



Mercia EnviRecover

**PUBLIC INQUIRY UNDER SECTION 77 OF THE TOWN AND
COUNTRY PLANNING ACT 1990 (AS AMENDED) INTO THE
PROPOSED DEVELOPMENT OF AN ENERGY FROM WASTE
FACILITY ON LAND AT HARTLEBURY TRADING ESTATE,
HARTLEBURY, WORCESTERSHIRE**

**PINS REFERENCE: APP/E/1855/V/11/2153273
LPA REFERENCE: 10/000032/CM**

PLANNING

REBUTTAL

PROOF OF EVIDENCE OF NICHOLAS ROBERTS

November 2011

axis

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Introduction

1. This short rebuttal proof has been prepared in response to evidence provided by Louise Brooke-Smith on behalf of WAIL. It relates to 2 matters as follows:
 - i) Whether the use of anaerobic digestion (AD), as opposed to energy from waste (EfW) through direct combustion, would constitute moving the management of waste up the waste hierarchy. Together with the suggestion that '63%' of municipal waste could be composted or treated through AD.
 - ii) The relevance of the Joint Municipal Waste Management Strategy (JMWMS) 2004 and statements contained therein. Together with the findings of the JMWMS Review 2009.

i) AD and the Waste Hierarchy

2. In a number of places Louise Brooke-Smith states / infers that AD would be a preferable solution to the EnviRecover proposal (paragraphs 5.4.18, 5.4.20, 5.4.25, 5.4.33, 5.4.36, 5.4.37, 5.6.19, 6.3 & 6.4). However, by reference to her own Appendix D: Defra Guidance on Applying the Waste Hierarchy (internal page 3), it can be seen in the diagram that AD and incineration with energy recovery are both classed as 'other recovery' falling within exactly the same band of the Waste Hierarchy.
3. On this basis the use of AD, as opposed to incineration with energy recovery, offers no benefit in moving the management of waste up the Hierarchy. In this regard, I find Louise Brooke-Smith's paragraph 5.4.36 unhelpful. Here she indicates that AD is preferable (in hierarchical terms) to landfill and incineration without energy recovery. Whilst factually correct, this statement has no relevance to the EnviRecover proposal, as EnviRecover is incineration **with** energy recovery (i.e. it is a facility that meets the revised Waste Framework Directive definition of 'recovery' by scoring over 0.65 in terms of the R1 calculation).
4. Louise Brooke-Smith's paragraph 5.4.36 also states that *'when waste is a mixture of food waste, dry anaerobic digestion followed by composting is*

preferred'. Reference to paragraph 2.2 of the Defra Guidance on Applying the Waste Hierarchy indicates that this sentence is missing the words 'garden' before the first use of the word 'waste' i.e. it should read: *when **garden** waste is a mixture of food waste, dry anaerobic digestion followed by composting is preferred*'. I would not wish anyone to believe that AD offers a 'good' solution for anything other than food and garden waste.

5. It is helpful to understand that AD falls into two main types: wet AD and dry AD. In terms of municipal solid waste (MSW), Wet AD can **only** treat food waste. It also has other applications such as farm slurries or sewage sludge, but these are not relevant in this case as neither are part of the municipal waste stream.
6. Dry AD is mostly used to treat combined food and green (garden) waste. However, it is not in widespread usage. It has a number of limitations:
 - The respective portions of each need to be carefully balanced (i.e. you cannot have 80% green waste and only 20% food).
 - It is far less efficient at generating energy than wet AD, and the greater the portion of green waste the less the energy produced.
 - It does not break down the lignin or woody material in the green waste (refer to the footnote on page 5 of the Defra Guidance on Applying the Waste Hierarchy).
 - You have to aerobically treat (compost) the output in order to get the green waste element fit for beneficial use. Coupled with the reduced energy generation, this secondary treatment process makes the marginal benefit (in overall energy terms) of putting green waste through AD very small and indeed questionable in many instances.
 - From a financial perspective it performs very poorly compared to green waste open windrow composting. This is why very few authorities AD green waste.
7. Worcestershire and Herefordshire have, in common with the vast majority of waste disposal authorities in the UK, elected to open windrow compost its green waste. I set out the collection systems in place for this waste stream in

Appendix NR10, paragraph 8. These would ensure that no material quantities of green waste would be sent to the EnviRecover facility.

8. With regard to residual waste treatment technology choice, within my main proof (paragraphs 4.2.4 to 4.2.7) I set out the repeated Government statements that it remains technology neutral. However, I also acknowledge that AD is strongly supported by the Government for the treatment of certain waste streams, namely food (see my main proof paragraphs 4.2.8 – 4.2.10). On this matter, I also note that the Defra Guidance on Applying the Waste Hierarchy (internal page 6) provides a table of how 11 waste streams should ideally be managed. AD is only listed as 'suitable' for food and garden wastes.
9. In her paragraph 5.4.18 Louise Brooke-Smith states that 63% of municipal waste could be composted or subject to AD. I have no clear idea where this figure comes from, but it may be derived from the fact that for the purposes of LATS, Defra consider that 68% of MSW is biodegradable. However, this by no means indicates that this portion of the waste can be subject to AD. I believe the Government's messages are unambiguous in that AD is only really suitable / preferable for food and possibly some green waste.

ii) JMWMS 2004 and JMWMS Review 2009

10. In her paragraphs 5.3.21 to 5.3.23, Louise Brooke-Smith considers the JMWMS and seems to place weight on the 2004 version, whilst criticising the 2009 Review.
11. As a matter of fact the JMWMS 2004 has been updated (and thus in part superseded) by the 2009 Review. The purpose of a regular review is to ascertain whether the prevailing circumstances have changed and whether the Strategy needs to be updated to reflect any changes. I have been advised by Worcestershire County Council Waste Disposal Authority, the lead body for the JMWMS, that all of the District and the County Councils (Herefordshire and Worcestershire) have formally endorsed / adopted the 2009 Review.

12. The JMWMS 2004 stated in Policy 4: *Waste management methods will support the Best Practicable Environmental Option (BPEO) which is based on a minimum 33% recycling and a maximum of 22% landfilling, with any balance required being managed through a form of thermal treatment. Emerging technologies which support the BPEO will be considered to enable a flexible approach to the waste treatment methods which will be adopted. Refer to attached Appendix NR21).*
13. Thermal treatment encompasses a number of technologies including incineration. However, it is fair to say the 2004 report was written shortly after MWM's Kidderminster EfW proposal was refused planning permission and at a time the Councils were considering autoclaving as their preferred waste treatment option. This is described in the originally submitted EnviRecover Planning Application document (see Planning Statement paragraph 2.4.4 to 2.4.6 – CD-PA1a) and summarised in paragraphs 3.5.3 and 3.5.4 of the JMWMS 2004 (see NR21).
14. The Councils' association with autoclaving was actually short lived. This is not surprising, as an autoclave:
- Is not a thermal treatment technology (at least by current definitions).
 - Is not a residual waste management technology and is actually an intermediate treatment method, as it produces waste in virtually the same quantities as is put into the process.
 - Is not an energy recovery technology.
 - Creates a highly biodegradable fibre (or sometimes a pellet) that can only be landfilled or, preferably, burnt to recover energy.
15. In 2004, there was a belief, fuelled by the autoclave developer, that there could be a commercial market for the output fibre in making building products. This transpired not to be the case as explained by Kirsten Berry (main proof paragraph 2.3.12).
16. Finally on the 2004 JMWMS, I note that in her paragraph 5.3.23 Louise Brook-Smith references paragraph 5.7.5 (of the JMWMS 2004 - see NR21)

and states incineration was '*expressly ruled out*'. This is not the case. Section 5.7 deals with a range of treatment technologies and paragraph 5.7.5 simply says: *Waste to Energy Mass burn incineration involves the combustion of mixed unsorted waste in controlled conditions on a moving grate. Resulting hot gasses are directed to a boiler to recover heat to produce steam and generate electricity. Thirty-five percent of the waste becomes a residue which can be recycled (bottom ash) or disposed (fly ash). No waste to energy facilities are planned to be built in Herefordshire or Worcestershire. However, it may be necessary to use regional facilities to dispose of small amounts of our waste.*

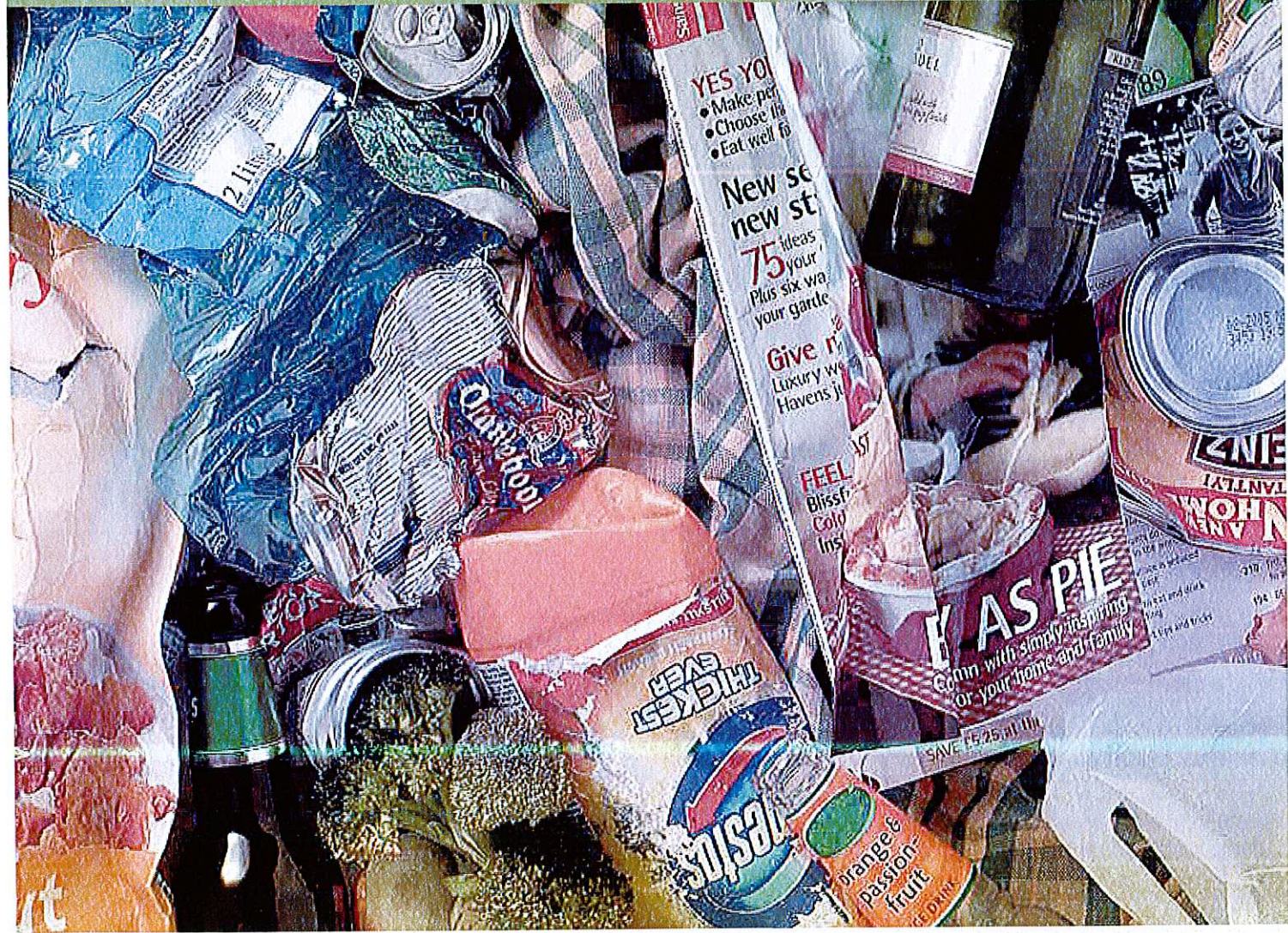
17. In the 2009 JMWMS Review the Council's continued to support thermal treatment, but set the target (Target 5) to achieve the balance of its 78% recovery target through energy recovery.
18. The 2009 Review was accompanied by a number of technical annexes, of which Annex D was a Residual Options Appraisal. This is briefly described in paragraphs 5.17 – 5.19 in SoCG1. In short, it considered a range of technologies and ranked them following evaluation against 14 criteria encompassing environmental, social and economic factors.
19. In her paragraph 5.3.23 Louise Brook-Smith states: *..... it is therefore surprising that the First Review 2009 failed to consider as part of these emerging technologies anaerobic digestion and autoclaving as a solution.*
20. Again this statement is not correct. Paragraph 1.3.1 of the Residual Options Appraisal (refer to Appendix NR22) clearly states that both autoclaving and AD were considered in the 'Long List' of initial treatment options. Paragraph 1.3.2 shows that of the seven technology options short listed and assessed in detail, two were autoclaving. I actually find it more surprising that autoclaving **was** considered based upon the purpose of the report (to evaluate 'residual' waste management options) and the Council's previous experience.

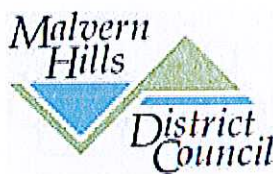
Appendix NR21: Extract from the JMWMS 2004



Managing waste for a brighter future...

The Joint Municipal Waste Management Strategy for Herefordshire & Worcestershire 2004-2034





This information is also available in **LARGE PRINT, BRAILLE** or **TAPED** and is supplied on request Telephone: **01905 768257**

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Key Policies

These key policies have been agreed by the Joint Members Waste Forum for Herefordshire and Worcestershire.

POLICY 1
Local Authorities in Herefordshire and Worcestershire will adopt the Waste Hierarchy as a template for their approach to Waste Management (shown in 2.1.4) i.e. reduce, re-use, retain, recycle and compost, recovery, landfill with energy recovery and finally safe disposal to landfill.

POLICY 2
Beginning in 2003/4, the Local Authorities began to implement a co-ordinated waste reduction/minimisation initiative – 'Waste Challenge' – across the counties. By March 2006 the Authorities will aim to have reduced the kg/head of waste collected and disposed of back to 2001/2 levels and endeavour to maintain these for the life of the Strategy.

POLICY 3
The Local Authorities will ensure that waste management in Herefordshire and Worcestershire offers Best Value to local people.

POLICY 4
Waste management methods will support the Best Practicable Environmental Option (BPEO) which is based on a minimum 33% recycling and a maximum of 22% landfilling, with any balance required being managed through a form of thermal treatment. Emerging technologies which support the BPEO will be considered to enable a flexible approach to the waste treatment methods which will be adopted.

POLICY 5
The Local Authorities will adopt a comprehensive and cohesive approach to publicity, promotion, awareness raising and enforcement.

POLICY 6
The Local Authorities will aim to achieve the Statutory Performance Standards for recycling and composting for 2003/4 and 2005/6 and the national standard of 33% recycling and composting by 2015 as a minimum, and aim to exceed them if affordable.

POLICY 7
In addition to national targets set out in Waste Strategy 2000, the Local Authorities are committed to aim to achieve the local targets contained in this Strategy.

POLICY 8
The Waste Disposal Authorities, in conjunction with their partners, will examine the role of Household Waste Sites to make sure that they provide a quality service and enable maximum recycling/re-use wherever possible.

POLICY 9
The Waste Collection Authorities will continue to provide and enhance Bring Recycling Sites, where considered beneficial, to supplement "kerbside" collection schemes. The effect of household recycling collections on Bring Recycling Sites will be monitored to ensure that together they continue to provide a cost effective and practical way of recycling.



3.5.2 In December 1998 the successor Authorities of Herefordshire Council and Worcestershire County Council together awarded the twenty five year contract for an integrated waste management service to Mercia Waste Management Ltd, which established a sister company Severn Waste Services Ltd to deliver the service locally.

3.5.3 The Contractor has to achieve certain percentage targets for waste recycling, composting and recovery. A key component of the Contract was the provision of an integrated waste management facility, which included an energy from waste plant located in the north of Worcestershire. Following the refusal of planning permission for this facility in July 2002 and the introduction of Statutory Performance Standards for recycling and composting in March 2002, the counties and the Contractor have reviewed the future provision and requirements of the Contract, taking into account emerging technologies and latest best practice.

3.5.4 The structure of the revised contract and the preferred type of technology that will be used to meet the new targets was reported to Herefordshire Council and Worcestershire County Council's Cabinets in July 2004 and that decision, based on an autoclave thermal treatment process, has been incorporated into this Strategy.

3.6 **Infrastructure Investment**

3.6.1 Since the Contract has been signed considerable progress has been made in providing additional and improving existing infrastructure across the two counties. This has included the construction of:

- **Transfer and Bulking Station;**
- **New Bulking Bays;**
- **Two Materials Reclamation Facilities (MRFs);**
- **Refurbishment of two existing Transfer Loading Stations;**
- **Refurbishment and relocation of a Transfer Loading Station and Household Waste Site;**
- **Refurbishment of 10 Household Waste Sites;**
- **In addition to this, considerable capital investment has been made in vehicles, plant and the green waste composting site and the landfill site at Hill & Moor near Pershore.**

3.7 **Material Reclamation Facilities (MRFs) And Bulking Facilities**

3.7.1 Herefordshire Council and Worcestershire County Council have provided, through the Integrated Waste Management Contract, two MRFs located at Rotherwas in Hereford and at Hill & Moor near Pershore. Recyclable material collected through the kerbside collection in Herefordshire is processed at the Hereford MRF and recyclables collected from Wychavon, Worcester City and Malvern Hills are handled at the Hill & Moor MRF. Local bulking facilities for Bromsgrove, Redditch and Wyre Forest are provided within each district and are already in place for Malvern Hills, Worcester City and Wychavon at Hill & Moor. The MRF at Hereford also has bulking bays for glass recycle.

3.8 **Transfer Loading Stations**

3.8.1 There are currently three compaction style Transfer Loading Stations located within the counties; two in Herefordshire, at Rotherwas in Hereford and at Leominster, and one in Worcestershire, at Redditch. These are local delivery points where collected waste is bulked up and compacted into closed containers before transportation to the final disposal point. At these Transfer Loading Stations waste is handled in a safe and clean manner by loading it directly from collection vehicles into a storage hopper before being compacted into containers.

3.8.2 A Transfer and Bulking Station has been built in Bromsgrove to handle the new demountable body refuse collection system.

3.9 **Household Waste Sites**

3.9.1. Herefordshire Council and Worcestershire County Council are responsible for providing sixteen Household Waste Sites across the counties – also known as Civic Amenity Sites, or even the 'tip'. As well as providing householders somewhere to take their larger waste items free of charge, these local facilities already contribute significantly to the amount of waste recovered in the counties for recycling and composting.



5.6.2 Following this example, the Authorities within Herefordshire and Worcestershire are considering the introduction of fortnightly residual waste collections. Wyre Forest District Council was the first Authority to introduce a fortnightly collection of residual waste alongside the phasing in of the weekly kerbside collection of recyclables in September 2003.

5.6.3 Bromsgrove District Council commenced phasing in a fortnightly collection of residual waste alongside the introduction of a kerbside collection of recyclables and compostables in March 2004.

5.6.4 The ultimate aim of the Local Authorities is to have a fully integrated collection system complimentary to the waste treatment and recycle processing methods deployed within the counties.

5.7 **Recovery**

5.7.1 It has long been recognised within the two counties, that reliance on landfill is not a long term, sustainable option. The Best Practicable Environmental Option (BPEO) for managing approximately 45% of the waste stream within the counties is a form of thermal treatment (see 3.5.4).

5.7.2 **Autoclave Thermal Treatment Process**

This new technology will accept household waste, which is steam treated in an autoclave. The materials are then separated into recyclables (metals, ferrous/aluminium; plastics; glass and aggregates). The organic fraction can then be used as a refuse derived fuel or potential markets have been identified to transform the material into building products.

Planning permission for the construction of an autoclave treatment plant has been granted in Herefordshire. There are also plans to build two plants in Worcestershire. The possibility of co-locating automated dry recyclable processing alongside these plants has been proposed and is being investigated.

5.7.3 **Anaerobic Digestion**

Reduces the bulk of organic waste by converting it into a relatively stable residue similar to compost that can be used as an agricultural soil conditioner and methane gas used to generate electricity. This process needs to take place in an oxygen free environment. A recognised process already adopted in parts of Europe and the UK.

5.7.4 **Gasification or Pyrolysis**

In essence these processes rely on breaking the waste down in sealed chambers by the application of extreme heat. The heat is applied in the absence of air (gasification) or with only a very small amount of air available (pyrolysis). This means that the waste does not burn, or only a very small part of it burns. Both processes generate a mixture of flammable gasses (often called 'syngas') which is then converted to electricity. A big disadvantage of these technologies is that they are not widespread in use and not currently in use on a commercial scale at all in the UK.

5.7.5 **Waste to Energy**

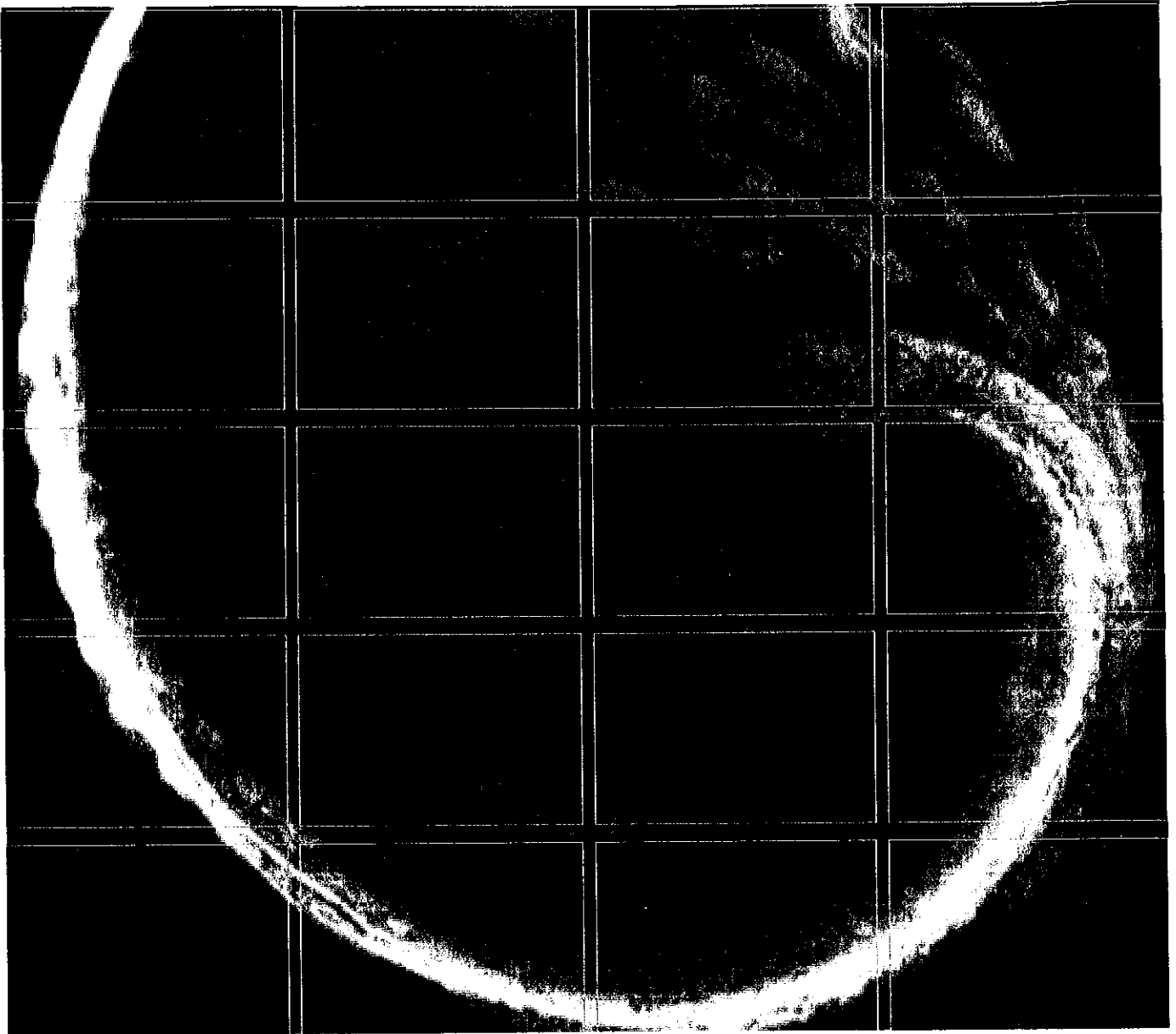
Mass burn incineration involves the combustion of mixed unsorted waste in controlled conditions on a moving grate. Resulting hot gasses are directed to a boiler to recover heat to produce steam and generate electricity. Thirty-five percent of the waste becomes a residue which can be recycled (bottom ash) or disposed (fly ash). No waste to energy facilities are planned to be built in Herefordshire or Worcestershire. However, it may be necessary to use regional facilities to dispose of small amounts of our waste.

5.7.6 **Emerging Technologies**

We live in a changing world, new technologies are emerging that should deliver more sustainable waste management solutions. The Local Authorities need to ensure that this Strategy is flexible so that we can take advantage of these new technologies thereby enabling us to meet the challenging targets for the future.

**Appendix NR22: Extract from JMWMS 2009 – Annex D Residual Options
Appraisal**

①



Annex D

Residual Options Appraisal

Environmental Report

July 2009

*INTRODUCTION*

The waste disposal authorities of Worcestershire and Herefordshire, in partnership with their constituent waste collection authorities (the Partnership), are currently reviewing their Joint Municipal Waste Management Strategy (JMWMS).

A key principle of the JMWMS is to focus on waste minimisation and to promote the management of waste up the waste hierarchy. However, despite these efforts, there will continue to be an element of residual municipal solid waste (MSW) requiring management.

Currently the majority of residual waste managed by the Partnership is disposed to landfill. There are three primary reasons why this can not continue:

- **Legislation** - The Waste and Emissions Trading Act (2003) introduced the Landfill Allowance and Trading Scheme (LATS), under which challenging targets for the diversion of biodegradable municipal waste from landfill have been introduced for each waste disposal authority (WDA) in England. In the event of a WDA failing to meet its targets directly, they may purchase allowances from the other WDAs, if available, or borrow against future capacity.
- **Finance** - Landfill has historically been a relatively cheap option for WDAs however this situation has changed dramatically over recent years. Landfill tax is increasing to £48 per tonne from 2010. This, on top of gate fees increasing due to high demand plus the unknown costs of LATS allowances, means that the long term cost of landfill is no longer viable for many authorities and alternative treatment technologies are becoming price competitive.
- **Lack of Capacity** - The amount of landfill void space, suitable for residual MSW, is reducing across England. In simple terms, we are running out of holes to fill up. This is particularly the case in Worcestershire and Herefordshire, with local void space expected to run out by Summer 2023 ⁽¹⁾.

Beyond the three reasons above, there is another key driver to divert waste away from landfill being highlighted by the JMWMS. This is to **address the challenges of climate change and viewing waste as a resource.**

In response to this challenge, a series of options for the introduction of residual waste treatment capacity for Worcestershire and Herefordshire have

(1) Based on 3.5 m3 current void remaining and an infill rate of 19,000 tonnes per month (October 2008)

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been developed. These options are not intended to be prescriptive, and are not directly related to any site specific proposal. The purpose of this report therefore is not to identify 'the best option' but to provide information on the advantages and disadvantages of various treatments to help guide and inform future strategic decisions regarding the treatment of residual MSW.

Having identified strategic options, methods were developed to appraise them objectively against a number of environmental, social and economic criteria. The purpose of this rigorous approach to options appraisal is to assist the Partnership with the strategic decision making process by identifying the potential environmental, social and economic benefits of each option.

1.2

DEVELOPING THE CRITERIA

A technical options appraisal requires that the performance of alternative options be assessed against key objectives, reflected through a range of criteria, in order to identify the option (or options) that perform best overall.

The criteria were not only used to indicate the environment and social impacts of the options, but also to demonstrate how they perform in relation to deliverability and cost.

As a basis for criteria selection, the draft Key Principles of the JMWMS and the Strategic Environmental Appraisal Objectives produced during development of the SEA of the JMWMS were reviewed. Some of the latter concerned more site specific issues, and thus were not appropriate for a strategic level assessment.

A workshop was held with both Officers and Members of the Partnership on 22 September 2008. This provided the opportunity to identify appropriate assessment criteria for Worcestershire and Herefordshire and ensured any authority specific concerns were identified.

The agreed criteria to be used for the assessment of the different options are as shown in *Table 1.1*.

Table 1.1 Criteria

Criteria Type	Criteria
Environmental Criteria	Resource Depletion Air Acidification Greenhouse Gas Emissions Freshwater aquatic ecotoxicity Eutrophication
Financial and Risk Criteria	Financial Costs Reliability of Delivery Planning Risk Compliance with Policy Flexibility End Product Liability
Social Criteria	Transport Health

It is essential that the chosen criteria help both to differentiate between the options and are able to be assessed in a robust manner. It is for these reasons that the issue of public acceptability has not been identified as a separate criterion. Any proposal for new infrastructure will be expected to generate an element of public opposition. This is particularly the case with waste management development. This is obviously a key concern to local authority Members and could cause delay in deliverability.

However, there is no evidence to demonstrate that the public are more or less accepting of any particular waste management technology. Opposition for new infrastructure is more often on the grounds of development of a certain site or related to local amenity issues (for example increased traffic) associated with the proposal rather than a focus on a particular technology type. For this reason it would not be possible for to differentiate between the options in this assessment.

A robust planning framework, and appropriate community engagement programmes, can help address misplaced perceptions and assist deliverability.

1.3 *DEVELOPING THE OPTIONS*

A facilitated workshop was held with the Partnership officers on 24 September 2008 to develop the list of residual waste options to be appraised and considered in the JMWMS.

1.3.1 *Developing a Long List*

A long list of generic technology types was initially identified. These are listed below:

- Mass burn incineration;



- Energy from Waste (EfW);
- Mechanical Biological Treatment (MBT) with Anaerobic Digestion (AD);
- MBT producing Refuse Derived Fuel (RDF);
- Gasification and pyrolysis (Advanced Thermal Treatment (ATT));
- Plasma Arc; and
- Autoclave.

1.3.2 *Developing a Short List*

The JMWMS aims to view waste as a resource and generate the most out of the residual waste it produces. For that reason mass burn incineration (combustion of waste without the generation of energy or heat) was not considered an option worth taking forward to the assessment.

Advanced Thermal Treatment (ATT) of untreated residual MSW has not been proven on a large scale in either the UK or Europe. It is essential that any option identified by the Partnership works and can be delivered. Therefore, it was considered to review the performance of ATT only in conjunction with a pre treatment technology (MBT) rather than in isolation. Plasma Arc technology was also felt to be in early development thus not suitable for further consideration at this stage.

In addition, the workshop considered the number and scale of facilities required. It is estimated the total residual treatment capacity required by the Partnership is ~ 250,000 tonnes per annum (tpa) ⁽¹⁾.

Options were considered for provision of: one, two, or three or more facilities. The proposal for three or more facilities was dismissed as it was not considered appropriate for the capacity required in terms economies of scale and the risks associated with site availability and deliverability.

Currently the Partnership export ~ 30,000tpa of residual waste to the energy from waste facilities in the West Midlands. There are a number of operating and planned waste treatment facilities in the areas surrounding Worcestershire and Herefordshire. It was therefore deemed necessary to assess an option that utilises waste treatment capacity outside the Partnership area.

In consideration of all the issues identified above, the following final list of options to be appraised was agreed.

- Option A - 1 site EfW
- Option B - 1 site EfW with CHP
- Option C - 2 site MBT with on site combustion

(1) This figure is based on information provided in Annex A - Waste Growth Paper and Annex B - Recycling & Composting Assessment of the JMWMS

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- Option D - 2 site MBT with off site combustion
- Option E - 1 site autoclave
- Option F - 2 site autoclave
- Option G - Out of county EfW