plant);
- direct use of untreated residual municipal waste as a fuel in a power generating plant.

For all energy from waste options consideration should also be given to the possibility of combined heat and power usage to obtain the maximum energy efficiency.

4. There are a wide variety of MBT processes that are available commercially for local authorities or their contractors to use to treat residual municipal waste. Similarly local authorities or their contractors are able to employ a number of different power generation technologies to beneficially recover energy from the residual waste. Some of these technologies have a long track record for municipal waste (e.g. conventional energy from waste “incinerator” plants), whereas other more “advanced” technologies (e.g. gasification and pyrolysis) have less of a track record for the management of residual municipal waste.

5. Local authorities will need to comply with various legal requirements that govern the decision making process when determining which technologies to employ to manage residual municipal wastes. For example, local authorities may need to comply with the EU Strategic Environment Appraisal (SEA) Directive. They are also required under TAN 21 (Waste) to ensure in the development planning process that the Best Practicable Environmental Option is evaluated. This can be satisfied potentially through the “sustainable waste management option” appraisal that is carried out during the development and revision of the Regional Waste Plans. Local authorities need to apply a complex decision making process when determining exactly which technology to use to manage their municipal wastes. Local authority decision making processes need to take into account, for example:

- capital and operational costs and whether this represents value for money;
- reliability of the technology;
- deliverability within timescales;
- land take;
- visual impact;
- environmental emissions;
- flexibility to cope with variations in waste composition;
- etc.

Guidance currently available and planned

6. There is a considerable amount of recent guidance on municipal waste treatment technologies that has been produced by the European Commission, the European Environment Agency, and various UK bodies, both public and private. The most important source of impartial information available to local authorities is contained in the Environment Agency’s “Waste Technologies Data Centre” that can be accessed on www.environment-agency.gov.uk/wtd. The Assembly Government is part funding the Centre.

7. The Assembly Government is working with the WLGA to organise three two-day training seminars on waste technologies for local authority officers and members. It is likely that the seminars will be held in N, SE and SW Wales in May 2006.

8. The three Regional Waste Plan Groups are actively reviewing the existing Regional Waste Plans with a view to publishing revised plans in 2007. The work will include a full sustainable waste management option appraisal of ways to manage wastes, including specifically the assessment of different technology options available to manage residual

municipal waste. This will include a health impact assessment and will ensure compliance with the SEA Directive. It will also include full public consultation.

Proposed draft guidance for Welsh local authorities

7. The Welsh Assembly Government is constrained on the level of prescription it can apply in instructing local authorities to use certain treatment technologies, nor would it be appropriate for it to usurp decisions that need to be made locally. Directing local authorities to adopt specified approaches would be within the remit of a waste management plan, and there are legal obligations that the Assembly Government needs to comply with in drawing up such a plan (eg. compliance with the SEA Directive, and Public Participation Directive, *inter alia*). This compliance would inevitably delay issuing any prescriptive guidance although it will be built into the forthcoming review of the Wales waste strategy. However, the Assembly Government can currently provide guidance within the context of its existing waste plan (Wise about Waste). Moreover, the Assembly Government can provide guidance on the criteria that local authorities should use in deciding which technologies to use. The Assembly Government can also ensure that local authorities are aware of, and have access to, the most up to date and reliable information on technologies, so that they are able to make the most informed decisions possible.

8. Annex 1 provides a draft outline of the guidance for local authorities on their choice of residual municipal waste treatment technologies.

Actions for the Committee

9. The Committee is invited to comment on the approach adopted by the Assembly Government and to give consideration to the draft outline of the guidance provided in Annex 1.

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DRAFT OUTLINE OF GUIDANCE FOR LOCAL AUTHORITIES ON THE CHOICE OF TECHNOLOGIES FOR RESIDUAL MUNICIPAL WASTE MANAGEMENT

Aim

To help local authorities to make sound decisions on technologies for the management of their residual municipal waste that take account of the Welsh Assembly Government's waste policies, sustainable development criteria, legal requirements, and evolving independent analysis of the operational capabilities and effectiveness of each technology.

Current policies on residual waste treatment

Wise about Waste, the National Waste Strategy for Wales, identifies that source separated recycling and composting is the preferred option for the management of municipal waste, and that the amount of residual waste requiring energy recovery or landfill should be minimised. However, Wise about Waste also identifies that energy from waste (EfW) is one of several treatment techniques that local authorities will need to employ to meet, in particular, the EC Landfill Directive targets to divert biodegradable municipal waste from landfill targets, subject to the following conditions:

- it forms part of an integrated approach and that it only recovers energy from residual waste that remains after as much recyclable and compostable material as practically possible has been removed;
- the need for it has been established as part of the development of the Municipal Waste Management Strategy which has been consulted upon with local communities at an early stage when all options can be considered;
- it represents the BPEO for residual waste, taking into account transportation;
- it has been designed so as not to inhibit increasing recycling and composting rates at a later date (in the expectation that the Assembly Government increases the targets further);
- it includes combined heat and power wherever practicable;
- it is consistent with the emerging or existing Regional Waste Plan.

The operation of EfW facilities is regulated under the Pollution Prevention and Control (PPC) Regulations 2000. Any waste disposal or management facility, including an EfW plant, is subject to licensing, monitoring and regulation. Health authorities are consulted as part of the process in determining an application for a PPC permit. In order to be granted a permit, EfW facilities of any type must be the Best Available Technology (BAT) and must meet stringent emission standards set by the EC Waste Incineration Directive (WID), which applies to all EfW technologies and processes, to protect health and the environment. Standards being introduced by the Directive are more stringent than those which have historically existed. For example, new limits on dioxin emissions are 0.1ng/m₃ compared with 1.0 ng/m₃ for municipal waste incineration previously.

Choosing residual municipal waste treatment technologies

Technologies available

The reduction in the landfill of residual biodegradable municipal waste can be achieved through treatment and/or beneficial use by using one or more of the following techniques:

- mechanical biological treatment (MBT) to produce a stabilised waste with a low biodegradability content that can then be landfilled without exceeding targets;
- MBT to produce a refuse derived fuel (RDF) that can then be used in a power generating plant to produce electricity and;
- MBT to produce a residual waste stream that could be spread on non-agricultural land under an exemption from the Waste Management Licensing Regulations (subject to the approval of the Environment Agency);
- mechanical thermal treatment (e.g. autoclaving) to produce a residual waste that can be beneficially used (often in a power generating plant);
- direct use of untreated residual municipal waste as a fuel in a power generating plant.

For all EfW options consideration should also be given to the possibility of combined heat and power usage to obtain the maximum energy efficiency.

There are currently a wide variety of MBT processes that are available commercially for local authorities or their contractors to use to treat residual municipal waste. Similarly local authorities or their contractors are able to employ a wide variety of different power generation technologies to beneficially recover energy from the residual waste. Some of these technologies have a long track record (e.g. conventional energy from waste “incinerator” plants) for municipal waste, whereas other more “advanced” technologies (e.g. gasification and pyrolysis) have less of a track record for the management of residual municipal waste.

The advantages and disadvantages of each technique are identified broadly in Table 1 [Note to EPC Committee: further guidance is available in published reports that will be referenced].

Table 1. The broad advantages and disadvantages of different technologies for the treatment of residual municipal waste

TECHNOLOGY	ADVANTAGES	DISADVANTAGES
MBT to produce a stabilised waste with a low biodegradability content that can then be landfilled without exceeding targets	Simple process. Output specification is basic.	Can be expensive due to long period of time needed to treat waste to ensure significant reduction in biodegradability. No beneficial use of residual material that is landfilled. Environmental impacts from landfilled waste.
MBT to produce a refuse derived fuel (RDF) that can then be used in a conventional power generating combustion plant to produce electricity and/or heat.	Recovers energy. Reliable technology with a long track record. Plants subject to strict emission controls under EC Waste Incineration Directive (WID).	Currently few power plants designed or constructed to use RDF in Wales. Variability in composition may be a problem for combustion process to operate efficiently.
MBT to produce an RDF that can then be used in a	Recovers energy. Plants subject to strict	Little track record for municipal wastes.

advanced power generating plant (pyrolysis/ gasification) to produce electricity and/or heat.	emission controls under EC Waste Incineration Directive (WID).	Potentially expensive. Reliability questionable. Variability in composition may be a problem for gasification / pyrolysis process to operate efficiently.
MBT to produce a residual waste stream that could be spread on non-agricultural land under an exemption from the Waste Management Licensing Regulations (subject to the approval of the Environment Agency);	Landspreading is cheaper than landfill of MBT residual.	Environmental impacts are questionable and spreading on land, if allowed by the Environment Agency, will be subject to tight environmental standards that may be very difficult to meet (since the material is derived from mixed municipal waste that contains hazardous substances)
Mechanical thermal treatment (e.g. autoclaving) to produce a residual waste that can be beneficially used (often in a power generating plant).	Recovers energy. Initially sterilises the waste (although keeping it sterile may be problematic). Can aid recycling of some components (eg. cleans metal cans). "Cooking" of the waste may improve efficiency of anaerobic digestion to produce gaseous fuel.	Limited track record for municipal waste. Treated waste still has a high biodegradability content and requires further treatment to meet Landfill Directive targets. Output material needs to be carefully stored and handled. Uses energy to heat the waste.
Direct use of untreated residual municipal waste as a fuel in a power generating plant.	Recovers energy. Reliable technology with a long track record. Plants subject to strict emission controls under EC Waste Incineration Directive (WID). Lack of pre-treatment reduces costs.	Metals can be recovered beneficially from the ash.

Legal requirements for decision making

Local authorities will need to comply with various legal and other requirements that govern the decision making process when deciding which technologies to employ to manage residual municipal wastes. These may include:

- the EU Public Procurement Directive;
- the EU Strategic Environment Appraisal (SEA) Directive;
- the requirement for BPEO under TAN 21 (Waste)

Integrating with other decision making processes

Local authorities should not make decisions on waste management technologies in isolation. For example, they should consider:

- their Municipal Waste Management Strategy and those of neighbouring local authorities;
- the Regional Waste Plan and revisions;
- the Spatial Plan and regional initiatives.

Criteria for decision making

When making decisions on technologies for the treatment of residual municipal waste, local authorities should include the following evaluation criteria: [**Note to EPC Committee – This list is not complete and requires refinement**]:

- the degree to which the technology maximises sustainable development outcomes in relation to the local economy, social well being and environmental protection;
- the assessment of the technology provided on the Environment Agency's (EA) Waste Technology Data Centre web site (the technology must have been fully assessed by the EA and the information on the performance of the technology accredited by the EA);
- capital and long term operational costs and whether this represents value for money;
- the track record and reliability of the technology, specifically in relation to the handling of residual municipal waste;
- deliverability within timescales to meet targets;
- land take;
- visual impact;
- environmental emission controls and the meeting of WID standards
- flexibility to cope with variations in waste composition – including day to day, seasonal and longer term fluctuations;
- degree of pre-treatment required;
- ability to deliver output to required specification (important for MBT plants)
- degree of future proofing of the technology (can it be easily adapted to changes in composition and/or legislative requirements);
- ability to manage other waste streams (e.g. industrial and commercial waste) to help local businesses and achieve economies of scale;
- overall energy efficiency (noting that the proposed revisions to the EC Waste Framework Directive set an energy efficiency threshold of 65% for incineration of municipal waste to count as recovery).

Other guidance on technologies for the treatment of residual municipal waste

[**Note to EPC Committee – a definitive list of available guidance documents and reports will be provided here**]

END.