EXPLANATORY MEMORANDUM

THE LANDFILL (ENGLAND AND WALES)(AMENDMENT) REGULATIONS 2004 No.1375

This explanatory memorandum is laid before Parliament by Command of Her Majesty.

DEPARTMENT FOR THE ENVIRONMENT, FOOD AND RURAL AFFAIRS

Description:

These Regulations implement in England and Wales, Council Decision 2033/33/EC ("the Council Decision") establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC on the landfill of waste ("the Landfill Directive"). They also make some minor amendments to the Regulations which transpose the Landfill Directive (The Landfill (England and Wales) Regulations 2002 (S.I.2002/1559).

Matters of Special Interest to the Joint Committee on Statutory Instruments:

None.

Legislative Background:

EU Legislation:- This is an amendment to the Landfill (England and Wales) Regulations 2002 to transpose the Council Decision in England and Wales. A transposition Note is attached. The Council Decision is a complex piece of EU legislation that supplements the Landfill Directive. The Directive imposes requirements relating to the characteristics of waste which may be accepted in landfills and sets out procedures for its acceptance. The Council Decision prescribes in much greater detail the relevant waste acceptance criteria (in particular in the form of limit values for given parameters) and procedures (especially the information relating to characteristics of the waste which must be provided and the tests which must be applied to establish them). The Regulations transpose these requirements in England and Wales though it should be noted that some matters left to the discretion of Member States have not yet been addressed (for instance appropriate limit values for monolithic waste). A further set of Regulations will be necessary to put in place these requirements. This will be done in time for the required date of July 2005.

The Council Decision must be transposed into national law by 16 July 2004 and the waste acceptance criteria must come into force by 16 July 2005; it has been taken that this requirement also extends to the waste acceptance procedures that are included in the Council Decision.

The original proposal was under European Commission competence and so was not subject to EU Scrutiny Committee procedures. In the event, the Commission procedures did not produce an outcome and the issue was passed back to Council. As a result, the proposal was subject to Parliamentary scrutiny and an Explanatory

Memorandum (12468/02) was submitted to the Houses of Parliament in October 2002. It was not selected for debate.

The Regulations make some minor technical amendments to the transitional provisions for existing landfills. In particular, the Regulations clarify that the Environment Agency is to close existing landfill sites according to Directive requirements that are not re-permitted under the 2002 Regulations for one reason or another.

Extent:

These Regulations extend to England and Wales.

European Convention on Human Rights:

No statement required (the Regulations are subject to the negative procedure and do not amend primary legislation).

Policy Background:

The Landfill Directive represents an important step change in the way the UK disposes of its waste. It encourages waste minimisation and increased levels of recycling and recovery. Its main aim is to provide, by way of stringent operational and technical requirements, measures, procedures and guidance to prevent or reduce as far as possible negative effects on the environment as well as any resulting risk to human health, from landfilling of waste. The result is that landfilling becomes a less attractive waste management option, both in terms of cost and convenience. This should encourage waste producers to look for more acceptable alternatives (accepting that for some waste streams, there is little alternative to landfill).

The Council Decision on Waste Acceptance Criteria (WAC), agreed in Council in December 2002, helps meet the Directives main aim by prescribing the standards that waste must meet to be accepted at one of the three classes of landfill (hazardous, non-hazardous or inert) established by the Landfill Directive. It introduces criteria and sets limit values for a number of contaminants, so harmonising another aspect of landfill regulation across Europe.

The Council Decision will be implemented from July 2005. It will lead to difficulties for both waste producers and the waste management industry, particularly in the short term. The standards required are stringent and the testing procedures potentially costly. The Government recognises these short term difficulties and has set up the Hazardous Waste Forum and the Landfill and Hazardous Waste Implementation Programme to address them. Nevertheless, the Government believes that in the medium/long term, this legislation will help lead to a more sustainable waste management system in the UK, with a greater emphasis on reducing waste arisings and recovering/recycling waste that is produced.

Impact:

A Regulatory Impact Assessment is attached.

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Regulatory Impact Assessment of Implementing the Landfill (England and Wales) (Amendment) Regulations 2004

A report produced for the Department of Environment, Food and Rural Affairs

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1 REGULATORY IMPACT ASSESSMENT OF IMPLEMENTING THE LANDFILL (ENGLAND AND WALES) (AMENDMENT) REGULATIONS 2003

This Regulatory Impact Assessment (RIA) is concerned with the transposition into legislation in England and Wales of European Council Decision 2003/33/EC (the Council Decision) establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC on the landfill of waste (the Landfill Directive).

Implementation of this Council Decision is required by 16 July 2005 and will be achieved through the Landfill (England and Wales)(Amendment) Regulations 2004.

This full regulatory impact assessment has been prepared following consultations on draft Regulations. It supplements and extends previous regulatory impact assessments presented in the consultation paper *Limiting Landfill*[1] and in the second consultation paper on implementing the Landfill Directive[2].

2 PURPOSE AND INTENDED EFFECT OF THE MEASURE

2.1 The objective

The Landfill Directive[3] introduces progressive restrictions on the landfilling of biodegradable municipal waste and other wastes, and requires that waste only be accepted in a class of landfill (inert, hazardous and non-hazardous) if it meets the relevant acceptance criteria for that class of landfill.

The purpose of the Council Decision is to set out specific criteria and procedures for waste acceptance at the different classes of landfill.

The criteria and procedures are principally intended to ensure that any leachate produced within the landfill does not pose a risk to groundwater and surface water. To this end the Council Decision requires that the composition, leachability, long-term behaviour and general properties of a waste to be landfilled be determined as precisely as possible, and that before waste is accepted at a landfill site the holder or operator must be able to show that the waste can be accepted according to the permit conditions and waste acceptance criteria.

2.2 The background

Landfilling is the most common means by which waste is disposed of across Europe. However, landfill can be linked to a wide number of negative environmental impacts, such as contamination of soil and groundwater, emission of greenhouse gases and local odour and noise pollution. In response, the European Commission has introduced a number of measures to regulate landfill disposal and to establish a common framework that promotes waste prevention, minimisation, re-use and recycling above landfill disposal[4].

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[1] Limiting Landfill, DETR 1999

[2] The Implementation of Council Directive 1999/31/EC on the Landfill of Waste, Second Consultation Paper, DETR August 2001

[3] Implemented as the Landfill (England and Wales) Regulations 2002 (SI No. 1559) (the Landfill Regulations)

[4] In particular EC Directive 91/156/EEC on waste (transposed into law in England and Wales through the Waste Management Licensing Regulations 1994 (SI No. 1056)

The Landfill Directive contains measures to further prevent or reduce as far as possible the negative effects of landfilling waste on the environment and on human health. It bans the landfill of liquids and certain solid wastes, introduces requirements for the treatment of wastes prior to landfill and sets out a framework for:

- the classification of landfill sites in one of three categories (inert, hazardous or non-hazardous)[5];
- procedures for waste acceptance to be adopted at landfills; and,
- the types of waste for each class of landfill specified by waste acceptance criteria.

Article 16 of and Annex II to the Landfill Directive set out the procedure to be used to introduce specific criteria and/or test methods and associated limit values for each class of landfill .

The general requirements of these waste acceptance criteria is based upon the following three level hierarchy:

Level 1: ***Basic characterisation***. This constitutes a thorough determination, according to standardised analysis and behaviour-testing methods, of the short and long-term leaching behaviour and/or characteristic properties of the waste.

Level 2: ***Compliance testing***. This constitutes periodical testing by simpler standardised analysis and behaviour-testing methods to determine whether a waste complies with permit conditions and/or specific reference criteria. The tests focus on key variables and behaviour identified by basic characterisation.

Level 3: ***On-site verification***. This constitutes rapid check methods to confirm that a waste is the same as that which has been subjected to compliance testing and that which is described in the accompanying documents. Where appropriate, it may merely consist of a visual inspection of a load of waste before and after unloading at the landfill site.

The Landfill Directive requires that before a waste can be landfilled, all of the properties of the waste which determine its suitability for landfill must be known (Level 1). The waste is then periodically checked (Level 2) to ensure that those properties have not changed, and it is checked at the landfill (Level 3) to verify that it is the expected waste and that it has not been contaminated in storage or transport[6].

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[5] From 16 July 2004:

- Hazardous waste landfills can only accept wastes classified as hazardous under the Hazardous Waste Directive and those wastes must meet the relevant waste acceptance criteria.
- Non-hazardous waste landfills may accept municipal waste, other non-hazardous wastes (including inert waste) which fulfil the relevant waste acceptance criteria and, in certain circumstances, stable, non-reactive hazardous waste. (These stabilised hazardous wastes must not be deposited in cells with biodegradable non-hazardous wastes).
- Inert landfills may only accept inert wastes that meet the relevant waste acceptance criteria.

[6] In general, the responsibilities of the waste producer and landfill operator can be summarised as follows:

Interim national guidance on the acceptance criteria at new and existing landfill sites was published in 2002[7]. The Council Decision now sets out the full measures for waste acceptance. These are required to be implemented by member states by 16 July 2005.

Basic characterisation (Level 1) is required for each type of waste. The Council Decision defines the functions of this characterisation as providing:

a) basic information on the waste (type and origin, composition, consistency, leachability and – where necessary and available - other characteristic properties).

b) basic information for understanding the behaviour of waste in landfills and options for treatment[8].

c) assessing waste against limit values.

d) detection of key variables (critical parameters) for compliance testing and options for simplification of compliance testing (leading to a significant decrease of constituents to be measured, but only after demonstration of relevant information).

The acceptance criteria are summarised in Table 1. These cover a range of inorganic determinants in eluates derived from the European standard leaching test BS EN 12457 and other specific parameters, such as pH, acid neutralisation capacity and total organic carbon[9]. (Full details of the limit values and acceptance criteria are set out in the Council Decision, Appendix 2).

If the basic characterisation of a waste shows that the waste fulfils the criteria for a landfill class, the waste is deemed to be acceptable at this landfill class. If this is not the case, the waste is deemed to be not acceptable at this landfill class.

As a general rule, all wastes will require testing from 16 July 2005. The exceptions will be:

- wastes where a comprehensive dataset is already available from previous testing to the satisfaction of the Environment Agency;

- Level 1 testing is the responsibility of the waste producer;
- Level 2 testing may be undertaken by both the producer and the landfill operator, but it is the responsibility of the landfill operator to ensure that only wastes that fulfil the waste acceptance criteria for a given site are accepted; and,
- Level 3 is the responsibility of the landfill operator.

[7] Environment Agency Guidance on National Interim Waste Acceptance Criteria and Procedures, Version 1.2 External Consultation Draft, August 2002 (under revision)

[8] laid out in Article 6(a) of the Landfill Directive

[9] Environment Agency guidance on the sampling and testing of wastes to meet the waste acceptance procedures is currently being drafted and will be issued in due course. This will note that the range of eluate determinands may also need to be expanded beyond the restricted suite listed above and further information may be required to check whether the waste can be reduced, recycled or recovered

- wastes which are listed in the Council Decision, the Landfill Regulations or other Environment Agency guidance as not requiring testing[10]; or,

- wastes whose composition can be predicted to the satisfaction of the Environment Agency from knowledge of the process producing the waste.

As a minimum, information will be required to determine waste acceptance to landfill and whether or not the waste is hazardous. The parameters used as the basis for determining the class of landfill at which the waste may be accepted are summarised in Table 1 below.

[10] This includes certain inert wastes, municipal waste, separately collected non-hazardous fractions of household waste and the same non-hazardous materials from other origins that have been treated prior to landfill. Separate provisions exist for gypsum wastes and asbestos wastes (see Appendix 2)

Table 1: Summary of Council Decision waste acceptance criteria[11]

Parameter	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill¶	Hazardous waste landfill
Parameters determined on the waste			
Total organic carbon (w/w %)	3%	5%	6%*
Loss on ignition			10%*
BTEX (benzene, toluene, ethylbenzene and xylenes) (mg kg^{-1})	6		
PCBs (polychlorinated biphenyls, 7 congeners (7 congeners) (mg kg^{-1})	1		
Mineral oil C_{10}-C_{40} (mg kg^{-1})	500		
PAHs (polycylcic aromatic hydrocarbons)	To be set		
PH		>6	
Acid neutralisation capacity		To be evaluated	To be evaluated
Limit values (mg kg^{-1}) for compliance leaching test using BS EN 12457/ 3 at cumulative L/S 10 l kg^{-1} [12]			
As (arsenic)	0.5	2	25
Ba (barium)	20	100	300
Cd (cadmium)	0.04	1	5
Cr (chromium (total))	0.5	10	70
Cu (copper	2	50	100
Hg (mercury)	0.01	0.2	2
Mo (molybdenum)	0.5	10	30
Ni (nickel)	0.4	10	40
Pb (lead)	0.5	10	50
Sb (antimony)	0.06	0.7	5
Se (selenium)	0.1	0.5	7
Zn (zinc)	4	50	200
Cl (chloride)	800	15,000	25,000
F (fluoride)	10	150	500
SO_4 (sulphate)	1,000[#]	20,000	50,000
Total dissolved solids (TDS)[+]	4,000	60,000	100,000
Phenol index	1		
Dissolved organic carbon at own pH or pH7.5-8.0[@]	500	800	1,000

¶ And non-hazardous wastes deposited in the same cell * Either TOC or LOI must be used or hazardous wastes

** UK PAH limit values are under development

Alternative limit values can be used to demonstrate compliance with the acceptance criteria for inert wastes as set out in the Council Decision.

+ The values for TDS can be used instead of the values for Cl and SO_4.

@ DOC at pH 7.5-8.0 and L/S10 can alternatively be determined using prEN 14429 test.

[11] Environment Agency, Guidance on Sampling and Testing of Wastes to meet Landfill Acceptance Procedures, Version 4.3a (December 2003)

[12] The leaching limit values were derived by the Technical Adaptation Committee by risk modelling based on the technical requirements for the protection of soil and groundwater for the different classes of landfill imposed by Annex I of the Landfill Directive.

2.3 Impact considerations

Landfills have the potential for a range of negative impacts on the environment and human health, including being a major cause of pollution to groundwater and surface water across Europe. The Council Decision is principally concerned with controlling the inputs to landfill such that any leachate produced does not pose a risk to groundwater and surface water. The impact of the Council Decision is therefore to provide a higher degree of protection to the environment than would otherwise be the case. In doing so, it also contributes to meeting the requirements of the Groundwater Directive[13].

3 OPTIONS

Three options for implementing the Council Decision requirements are considered based on amending existing regulations. In each case, additional regimes of testing and reporting are required for new and existing landfills according to the limits and timescales set out in the Council Decision. A baseline of 'Business as usual' is presented as the basis for comparison with the current situation.

Baseline: 'Business as usual'
The landfill disposal of wastes is extensively regulated in England and Wales under the Environmental Protection Act 1990, the Pollution Prevention and Control Regulations 2000, the Landfill Regulations 2002 and is subject to requirements under the Groundwater Directive. These encompass many of the requirements now set out in the Council Decision.

The principal additional requirements introduced by this Council Decision are:

- The definition of procedures to determine acceptability of waste at landfills;
- The setting of strict acceptance criteria for the disposal of wastes to different classes of landfill; and,
- Specification of the methods to be used for sampling and testing of waste.

'Business as usual' implies non-compliance with these additional requirements. It fails to keep up with changes in European legislation, nor does it enhance the government and Environment Agency's roles in contributing to sustainable development. In addition, the 'Business as usual' does not help the UK to look forward to new legislation and prepare for it. Most relevant to this latter point is the fact that the Water Framework Directive forbids the new pollution of groundwater.

'Business as usual' is therefore not a feasible option but provides a useful baseline for comparison.

[13] Council Directive of 17 December 1979 on the protection of groundwater against pollution caused by certain dangerous substances (80/68/EEC)

Option 1: Introduce fixed acceptance criteria for all wastes
Option 1 implies full implementation of the waste acceptance criteria and fixed limit values for different classes of landfill as set out in the Council Decision.

Additionally, the Council Decision provides for Member States to apply more stringent measures than those set out in its Annex. As a result of further modelling work on potential impacts on groundwater, the Environment Agency in their guidance on national interim waste acceptance criteria and procedures proposed more stringent limits for the List I substances, cadmium and mercury[7]. Both sets of limits are set out in Table 2. Preliminary research indicates that only a limited range of wastes may be affected by the choice of standard.[14]. Following consultation on the draft Regulations the limit values in the Council Decision are recommended for adoption, subject to further consideration of the requirements of the Groundwater Directive. Where there is uncertainty, a full risk assessment should be undertaken on an individual site basis.

Table 2: NIWAC proposed leaching limit values for Cd & Hg

	Inert waste		Non-haz waste		Hazardous waste	
	mg/kg dry wt at L/S 10		mg/kg dry wt at L/S 10		mg/kg dry wt at L/S 10	
	Council Decision	NIWAC proposed	Council Decision	NIWAC proposed	Council Decision	NIWAC proposed
Cadmium	0.04	0.04	1.0	0.1	5.0	1.0
Mercury	0.01	0.01	0.2	0.02	2.0	0.40

This option would comply fully with the Council Decision. However, there is a significant lack of suitable capacity across the UK to treat wastes to the levels required by the acceptance criteria[2]. In particular, the Council Decision places limits on the total organic carbon content of wastes (Table 1). Existing biological, chemical and physical treatment and pre-treatment technologies may be insufficient to ensure organically-contaminated wastes are capable of meeting the total organic carbon limits such that they are rendered suitable for landfill disposal. This could accentuate existing pressures for additional thermal treatment capacity, which may not be forthcoming in the foreseeable future. There remains therefore a risk that waste producers will be unable to find appropriate disposal routes for their waste streams, and particularly for organic contaminated hazardous waste streams.

Option 2: Permit risk assessment option for all wastes
This option would permit landfill operators to invoke Article 2 of the Annex to the Council Decision. This would enable up to three times greater limit values to be applied for specific parameters[15], if:

- the competent authority gives a permit for specified wastes on a case-by-case basis for the recipient landfill, taking into account the characteristics of the landfill and its surroundings; and,

[14] H.A. van der Sloot, ECN Netherlands, Pers comm. Leachate characterization research indicated that only an additional 7 samples out of 786 tested covering 38 waste streams failed the more stringent limits. The waste streams affected were primarily industrial sludge, metal pickling waste and pigment residues.

[15] These higher limit values would apply to As, Ba, Cd, Cr (total), Cu, Hg, Mo, Ni, Pb, Sb, Se, Zn, Chloride, Fluoride, Sulphate, Phenol index, TDS, PAHs and restricting the possible increase of the limit value for TOC in wastes going to inert waste landfills

- emissions (including leachate) from the landfill, taking into account the limits for specific parameters, will present no additional risk to the environment according to a risk assessment.

This provision would effectively require a site-specific risk assessment to be undertaken for each waste. The additional burden this implies is likely to deter waste producers and landfill operators from seeking such a permit in most cases. However, specific circumstances may favour this approach, for instance where an homogeneous consistent waste is destined for a dedicated landfill (e.g. a kiln residue disposed to an in-house landfill) or where suitable capacity does not exist for the appropriate treatment of wastes and the extra flexibility offered by the three times limit option is required.

Invoking this risk assessment provision removes the certainty of having to meet set waste treatment criteria and could place a significant additional burden on the Environment Agency as regulator, both in terms of manpower requirements and technical expertise to assess the individual risk assessments and ensure compliance with permit conditions. Associated with any increase in complexity would be an inherent risk of inconsistency in the application of the requirements, raising issues of equity and fairness.

Option 3: Permit risk assessment option for certain pollutants
This option allows the adoption of the Article 2 risk-based approach but only for certain pollutants and for a limited period, notionally to 2007.

Criteria for identifying pollutant groups for which this approach may be appropriate are summarised in Table 3 below[16].

Based on these criteria, this option would be restricted to certain mobile constituents (chloride, fluoride, sulphate and total dissolved solids), which are a growing problem in a number of waste streams (such as air pollution control residues) and for which suitable treatment options are currently not available. The advantage of this option is that it may relieve pressure on those waste streams for an interim period whilst treatment capacity is developed.

Table 3: Pollutant groups for risk assessment[16]

Group	Parameters	Comments
1	Total organic carbon Dissolved organic carbon Acid Neutralisation Capacity pH	These parameters define the nature of a site and influence the mobility of some other parameters such as heavy metals. The use of a risk assessment model to allow higher consent limits for these parameters is not available.
2	Cd, Hg	These substances are on List I of the Groundwater Directive. The limits are recommended as maximum values for waste acceptance criteria (Table 2).
3	As, Cr (total), Cu, Ni, Pb, Sb, Se, Zn	The Environment Agency modelling work has indicated that at the levels of engineering set in the Landfill Directive, the waste acceptance criteria set for these species should be regarded as a fixed standard for waste acceptance to ensure the necessary groundwater protection.
4	Chloride, fluoride, sulphate, Total dissolved solids	These parameters are the mobile constituents of leachate, the effects of which could be determined using a risk-based approach. Therefore, it has been proposed that these constituents be permitted to be assessed using risk assessment

[16] Dr J Gronow, Environment Agency, pers comm

		methods for an interim period, until July 2007.

4 BENEFITS

Baseline: 'Business as usual'
Current requirements under the Pollution Prevention and Control (England and Wales) Regulations 2000 are that all new landfills undergo a risk assessment as part of the planning and permitting procedures. Existing landfills coming under the PPC regime will also require risk assessments in due course as part of re-authorisation procedures. In both cases, the Groundwater Directive requires that the risk assessment demonstrates that the landfill poses no risk of introducing List I substances into groundwater and limits the introduction of List II substances into groundwater. The current regulatory regime therefore provides a high degree of groundwater and surface water protection.

Option 1: Introduce fixed acceptance criteria for all wastes
In most cases, the fixed acceptance criteria and limits introduced by this option will be more stringent that those derived under previous regulations, including under Regulation 15 of the Waste Management Licensing Regulations[17]. This option therefore offers a higher level of environmental protection than was previously the case (i.e. in "business as usual". Additionally, the requirements for greater testing and improved record keeping will provide significant benefits in the traceability of inputs to landfill and will provide the basis for improved long-term environmental management of landfill sites.

The option complies with the Council Decision and avoids the increasing risk of fines imposed by the European Commission on the UK for not enforcing either the Landfill Directive or Groundwater Directive effectively. Fines currently run at about £100k per day[18].

The Council Decision provides greater clarity of the regulatory requirements for waste treatment and the standards that treatment technologies will be required to achieve. This will help reduce the uncertainties that waste management companies and landfill operators currently face in making investment decisions for new facilities for meeting the requirements of the Landfill Directive. It should therefore help bring forward new capacity in appropriate treatment technology in the longer term, although, given planning horizons, there remains a significant risk of treatment capacity shortfall in the short and medium (five year) term

Option 2: Permit risk assessment option for all wastes
This option would enable waste acceptance criteria to be based higher limit values where, through submission of a specific risk assessment, the waste producer and landfill operator are able to demonstrate that no additional risk to the environment is posed by disposing of a specific waste in a given landfill. The benefit of this option is in reducing or eliminating the treatment requirements for certain wastes, but at the expense of requiring a comprehensive risk assessment to be undertaken.

This may be an attractive option for:

- organic-contaminated soils and inert wastes destined for inert waste landfill;

[17] Waste Management Licensing Regulations 1994 (SI No. 1056)
[18] Dr J Gronow, Environment Agency, pers comm

- producers of heavy metal-laden drosses, slags etc destined for a specific landfill (or for a limited number of landfills), for example monowastes going to in-house monofills;
- waste management contractors who are also the landfill operator receiving the waste, as in this case they would be able to limit the frequency with which the risk assessment would need to be reviewed; and,
- producers of problematic wastes with highly mobile constituents, such as air pollution control residues, or other wastes for which the necessary capacity capable of treatment to the full acceptance criteria requirements may not be available.

As there is a significant risk of shortfall in treatment capacity suitable for treating all wastes requiring landfill disposal, there will be considerable pressure on existing capacity. This option could therefore provide much needed flexibility whilst waste management companies and landfill operators develop the appropriate treatment capacity in the medium (five year) term. However, at the same time, this flexibility could undermine investment decisions in appropriate treatment technologies capable of meeting the full acceptance criteria requirements, especially if the option is available in perpetuity. This could push the required development of UK infrastructure into the longer (five to 10 year) term.

Option 3: Permit risk assessment option for certain pollutants
This option would limit the risk-based approach to those mobile species identified in Table 3 (chlorides, sulphates etc) for an interim period to July 2007. These species are inherently difficult to control using current technology and this interim relief would provide time for appropriate technologies to be developed without the risk of undermining infrastructure developments for the treatment of other wastes.

4.1 Business sectors affected

The Council Decision adds further to the impacts resulting from the implementation of the Landfill Directive. The requirements for the testing and characterisation of wastes will fall on all sectors of UK industry that produce hazardous solid wastes (thousands of companies of varying size and complexity); the construction and demolition industry and other producers of inert wastes; private sector waste management contractors, landfill operators and organisations involved in the management of these wastes. They will also impact greatly on the Environment Agency as regulator.

In addition, the waste characterisation and testing required for these wastes will create major opportunities for the analytical services sector, and for those professional bodies who will have additional opportunities for training in all aspects of landfill management.

The waste acceptance criteria limits on total organic carbon could significantly impact on the management of organically contaminated hazardous wastes, particularly where these in future require thermal treatment.

The impacts and implications of these changes on these business sectors are considered for each waste acceptance option in Section 5.

4.2 Equity and fairness

The waste management industry is undergoing major transitions as a result of the Landfill Directive and other measures aimed at reducing the production and disposal of waste to

landfill. The requirements of the Council Decision will result in some further increase in costs due to the additional work in waste characterisation, compliance monitoring and administration. The waste management service provider will generally reflect these additional costs back to the waste producer through the disposal charges levied. This is consistent with the Polluter Pays Principle, and provides a further incentive to the waste producer to reuse or recycle the waste, or otherwise minimise waste production.

At present, however, there is limited suitable capacity in the UK for the treatment and pre-treatment of the full range of wastes. No matter which option is selected, implementation of the Council Decision will increase demand on the existing treatment facilities, which in the longer term may drive the development of new capacity. However, in the interim period there are likely to be significant regional differences in waste disposal costs for waste producers and significant transport impacts where waste is moved around the country, linked to increased lorry movements and their impact on the local communities. This would be particularly so under the fixed acceptance criteria of option 1 as capacity is likely to be at a premium. Waste producers located remotely from suitable facilities will therefore be at an inherent disadvantage.

Option 2 is principally aimed at providing some flexibility in the use of existing treatment and landfill capacity. This could ease demand on existing facilities but at an additional expense of undertaking a specific risk assessment. This option is particularly beneficial to producers with in-house landfills, but this may place a significant additional regulatory burden for the Environment Agency and may also lead to regional differences in regulatory decisions and to regulatory oversights, which would be inequitable.

The longer-term uptake of option 2 will depend on the balance of costs between the options. The risk is that the uncertainty that this introduces may undermine investment decisions for the appropriate treatment technologies capable of meeting the full acceptance criteria requirements. This would not be equitable to those prepared to make significant investment decisions, especially if the option 2 is available in perpetuity.

Option 3 is more equitable in that it is aimed at addressing the specific problem of highly mobile contaminants for which current treatments are not available, whilst signalling the need to develop appropriate technologies for deployment in the medium term.

5 COSTS

This Section considers the implications of the three options for implementing the Council Decision and, as far as possible, describes how costs will fall on the business sectors affected. 'Business as usual' is discussed as a baseline for comparison. Cost implications for typical waste producing business are given in Section 5.2.

5.1 Compliance costs

Waste producers

The producer of the waste, or in default the person responsible for its management, has the primary responsibility under the Council Decision for ensuring that the Level 1 basic characterisation information is correct.

The information required for full characterisation is:

a) source and origin of the waste;

b) information on the process producing the waste (description, and characteristics of raw materials and products);

c) description of the waste treatment applied, or a statement of reasons why such treatment is not considered necessary;

d) data on the composition of the waste and the leaching behaviour, where relevant;

e) appearance of the waste (smell, colour, physical form);

f) code according to the European Waste Catalogue[19];

g) for hazardous waste, in the case of mirror entries, the relevant hazard properties according to Annex III of the Hazardous Waste Directive (91/689/EEC);

h) information to demonstrate that the waste does not fall under the exclusions of Article 5(3) of the Landfill Directive;

i) the landfill class at which the waste may be accepted;

j) if necessary, additional precautions to be taken at the landfill;

k) check if the waste can be reduced, recycled or recovered.

These full requirements must be implemented by 16 July 2005.

Baseline: 'Business as usual'

'Business as usual' implies no action is taken to implement the requirements of the Council Decision (this could lead to the Government facing fines of up to £100,000 per day for non-implementation of Community legislation). All other requirements on landfills, including the progressive measures imposed by the Landfill Directive through the Landfill Regulations would continue[20].

The existing requirements encompass a number of requirements set out in the Council Decision. In particular, some information (listed at a), b) d) except leaching tests, e), f), g) and j) above) is to a large extent currently required to comply with the Environmental Protection (Duty of Care) Regulations 1991 (as amended by the Landfill Regulations); and item c) is already required for new landfills under Regulation 10 of the Landfill Regulations, and will apply to existing hazardous waste landfills from 16 July 2004 (and to other existing landfills on a date yet to be specified). The costs attributable to these requirements therefore properly reside with the 'business as usual' case.

Option 1: Introduce fixed acceptance criteria for all wastes

This option requires the basic characterisation (Level 1 testing) of wastes. This is the primary responsibility of the waste producer. As a general rule, inert and hazardous wastes will require testing from 16 July 2005 to obtain leaching test data for item d) above and, as the

[19] Council Decision 2002/532/EC as amended by Council Decisions 2001/118 EC, 2001/119 EC and 2001/573/EC

[20] The cost implications to 2020 of 'business as usual' in relation to the management of municipal wastes are estimated at £27bn to £31bn (*Waste not, want not: A strategy for tackling the waste problem in England.* Strategy Unit, 2002*)*, ie some £1.5bn per year discounted over 20 years, and of the order of £400m per year for the treatment of liquid and solid hazardous wastes (ref 2), ie. ca £25 per tonne for ca 75 million tonnes impacted

basis for determining the class of landfill at which the waste may be accepted, (item i) above). The exceptions will be:

a) wastes which are listed in the Council Decision, the Landfill Regulations or other Agency guidance as not requiring testing[10];

b) wastes where a comprehensive dataset is already available from previous testing to the satisfaction of the Regulator;

c) wastes whose composition can be predicted to the satisfaction of the Regulator from knowledge of the process producing the waste.

For granular wastes, current laboratory analytical charges for the range of determinants stipulated within the Council Decision range from £500- £800 per sample.

There remains some degree of uncertainty regarding the test procedures and waste acceptance limits for monolithic wastes, with national regulators charged with the responsibility for developing waste acceptance criteria. Initial estimations suggest that costs for testing in the region of £1000 to £2000 per sample should be anticipated.

Increased demand for these characterisation tests may result in some commoditisation of testing services, which should reduce characterisation costs in the longer term, however in the short to medium term demand may outweigh the service capacity and costs could well rise.

In addition to basic characterisation, wastes will need to be subject to periodic compliance (Level 2) testing. Compliance testing will also be required for wastes exempted from basic characterisation by virtue of a being part of a comprehensive dataset (indent b above).

The frequency of compliance testing required should be determined from the basic characterisation. As a minimum, it is required annually and will require a batch-leaching test to be undertaken in accordance with BS EN 12457. This will incur a typical cost £80 to £100 per sample. In addition, the basic characterisation may identify other key parameters that require determination for compliance monitoring purposes. This will be a waste stream-specific consideration but is likely to add further to the compliance testing costs.

Compliance testing may either be undertaken by the waste producer or the landfill operator, although it is more likely that the latter as they are responsible for ensuring that only wastes that fulfil the acceptance criteria for the given site are accepted [6]. The cost would generally be borne by the waste producer either as a direct charge or as a levy on the disposal fee.

The overall costs to waste producers resulting from Level 1 and Level 2 testing requirements will depend greatly on the number of samples required to be assessed. In turn, this will depend on the nature of individual wastes and particularly the variability of their characteristics[9]. In some cases, a single test to ensure accordance with a waste list may be deemed adequate. In the extreme case of highly variable wastes, testing of individual loads may be required. At the present time there is insufficient data to enable the range of testing requirements to be known. However, as an illustration, the costs for hazardous waste producers during the first year of implementation could be as high as £20m (£10/tonne) with

annual costs thereafter of the order of £6m (£3/tonne)[21]. Similarly, for inert waste producers first year annual costs would be £4m (£0.25/tonne) with subsequent years at £1.28m (£0.08/tonne)[22].

A major change introduced by the waste acceptance criteria is the limit on the total organic carbon (TOC) of wastes acceptable at different classes of landfill (Table 1). This may require waste producers to undertake further sorting of inert and construction and demolition wastes at an additional cost of between £0 and £5 per tonne[23].

For hazardous wastes which contain a level of organic contamination, treatment by biological, chemical and physical treatment and pre-treatment technologies may be insufficient to meet the acceptance criteria for TOC. These wastes may therefore require thermal treatment, at an additional cost to waste producers of £40 to £100 per tonne[23] or even higher costs for those producers at distance from the available facilities. In the extreme case, where all hazardous solid wastes previously treated by biological, chemical or physical means required consignment to thermal treatment, the additional costs would roughly double, from a range of £13m to £76m to the range £32m to £126m per year (Appendix 1). This would require a significant increase in additional thermal treatment capacity, possibly necessitating an additional four new merchant incineration plant[24].

The limits on mobile species (Group 4 in Table 3) may be problematical to achieve for certain hazardous wastes, such as air pollution control residues, using currently available technologies. Producers of such wastes may wish to direct these wastes to underground storage, where, on the basis of a site-specific risk assessment for that waste, the leaching limits do not apply. The costs of a risk assessment for underground storage would be very site specific, but could be expected to be in the upper range of costs currently incurred in conducting the groundwater element for Regulation 15 assessments under the Waste Management Licensing Regulations[17]. These are typically in the range £2500 to £25,000 per site [25]. There is of course no guarantee that the results of any such risk assessment would be favourable.

The leaching limits are intended primarily to ensure protection of groundwater. If a landfill site is located away from any possibility of contaminating groundwater, the provisions of Section 2 of the Annex to the Council Decision may be invoked such that up to three times higher limits for certain parameters may be permitted (see Section 2.3). This again would require a site-specific assessment for each waste, but may be an attractive alternative for

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[21] Average of 100,000 special waste producers 1999 to 2001 (N Bethel, Environment Agency, pers comm). Assuming 10% produce a single hazardous waste stream requiring landfill disposal, each requiring 4 comprehensive tests for Level 1 basic characterisation at £500 per sample i.e. 10,000*4*500 = £20m (ie £10/t), then 6 tests for Level 2 compliance per year at £100 per sample (ie. 10,000*6*100 = £6m (ie. £3 per tonne) a total £13 /tonne average charge if both Level 1 and Level 2 costs are incurred in the same year, based on 2m tonnes solid hazardous waste landfilled, ref 2.

[22] 16m tonnes inert waste currently landfilled (ref 2). Assume 1 in 200 loads of 10 tonnes requires a single point Level 1 basic characterisation at £500 per sample (ie. 16mt / 10 t per load / 200 load sampling rate = 8000 samples * 500 ~ £4m (i.e. £0.250 per tonne average charge, then 2 tests for Level 2 compliance per year at £80 per sample (ie. 16mt / 10 t per load / 200 load sampling rate = 8000 samples * 2*80 ~ £1.28m (ie. £0.08 per tonne average charge) or in the worst case scenario where the average load may be less, representing numerous small loads, this total figure could be doubled to £10.6m (ie. £0.60 per tonne).

[23] Cost range estimated in regulatory impact assessment accompanying ref (2)

[24] Appendix 1 indicates that an additional 33kt/y of thermal treatment capacity is required for solid hazardous wastes as a result of the Landfill Directive. This additional requirement increases to 460kt/y in the extreme case considered here with typical build costs of the order of £ 50-75m.

[25] D Hall, Golder Associates, pers comm

dealing with these problematic wastes. The costs for such assessment are unknown, but could be expected to be in line with current costs for Regulation 15 assessments, i.e. in the range £2500 to £25,000 per instance. The assessment would require co-operation between the landfill operator and the waste producer, but ultimately the cost would be borne by the waste producer either as a direct cost or as a levy on the disposal fee[26].

Alternative leachate limit values have been discussed for Hg and Cd (Table 2). Additional treatment would be required if the higher standard were to be adopted, which would result in some additional cost. The additional treatment required would depend on the nature of the wastes but in general would involve alkaline stabilisation and solidification. Given that only a limited range of wastes may be affected[14], the cost implications are not expected to be significant. However this has not been determined.

Research into novel treatment technologies for these problematical wastes is currently underway. Facilities offering such technologies may be provided in the future by merchant operators. However, this will be a commercial decision on the part of individual operators and likely to be influenced strongly by price competition from underground storage and landfills operating at the three times limit. It is not possible at this time to judge the balance between these options or their net effect on the cost to producers of these wastes.

The overall additional cost to waste producers of waste treatment and characterisation in this option over the 'business as usual' case[20] is therefore estimated to be in the range of £50m to £80m per year. In addition, the waste producer is likely to bear the bulk of the increased costs to the landfill operator through an increased disposal fee.

Option 2: Permit risk assessment option for all wastes

Several industries produce large quantities of specific hazardous waste. Such industries include cement manufacture, iron and steel production and waste incineration. Large producers generally manage such wastes through in-house facilities and landfills. For these, adopting the risk assessment approach to establishing acceptance criteria may be an attractive option, especially where this permits a lower level of pre-treatment.

The costs of undertaking such an assessment would be highly site specific. However, again these could be expected to be in line with current costs of Regulation 15 assessments, i.e. in the range £2500 to £25,000. Given the increase in demand for risk assessment services, and the fact that each operational landfill must have already conducted a rigorous risk assessment with Agency approval, the cost of a waste-stream specific risk assessment is likely to be towards the lower end of this range.

Indeed, given the likely shortfall in suitable treatment capacity for a range of wastes, it may prove cost-effective and competitive for a landfill operator to utilise a waste-generic, site-specific risk assessment to produce a list of acceptable wastes for a specific landfill. This would reduce the total risk assessment costs to waste producers, especially where a limited range of wastes is accepted.

The number of risk assessment options that will be taken up is not known. However, it may be assumed that all in-house landfill operators would want to consider this option for their own wastes (i.e. 9 operators, see section on landfill operators below). It is also assumed that

[26] However, as the risk assessment would need to take into consideration the waste already in place at existing sites and possible interactions with other wastes being disposed, the assessment would need to be repeated periodically to ensure ongoing compliance. This would therefore be a recurring cost for operator and regulator

there will be 11 operational hazardous waste sites, each with a requirement to conduct on average 10 waste stream-specific risk assessments per annum[27]. Under these assumptions, the additional cost of this option would be of the order of £1.17m per year[28] based on annual renewal of the risk assessment. Compliance (Level 2) testing would be required in addition to this (but included in the costs of option 1).

Option 3: Permit risk assessment option for certain pollutants
Option 3 would permit a limited sub-set of option 2. As noted above, this may be an attractive interim option to provide some interim easement for problematic hazardous wastes with highly mobile constituents, such as flue gas cleaning residues, whilst signalling the need to develop treatment methods to deals with these wastes in the longer term.

The requirements and costs to waste producers would be essentially the same as in option 2. Assuming that all 9 in-house landfill operators would again want to consider this option for their own wastes and that of the 11 operational hazardous waste sites half undertake risk assessments for two waste streams each, the additional cost of this option would be of the order of £290k per year[29]. Again, compliance (Level 2) testing would be required in addition to this (but included in the costs of option 1).

Merchant recyclers

Merchant recyclers are well established for recovery, treatment and reprocessing of solvents, oily wastes, food processing residues and the like. Additional treatment capacity will be required, which will provide new investment and employment opportunities. In addition, there is significant potential to increase the recycling of general industrial and commercial waste, particularly through the mechanism of waste exchanges – where waste from one producer is traded as a feedstock to another process.

Baseline: 'Business as usual'
The Landfill Directive requirements for additional merchant capacity for general commercial and industrial wastes and mineral wastes and residues was estimated in previous regulatory impact assessment at around 4.5 million tonnes per year[2], focussed principally on general commercial and industrial wastes and mineral wastes and residues. The baseline implies no change over these predictions.

Options 1, 2, and 3
Merchant recyclers are classed as secondary producers with respect to any residues they dispose of to landfill. They are therefore subject to the same requirements for waste characterisation and compliance with waste acceptance criteria as primary producers. This may reduce the commercial attractiveness to them of managing hazardous and problematical wastes, but in general any additional costs borne by the merchant as a result of the Council Decision requirements will be passed back as an increased charge to the primary producer. Their costs are therefore included in the assessment above.

Charities and voluntary organisations as waste recyclers

[27] These wastes may arise principally as processing residues from waste management contractors
[28] Assuming 9 in-house landfills each undertaking a risk assessment at £7500 (£67500), plus risk assessment for 11*10= 110 waste streams going to landfill at £10,000 per assessment (£1.1m/y)
[29] Assuming 9 in-house landfills each undertaking a risk assessment at £7500 (£67,500), plus risk assessment for 22 waste streams going to landfill at £10,000 per assessment (£220,000k/y)

Charities, voluntary organisations and non-governmental organisations (NGOs) make a significant contribution to local schemes for recycling and re-use of certain household and commercial wastes, and are increasingly consulted in developing waste reduction programmes under Local Agenda 21. These may have an increasing role in niche markets, such as through not for profit companies in commercial waste recycling and local networks of waste exchanges with resultant additional paid and voluntary employment opportunities.

Baseline: 'Business as usual'
This implies no change over the current situation.

Options 1, 2 and 3
These Groups are again classed as secondary producers with respect to any wastes they dispose of to landfill. However, they are principally concerned with activities involving the collection and recycling of household and similar industrial wastes, which are exempt from the testing requirements of the waste acceptance criteria. Moreover, any residues they do produce will generally be managed through merchant waste disposal contractors who the Groups should consult to ensure the appropriate procedures are in place. The Groups will therefore incur no additional costs as a result of the Council Decision.

Waste management contractors

The regulatory impact assessment accompanying the second consultation on implementing the Landfill Directive[2] estimated that some 2.5m tonnes per year of hazardous solid and liquid wastes and 33.8m tonnes of non-hazardous solid wastes (other than municipal and construction and demolition waste) may require treatment or otherwise be diverted from landfill as a consequence of the Landfill Directive. It noted that this will require significant investment in new treatment capacity and disposal facilities, which could be brought forward largely by increasingly consolidated waste management companies who have the resources to pursue the necessary developments though the planning process.

This presents waste management contractors with a new market opportunity, albeit subject to a significant investment in time and effort to drive forward the installation of more capacity via the planning process. However, as hazardous waste disposal costs increase, producers may look to waste minimisation and in-house solutions that may result in a declining waste treatment market.

Investment in new capacity will be based on their commercial views of risk and return. The Council Decision now brings greater clarity of the regulatory requirements upon which waste management contractors can base investment decisions. Most waste management contractors, however, still desire a fuller understanding of the entire climate for waste management before making any significant decisions. Indeed, other than infrastructure development for municipal waste under long-term local authority contracts, sparingly few proposals for new treatment capacity are being progressed at this date[30]. Given that the planning process may take several years, there therefore remains a significant risk of shortfall in suitable capacity both in the short and medium term.

Baseline: 'Business as usual'

[30] notably a 30,000 tonne per year hazardous waste incinerator in Teesside and a materials and energy recovery facility for commercial wastes in Berkshire

'Business as usual' provides no further stimulus for the development of the additional treatment capacity required to meet the requirements of the Landfill Directive. There is some residual treatment capacity available in existing works that may be utilised to provide some buffer capacity whilst new or extended capacity is built. These facilities may not be in convenient locations, which may result in additional transport of waste contrary to the proximity principle during the transitional phase. Any long-term shortfall in treatment capacity is likely to drive up disposal charges and lead to further transport of waste. However, this will also provide a stimulus to waste producers to further reduce waste arisings and/or the extent to which their wastes require treatment prior to disposal.

Option 1: Introduce fixed acceptance criteria for all wastes

The defined waste acceptance criteria introduced by the Council Decision further clarifies the basis upon which waste management contractors are able to make informed investment decisions. They help identify the significant waste streams that will be most affected by the regulations as a whole, and hence the volume, nature and sources of key waste streams that will require the most significant investment in new treatment plant.

As discussed in the section on waste producers, the introduction of a limit on total organic carbon content of wastes is likely to affect organically contaminated waste streams, and may result in additional requirements for thermal treatment capacity for these wastes. Given current public and political concerns over all forms of waste "incineration", this is likely to be problematical for the UK.

The facilities provided by the waste management contractor will generally be aimed at waste to be diverted from landfill, treating the wastes to reduce the volume requiring landfill disposal and/or treating the wastes to render them acceptable for a lower class of landfill. Where a waste management contractor does send treated waste to landfill, s/he will be classed as a secondary producer with respect to that waste. This will require the contractor to undertake basic characterisation (Level 1 testing) of these wastes, as well as periodic Level 2 compliance testing. This will also be the case where the waste is disposed to their own landfill.

The cost implications of these additional compliance testing requirements will depend on the nature of the wastes treated. The contractor might be selective in which wastes to accept to ensure that any residues are well defined. This would be particularly the case where the treatment is based on physical or chemical processes, but would be less of an issue with thermal treatments where the characteristics of the air pollution control residues are largely independent of the waste treated.

A key consideration for waste management contractors will be the stipulation that if a single compliance test is failed, it is deemed that the waste has failed to meet acceptance criteria for that compliance period. Remedial action will then need to be taken to the satisfaction of the Environment Agency as regulator to ensure no further failures of compliance. It is therefore anticipated that waste management contractors will develop criteria-based lists and scales of charges for wastes that they are prepared to accept. These charges would reflect the testing costs, so that these costs would be borne by the waste producer in line with the Polluter Pays Principle. Wastes outside such lists, or outside the specifications of such lists, might be accepted on a case-by-case basis, but charges for additional testing may be incurred.

The likely level of charges for basic characterisation and compliance testing are indicated in the section on waste producers above. The total costs are also reflected in the total costs on waste producers above.

Option 2: Permit risk assessment option for all wastes
There is a significant risk of shortfall in treatment capacity suitable for treating all wastes requiring landfill disposal, with considerable pressure on the existing merchant capacity. Existing facilities may not in all cases be capable of treating wastes to the full acceptance criteria requirements. The flexibility offered by this option may therefore be required, at least in the interim until new capacity or new processes are developed.

At this stage it is not possible to estimate the extent to which waste management contractors would seek to adopt this option. However, this appears to represent an attractive option to those waste management contractors who are also landfill operators as in this case they would have reasonable control of the wastes entering the landfill and hence be able to limit the frequency with which the risk assessment would need to be reviewed[31]. This could lead to the development of risk-based lists of wastes acceptable for treatment and onward disposal to landfill. For these purposes, they would be classed as secondary producers. The likely costs associated with this have been considered in the section on waste producers.

Option 3: Permit risk assessment option for certain pollutants
This option is intended to provide interim assistance in the management of problematic wastes rich in mobile species (such as air pollution control residues) for which suitable treatments are currently not available. Such wastes are largely dealt with by a limited number of larger merchant waste management contractors employing specialist facilities. It is anticipated that these would all take up this option. Again, for these purposes they would be classed as secondary producers. Their likely costs have been considered in the section on waste producers.

Landfill operators

The Landfill Regulations required that existing landfills wishing to operate beyond July 2002 demonstrated their ability to comply with the Landfill Directive through a conditioning plan submitted to the Environment Agency. Of the expected 1045 conditioning plans, 968 had been received by the deadline of 16 July 2002. An approximate breakdown of these sites at that time was:

- Hazardous waste landfills – 223
- Non-hazardous waste landfills – 365
- Inert waste landfills – 380

The number of hazardous waste landfills is now expected to decrease significantly as a consequence of the Landfill Regulations. Current Environment Agency figures based on the receipt and processing of conditioning plan returns and PPC applications suggest that only 21 hazardous waste landfills will continue to operate beyond July 2004, of which 9 are in-house

[31] The risk assessment must take into consideration the waste already in place at existing sites and possible interactions with other wastes being disposed, hence the assessment would need to be repeated periodically to ensure ongoing compliance. This would therefore be a recurring cost for operator and regulator.

landfills. The majority of these sites will accept a range of hazardous wastes but 2 are restricted to asbestos only.

From the information received to date, approximately 150 previously classed hazardous waste sites are reclassifying as non-hazardous sites. Of these, only 30 have indicated that they wish to develop specific separate cells within these sites for "stable non-reactive" hazardous waste[32]. However, the picture at this time is still unclear as only the first tranches of PPC applications have been received to date with further tranches expected in May and October.

Baseline: 'Business as usual'

The Landfill Directive imposes fundamental changes on the landfilling of wastes. In addition to the requirements to separate landfills into categories for hazardous, non-hazardous and inert wastes, they impact on landfill operators through the:

- ban on the disposal of all liquids to landfill, both hazardous and non-hazardous;
- ban on infectious hospital, clinical and veterinary wastes, and on wastes that might be corrosive, oxidising, flammable or explosive within a landfill;
- progressive bans on landfill of tyres and biodegradable wastes;
- requirement to re-permit or cease operations at existing sites on the basis of the conditioning plans that identify remedial actions to meet Landfill Directive requirements;
- requirement for financial provision for site aftercare;
- requirement for ongoing training and development of those involved in operating landfills; and,
- requirement to utilise, or otherwise flare, landfill gas from sites receiving biodegradable waste.

The costs to landfill operators of these measures are in excess of £100m per year[33]. These costs are driving a consolidation of the landfill industry, but ultimately will be passed back largely to the waste producer through increased disposal fees.

Option 1, 2 and 3

All options for implementing the Council Decision will essentially impact equally on landfill operators. There will be increased administrative and monitoring burdens, as well as engineering and technical implications of the nature of waste to be disposed of within a given site.

Landfill operators are required to retain records of all controlled wastes accepted under the Environmental Protection (Duty of Care) Regulations 1991. It is likely that the Council Decision will require further development of the consignment note systems currently used to track individual loads. Even for those operators with computerised systems, this will represent an additional burden.

Landfill operators will be required to ensure that Level 2 compliance testing has been undertaken at the frequency determined by the basic characterisation. Operators may undertake testing themselves, or rely on documentation provided by the waste producer. In

[32] J Rooksby, Environment Agency, pers comm

[33] Based on figures in ref (2), ie. ca £1.30 per tonne based on 75 million tonnes per year landfilled

either case, the costs will fall on the waste producer, either as a direct charge or as a level on the disposal fee (see section on waste producers). A key consideration is that if a single compliance test is failed, it is deemed that the waste has failed to meet acceptance criteria for that compliance period. Remedial action will then need to be taken to the satisfaction of the Environment Agency as regulator to ensure no further failures of compliance. This may involve additional pre-treatment coupled with greater frequency of testing. Again, the cost burden will fall on the waste producer, but would represent an additional administrative burden on the landfill operator.

The landfill operator is responsible for Level 3 testing (on-site verification)[34]. This requires a visual inspection of each load both before *and* after unloading to ensure it meets the description set out in the accompanying documentation. The Environment Agency will produce guidance on verification methods to be used, but as minimum the assessment should include visual appearance, odour and other readily determined properties. In addition, tests may be required to ensure compatibility with the engineering requirements of the site. A suitably qualified person must therefore be available at the tipping face, thereby increasing staffing requirements. The landfill operator must also employ some system of communication between the weighbridge and the tipping face. Such systems may again be based on the consignment note, but more sophisticated electronic systems may become available in due course.

The landfill operator is required to undertake periodic sampling of the wastes received. He may also use the verification checking procedures to identify samples that are suitable for compliance testing. These samples must be maintained under appropriate storage conditions until the analytical results have been reported, and for at least one month. An additional one – off cost for adequate storage facilities may be incurred, which again would be passed onto the waste producer.

The changing nature of wastes accepted for landfill is likely to have significant technical implications for the way in which existing landfills operate in the future. In particular, the restrictions on total organic carbon levels will impact on the nature of landfill leachate. Current practices of on-site aerobic digestion of organic-laden leachates (or disposal of organic leachates to effluent treatment facilities) are likely to be replaced by leachate treatment facilities that focus on the inorganic content over the longer term. This may require investment in new treatment facilities to ensure that management of leachate can continue to meet permit requirements.

The mixing of waste that does not meet the waste acceptance criteria and that which does is something to be avoided if possible. For existing landfills this may necessitate the construction of a fully engineered barrier between hazardous waste deposited pre July 2005 and that deposited post July 2005. Landfill operators who are required to construct such barriers will incur additional costs and also loss of profit from the airspace consumed by the barrier. These are estimated at £8.1m as a one off cost[35].

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[34] Where the waste producer is also the landfill operator, this verification may be done at the time of dispatch

[35] Assuming a 50,000 m^3 cell, 10,000 sq m base with 5m high sides, to engineer a simple composite clay and hdpe liner with appropriate geotextile and protection layers, a typical cost would be of the order of £15-20/m^2, i.e. a total cost £150k - £200k. In addition to this approximately 10,000 x1 m^3 would not be available for revenue earning materials. At say £35/t revenue working at 20% profit margin this would mean a landfill operator would lose the potential profit from 10,000 m^3 of waste, the equivalent of £70k. Total cost to an operator would be (£70k + £200k) x 30 hazardous waste landfill sites = £8.1m as a one off cost

The Council Decision requires that gypsum wastes be deposed of only in landfills for non-hazardous wastes in cells where no biodegradable waste is accepted. It has been decided that this restriction should be extended to all high sulphate wastes due to the risk of producing unacceptable concentrations of hydrogen sulphide gas, which is both toxic and highly odorous. The Environment Agency has estimated that some 985 kt/y of high sulphate wastes are produced [36]. 590 kt/y may be restricted by this requirement at a cost to waste producers of £5.2 to £8.7m/y[37].

Professional bodies

Baseline: 'Business as usual'
The Landfill Directive introduces a requirement for landfill operators and staff to receive ongoing training and development. This will place an additional cost and administrative burden on landfill operators[38], but provide increased opportunities for professional institutions and qualified bodies to provide training.

Option 1: Introduce fixed acceptance criteria for all wastes
There are a wide range of ancillary services that will provide new markets for specialist consultancies and professional bodies. These are likely to include the following:

- assistance to Regulators and operators in development and maintenance of waste lists;
- professional training services for Level 2 & 3 testing; and,
- increased market for independent accreditation of sampling and analytical services that will require development of QA procedures and periodic auditing.

Options 2 and 3
The options will additionally increase the demand for professional training regarding the performance and review of risk assessments.

Costs to the Environmental Agency as Regulator

The Landfill Regulations and other regulations implementing the Landfill Directive introduced significant additional administrative burdens on the Environment Agency and planning authorities in a number of principal areas. Regulating the Council Decision now adds further to this, both in terms of the administrative load and the technical competence required of Agency staff.

Baseline: 'Business as usual'
The requirements resulting from the Landfill Directive will continue to impact progressively on the regulatory burden of the Environment Agency. These include:

- review of conditioning plans and the subsequent processing of permits;
- the regulation of biodegradable municipal waste management;

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[36] T Coleman Environment Agency, pers comm.

[37] This assumes restriction applies to wastes with greater than 10% sulphate content. Based on 450 kt/y of calcium sulphate waste (100% restricted), 40kt/y sulphuric acid wastes (all hazardous and hence excluded), 143 kt/y plaster and plaster board wastes (100% restricted) and 353 kt/y of mixed C&D waste (0% restricted as assumed below 10% sulphate) assuming typical cell engineering costs for 10,000 to 50,000 m^3 cell at £15-£25/m^3 and a waste bulk density of 1700kg/m^3.

[38] A typical one-day training course costs £300 per person. Full training to a Certificate of Technical Competence may cost £5000 to £10,000 per person.

- the licensing and permitting of additional facilities for the recycling and/or treatment of wastes prior to landfill; and,
- additional regulation to ensure compliance with permit conditions.

These costs have not been evaluated here. However, these will be largely passed back to waste producers via landfill operators through licensing charges or other fees.

Option 1: Introduce fixed acceptance criteria for all wastes

The additional requirements of the Council Decision will require the development and maintenance of national or site-specific waste lists. At a national level, the effort required is estimated at an additional 70 person hours per annum[39]. In addition, review and assessment of site-specific lists of acceptable wastes (which may be undertaken locally) is estimated at 10 person hours per annum per site. Assuming that all inert and hazardous waste sites (ca 420 sites) will have such lists, the total effort is estimated at £230k per year[40].

The Environment Agency will need to develop methods for monitoring and auditing waste acceptance criteria compliance. Traditional methods based on inspection at the point of disposal are likely to be too resource intensive, so an alternative approach is required supported by changes to the Duty of Care framework. This has not been costed.

From 16 July 2004 all hazardous waste consigned to landfill will require prior treatment. However, the waste acceptance criteria that define the acceptable level of treatment do not apply until 16 July 2005. The potential is that significant quantities of hazardous wastes may be deposited into sites that are currently co-disposing in this intervening year. In this case, the Environment Agency will need to establish that the loading capacity for each landfill will not be exceeded. Such loading assessments are likely to be undertaken by local Agency staff and require some 30 hours staff effort for a single site loading assessment (i.e. a cost of £35k per year based on 20 sites).

The Environment Agency is responsible for developing sampling and testing procedures for both granular and monolithic wastes. This work is being carried out in collaboration with a number of external consultancies under programmes funded by the Agency. The total effort is considerable, possibly of the order of hundreds of £k including Agency staff time.

Options 2 and 3

The Environment Agency will be required to review each waste stream-specific site risk assessment. A number of aspects will require consideration, including the hydrogeologically assessment, landfill gas assessment and assessment of potential accidents. The effort required is estimated at 35 hours per assessment, i.e. an additional cost of £220k per year for option 2 and £54k per year for option 3[41].

In addition, there is a requirement to report to Brussels on those waste streams allowed to be accepted on the basis of specific risk assessments. It is anticipated that the majority of the reporting burden will fall locally and require approximately 5 hours per risk assessment, i.e. adding a further cost of £8-32k per year.

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[39] Estimates of Environment Agency staff requirements provided by O Slater, Environment Agency, pers comm

[40] (420 sites * 10 hours + 70 hours) / 37.5 hours per week / 50 weeks per year) = 2.2 person-years @ £100k per year (assumed)

[41] based on an assumed Agency charge of £100k per person-year and the number of assessments in footnotes 28 and 29(i.e. Option 2 – (9+(11*10)*35=4165=2.22y, Option 3 – (20+9)*35 = 1015= 0.54y)

Given the numbers involved, there will also be additional costs to the Agency for the professional development and training of Agency staff to regulate these options, and for the provision of support to regional offices to ensure a consistent approach to the assessments. Flexibility of resources may also be required as some regions may be much more overloaded with risk assessment work than others. If the workload is too large then the costs rise steeply since experience suggests that it is hard to 'buy-in' the necessary skills at short notice without a reasonable cost.

5.2 Cost for a typical small business

The cost impact on waste producers of implementing the Landfill Directive will be through increased disposal costs, which will provide further stimulus to reuse, recycle or otherwise minimise waste production. This stimulus may result in significant savings to the company. Alternatively, the company may wish to bear the additional cost of disposal, which have been assessed to vary from £0 to £120/tonne depending on the nature of the waste and the cost of pre-treatment required[2]. Implementing the Council Decision will further add to these costs, principally as a result of the need for waste characterisation and the associated administration.

For example, a typical small business producing 2 tonnes of mainly office waste per month could expect an increase of £200 to £650 per year[2]. These wastes are exempt from basic characterisation (Level 1) and will only require minimal compliance verification. The costs to this business would therefore not be expected to rise noticeably.

An engineering works producing 8 tonnes per week of mixed wastes, including some solid special waste, could expect an increase of around £1150 to £7000 per year[2]. These wastes may require 4 lots of Level 1 testing for basic characterisation plus 4 lots of compliance (Level 2) testing per year, giving an additional cost of £2400 per year[42].

6 COMPETITION FILTER TEST

The Council Decision adds further to the impacts resulting from the implementation of the Landfill Directive and other measures aimed at reducing waste generation and the protection of human health and the environment. Although these are driving fundamental change, the diversity of stakeholders impacted means that the Council Decision in itself will have little additional impact on competition. These impacts have been considered in the section on equity and fairness.

The Competition Filter Test

Q1: In the market(s) affected by the new regulation, does any firm have more than 10% market share?	No
Q2: In the market(s) affected by the new regulation, does any firm have more than 20% market share?	No
Q3: In the market(s) affected by the new regulation, do the largest three firms together have at least 50% market share?	No
Q4: Would the costs of the regulation affect some firms substantially more	No

[42] (4*500 + 4*100) = £2400 per year assuming annual re-testing, or £2400 in first year with a recurring cost of £400 if only compliance testing is required

than others?	
Q5: Is the regulation likely to affect the market structure, changing the number or size of firms?	No
Q6: Would the regulation lead to higher set-up costs for new or potential firms that existing firms do not have to meet?	No
Q7: Would the regulation lead to higher ongoing costs for new or potential firms that existing firms do not have to meet?	No
Q8: Is the sector characterised by rapid technological change?	No
Q9: Would the regulation restrict the ability of firms to choose the price, quality, range or location of their products?	No

7 CONSULTATION WITH SMALL BUSINESSES

Small businesses were brought into the consultation process through the response from the Small Business Council, as well as responses from trade organizations.

8 ENFORCEMENT AND SANCTIONS

Enforcement of the waste acceptance criteria will be carried out by the powers given to the Secretary of State in England and Wales under the Landfill (England and Wales) (Amendment) Regulations 2003.

Sanctions for breaches of the waste acceptance criteria will be fines levied by the EU on the UK.

9 MONITORING AND REVIEW

Monitoring will be carried out in England and Wales by the Environment Agency.
The onus will be on DEFRA to carry out reviews of the legislation. There will be a power to review or modify the strategies made under Article 5(2) from time to time – with reporting obligations to Europe. There will also be a power to amend the targets and to review the allowances if necessary. The Directive also carries a review clause for 2014.

10 CONSULTATION

The consultation opened on the 24 September 2003, and Defra requested that responses be received by 17 December 2003, although responses continued to arrive for a few weeks afterwards. The draft amending Regulations and the partial Regulatory Impact Assessment were also published on the website on 24 September 2003. Overall, 55 responses were received to the consultation, some of which were detailed.

Although there are no specific changes to the RIA as a result of comments received on the Partial RIA, the data on landfill sites etc and costings in this RIA follow further discussions with industry and the Environment Agency.

In addition to this formal consultation process, Defra has held, and continues to hold, regular meetings with stakeholders to discuss issues raised by the Council Decision. This group, the

"Landfill Directive Implementation Group", includes representatives from the waste management industry, waste producers, Government Departments (including the devolved administrations) and the Regulators.

11 SUMMARY AND RECOMMENDATION

Landfills have the potential for a range of negative impacts on the environment and human health. The Landfill Directive brought forward progressive restrictions to prevent or reduce these impacts as far as possible, including bans on the landfill of liquids and certain solid wastes, together with requirements for treatment of wastes prior to disposal. For the purposes of this regulatory impact assessment, meeting the Landfill Directive requirements represents 'business as usual'. This will require sustained capital investment over the coming decade and result in increased costs of the order of £2bn per year. These increased costs will largely fall on the waste producer through various fees and charges, which is consistent with the Polluter Pays Principle.

The Council Decision now sets out specific criteria and procedures for waste acceptance at the different classes of landfill. These are principally aimed at controlling the inputs to landfill such that any leachate produced does not pose a risk to groundwater and surface water.

The Council Decision is required to be implemented by 16 July 2005. Failure to implement raises the risk of fines by the European Commission, which run at about £100,000 per day (£36.5m per year).

Three options for implementation have been considered. Each would be fully compliant with the requirements of the Council Decision.

Option 1: Introduce fixed acceptance criteria for all wastes. This option provides clarity in the regulatory requirements for waste treatment and the standards that treatment technologies will be required to achieve. It should therefore help bring forward new capacity in appropriate treatment technology, although given planning horizons, there remains a significant risk of capacity shortfall in the short and medium (five year) term. The additional annual cost to waste producers over and above 'business as usual' is estimated at £50m to £80m, of which £20m to £50m is in the possible need for additional thermal treatment to ensure compliance with total organic content limits. The costs of regulation are estimated at £265k per year, excluding monitoring and auditing costs.

Option 2: Permit risk assessment option for all wastes. There is a significant risk of shortfall in treatment capacity suitable for treating all wastes requiring landfill disposal. This would place considerable pressure on existing capacity, which may not be able to meet the fixed limits set by the Council Decision. This option would enable waste acceptance criteria to be based on higher limit values on a case-by-case basis, and thus provide needed flexibility whilst waste management companies and landfill operators develop appropriate treatment capacity in the medium (five year) term. The additional annual cost to waste producers of preparing the specific risk assessments is estimated at £1.17m. However, the option would require greater regulatory oversight by the Environment Agency (estimated at an additional 2.2 person-years (£220k per year), which could strain their short-term specialist resources. At the same time, the flexibility offered by this option could undermine investment decisions in appropriate treatment technologies capable of meeting the full acceptance criteria

requirements, especially if the option is available in perpetuity. This could push the required development of UK infrastructure into the longer (five to 10 year) term.

Option 3: Permit risk assessment option for certain pollutants. This option allows the risk-based approach but only for mobile pollutants for a limited period, notionally to 2007. These species (chlorides, sulphates etc) are inherently difficult to control using current technology and this interim relief would provide time for appropriate technologies to be developed without the risk of undermining infrastructure developments for the treatment of other wastes. The additional annual cost to waste producers of preparing the specific risk assessments is estimated at £290k. Again, the Environment Agency would need to provide additional regulatory oversight, but this is estimated at only 0.54 person-years (£54k per year), which could be readily accommodated.

Given the risk of shortfall in suitable treatment capacity it is imperative that the Council Decision be implemented so as to provide the greater certainty to invest in treatment facilities. In doing so it must be recognised that suitable treatment options for certain wastes still need to be developed and advantage should therefore be taken of the 3 times limit offered by the risk assessment approach. Option 3 is therefore recommended. Additionally, in the limited case of individual waste streams destined for mono-sites, the risks can be singularly defined by the risk assessment approach. In this specific situation, the risk assessment approach (Option 2) should be adopted so as to avoid "gold plating".

APPENDIX 1

ASSESSMENT OF HAZARDOUS SOLID WASTE TREATMENT COSTS

The annual additional disposal costs for hazardous solid wastes resulting from the pre-treatment requirements of the Landfill Directive have been assessed at between £13m and £75m[43]. These costs are detailed in Table A1.

The Council Decision now introduces limits on the total organic carbon content of landfilled inert and hazardous wastes. The impact for inert wastes is that this may require some additional sorting or separation of these wastes at source, with the organic-rich fraction receiving additional treatment. The cost implications are estimated at between £0 and £5 per tonne.

The impact on hazardous solid wastes is that treatment by biological, chemical and physical systems may not be adequate to meet the limits, and that these wastes will therefore need to be directed to thermal systems at significantly increased costs. Table A2 illustrates the extreme case where 100% of affected streams are directed to thermal treatment. Annual treatment costs are seen to roughly double, to between £32 and £126m, and average price of £16 to £63 per tonne disposed.

[43] The Implementation of Council Directive 1999/31/EC on the Landfill of Waste, Second Consultation Paper, DETR 2001.

Table A1: Treatment cost estimate for hazardous solid wastes[43]

Waste Type	Quantity landfilled (1998/99), kt	waste min	in house reuse	merchant recycling	complex phase sep centrif + settle	high cost physical	Wetox/DEM pretreat	anaerobic	biological + pretreat	combustion	other thermal; e.g.pyrolysis/gasification plasma/vitrification	solidification	remediation	do nothing	Cost of change (£k/y) low	Cost of change (£k/y) high	Cost (£)/tonne low	Cost (£)/tonne high
Waste resulting from exploration, mining, dressing and further treatment of minerals and quarry	1.8								10%	10%		20%	30%	30%		49	115	26.50	62.50
Waste from agricultural, horticultural, hunting, fishing & aquaculture primary production, food preparation & processing	0.6	10%							26%	29%			35%			15	35	23.50	55.80
Wastes from wood processing and the production of paper, cardboard, pulp, panels & furniture	1.4	5%							8%	29%			56%	2%		49	100	33.70	69.10
Wastes from the leather and textile industries	1.0	5%		13%		2%			2%	27%	13%		38%			35	88	33.60	84.30
Wastes from petroleum refining, natural gas purification and pyrolytic treatment of coal	103.9	5%		11%	15%						37%		10%	23%		1969	7276	18.90	70.00
Wastes from inorganic chemical processes	52.7	5%		8%		8%				2%		10%	55%	10%	3%	1481	3089	28.10	58.60
Wastes from organic chemical processes	42.1	5%		5%			15%	5%	20%	5%	15%		19%	9%	2%	871	2253	20.70	53.50
Wastes from the manufacture, formulation, supply and use (mfsu) of coatings	37.2	12%		19%		8%			29%	10%	3%	3%	16%			501	1809	13.40	48.60
Wastes from the photographic industry	0.2	5%		2%		42%				1%			50%			4	7	21.30	39.60
Inorganic wastes from thermal processes	81.1	5%	25%	5%								20%	45%			2212	5405	27.30	66.70
Inorganic waste with metals from metal treatment and the coating of metals; non-ferrous hydro-metallurgy	10.6	5%	20%										75%			299	581	28.30	55.00
Wastes from shaping and surface treatment of metals and plastics	32.0	8%	10%		15%	5%			12%		20%		15%		15%	373	1289	11.70	40.30
Oil wastes (except edible oils, 050000 and 120000)	72.0				40%				10%		30%			20%		864	3385	12.00	47.00
Wastes from organic substances employed as solvents (except 070000 and 080000)	7.9	5%	10%	40%	20%					5%	20%					130	608	16.50	77.00
Packaging absorbents, wiping cloths, filter materials and protective clothing not otherwise specified	37.5	5%		30%					10%	15%			10%		30%	563	2026	15.00	54.00
Waste not otherwise specified in the catalogue	26.8	17%		6%					21%	21%	2%		32%		1%	488	1421	18.20	52.90
Construction and demolition waste (including road construction)	1,340.6	23%										7%	7%	39%	23%	-1910	35172	-1.40	26.20
Wastes from human or animal health care and/or related research	1.9	0%							25%	25%	17%		33%			58	130	31.10	69.90
Wastes from waste treatment facilities, off-site waste water treatment plants and the water industry	116.4			10%				1%	4%	7%		36%	37%		5%	4419	9427	38.00	81.00
Municipal wastes and similar commercial, industrial and institutional wastes including separately collected fractions	10.5	2%	10%	36%				4%	3%	12%			18%	7%	8%	207	751	19.70	71.40
Unknown	13.1	5%							20%	25%			40%	10%		334	754	25.50	57.50
TOTAL ALL WASTES (kt/y)	**1,992**	**336**	**27**	**60**	**51**	**9**	**6**	**4**	**48**	**33**	**76**	**163**	**265**	**578**	**335**				
COST OF CHANGE																**13010**	**75721**	**6.50**	**38.00**

Table A2: Treatment cost estimate for hazardous solid wastes assuming all wastes previously treated by biological, chemical and physical systems require combustion to meet total organic carbon limits

Waste Type	Quantity landfilled (1998/99), kt	waste min	in house reuse	merchant recycling	complex phase sep centrif + settle	high cost physical	Wetox/DEM pretreat	anaerobic	biological + pretreat	combustion	other thermal: e.g.pyrolysis/gasification	plasma/vitrification	solidification	remediation	do nothing	Cost of change (£k/y) low	Cost of change (£k/y) high	Cost (£)/tonne low	Cost (£)/tonne high
Waste resulting from exploration, mining, dressing and further treatment of minerals and quarry	1.8									20%		20%	30%	30%		57	137	31.00	74.50
Waste from agricultural, horticultural, hunting, fishing & aquaculture primary production, food preparation & processing	0.6	10%								55%			35%			22	55	35.30	87.20
Wastes from wood processing and the production of paper, cardboard, pulp, panels & furniture	1.4	5%								37%			56%	2%		54	114	37.30	78.70
Wastes from the leather and textile industries	1.0	5%		13%		2%				29%	13%		38%			36	90	34.50	86.60
Wastes from petroleum refining, natural gas purification and pyrolytic treatment of coal	103.9	5%		11%						15%	37%		10%	23%		2666	8979	25.60	86.40
Wastes from inorganic chemical processes	52.7	5%		8%		8%				5%		10%	55%	10%		1552	3278	29.50	62.20
Wastes from organic chemical processes	42.1	5%		5%			15%			32%	15%		19%	9%		1371	3498	32.50	83.00
Wastes from the manufacture, formulation, supply and use (mfsu) of coatings	37.2	12%		19%		8%				39%	3%	3%	16%			993	3120	26.70	83.80
Wastes from the photographic industry	0.2	5%		2%		42%				1%			50%			4	7	21.30	39.60
Inorganic wastes from thermal processes	81.1	5%	25%	5%								20%	45%			2212	5405	27.30	66.70
Inorganic waste with metals from metal treatment and the coating of metals; non-ferrous hydro-metallurgy	10.6	5%	20%										75%			299	581	28.30	55.00
Wastes from shaping and surface treatment of metals and plastics	32.0	8%	10%			5%				42%	20%		15%			982	2867	30.70	89.70
Oil wastes (except edible oils, 050000 and 120000)	72.0									50%	30%			20%		2485	7419	34.50	103.00
Wastes from organic substances employed as solvents (except 070000 and 080000)	7.9	5%	10%	40%						25%	20%					201	782	25.50	99.00
Packaging absorbents, wiping cloths, filter materials and protective clothing not otherwise specified	37.5	5%		30%						55%			10%			1238	3827	33.00	102.00
Waste not otherwise specified in the catalogue	26.8	17%		6%						43%	2%		32%			753	2127	28.00	79.20
Construction and demolition waste (including road construction)	1,340.6	23%								23%		7%	7%	39%		12005	72278	9.00	53.90
Wastes from human or animal health care and/or related research	1.9	0%								50%	17%		33%			79	186	42.30	99.80
Wastes from waste treatment facilities, off-site waste water treatment plants and the water industry	116.4			10%						18%		36%	37%			4942	10756	42.40	92.40
Municipal wastes and similar commercial, industrial and institutional wastes including separately collected fractions	10.5	2%	10%	36%						28%			18%	7%		277	919	26.40	87.30
Unknown	13.1	5%								45%			40%	10%		452	1069	34.50	81.50
TOTAL ALL WASTES (kt/y)	**1,992**	**336**	**27**	**60**	**0**	**9**	**6**	**0**	**0**	**471**	**76**	**163**	**265**	**578**	**0**				
COST OF CHANGE																**32680**	**127493**	**16.40**	**64.00**

APPENDIX 2

Council Decision 2003/33/EC

The Council Decision establishing the Waste Acceptance Criteria for landfills can be obtained through the following link.

http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_011/l_01120030116en00270049.pdf

I have read the Regulatory Impact Assessment and I am satisfied that the benefits justify the costs.

Signed……Elliot Morley

Date…… 17th May 2004

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TRANSPOSITION OF COUNCIL DECISION 2003/33/EC ESTABLISHING CRITERIA AND PROCEDUURES FOR THE ACCEPTANCE OF WASTE AT LANDFILLS PURSUANT TO ARTICLE 16 OF AND ANNEX II TO DIRECTIVE 1999/31/EC (THE LANDFILL DIRECTIVE)

THE LANDFILL (ENGLAND AND WALES) (AMENDMENT) REGULATIONS 2004

Introduction

Landfilling is the most common form of waste disposal across Europe. However, differences in technical standards and operating practices between member states have led to numerous incidents of gross land and water pollution. In response, the European Commission has introduced a number of measures to regulate landfill disposal and to establish a common framework that promotes waste prevention, minimisation, re-use and recycling as alternatives to landfill disposal.

The Landfill Directive introduces progressive measures to further prevent or reduce as far as possible the negative effects of landfilling waste on the environment and on human health. Over time it bans the co-disposal of hazardous waste with non-hazardous waste, the landfilling of liquids and certain solid wastes, introduces requirements for the treatment of wastes prior to landfill and sets out a framework for:

- the classification of landfill sites (inert, hazardous and non-hazardous);
- procedures for waste acceptance to be adopted at landfills; and,
- the types of waste for each class of landfill specified by waste acceptance criteria.

Annex II of the Landfill Directive sets out the principles of waste acceptance criteria and procedures. The Landfill (England and Wales) Regulations 2002 ("the 2002 Regulations") transpose the Landfill Directive in England and Wales with the exception of Articles 5(1) and (2) which require a national strategy for the reduction of biodegradable waste going to landfill. These requirements are being met separately through the Waste Emissions and Trading Act and Waste Strategy 2000.

The Council Decision introducing detailed waste acceptance criteria and procedures was adopted on 19 December 2002 and published in the Official Journal on 16 January 2003.

This note sets out how the main requirements of the Decision have been transposed in England and Wales.

Implementing Legislation

The Council Decision is being transposed in England and Wales by the Landfill (England and Wales) (Amendment) Regulations 2004 made under Section 2 of the Pollution Prevention and Control Act 1999.

Main Elements of the Decision

Article 6 of the Landfill Directive prohibits landfilling of waste unless it meets the criteria set out in Annex II of the Directive. The Council Decision sets out the full measures for waste acceptance. It introduces criteria and sets limit values for a number of contaminants, so harmonising another aspect of landfill regulation across Europe.

The Council Decision lays down:

- the procedures for characterising waste, checking compliance of the waste with the acceptance criteria and the on-site verification that the waste arriving at the landfill is identical to the waste described in the documents;

- acceptance criteria for:

    - inert waste landfills;
    - for certain non-hazardous wastes that are landfilled together with stable, non reactive hazardous waste in non-hazardous waste sites,
    - for stable non reactive hazardous waste accepted at landfills for non-hazardous waste,
    - for hazardous waste landfills, and
    - for underground storage facilities;

- the test methods to be used; and

- a risk assessment alternative option.

The Decision also requires member states to set criteria for monolithic waste, to provide the same level of environmental protection given by the limit values for granular waste, and to set limit values for polycyclic aromatic hydrocarbons in inert waste. Limit values for these types of waste will be dealt with in a separate set of amending regulations, to come into force before 16 July 2005.

These requirements and details of how they have been transposed are discussed in more detail in the table below.

	Objectives	**Implementation**	**Responsibility**
Article 2 of and Section 1 of the Annex to the Decision	**Procedures for the Acceptance of Waste at Landfills** This section sets out the requirement for and functions of basic characterisation, testing (including compliance testing) and on-site verification	Regulation 12 of and Part 2 of Schedule 1 to the 2002 Regulations (as amended) set out the procedure for the acceptance of waste at landfills, including the requirement for basic characterisation of wastes and for compliance testing.	The Environment Agency is responsible for regulating the provisions of the Landfill Regulations
Article 3 of and Section 2 of the Annex to the Decision	**Waste Acceptance Criteria** This section sets out the criteria for the acceptance of waste at each landfill class, including criteria for underground storage.	Regulation 10 of and Part 3 of Schedule 1 to the Landfill (England and Wales) Regulations (as amended) sets out the detailed criteria for accepting waste in different classifications of landfill and for underground storage, including the incorporation of limit value tables taken from the Council Decision. Where a choice of leaching tests was given(for instance in tables 2.1.2.1, 2.2.2 and 2.4.1 of the Annex), the decision was taken to use only the L/S=10l/kg test. The general waste acceptance criteria are required by Article 6 of and Annex II to the Directive. These are included at Part 1 of the new Schedule 1 to the 2002 Regulations.	The Environment Agency is responsible for regulating the provisions of the Landfill Regulations
Article 4 and Section3 of the Annex to	**Sampling and Test Methods** This section sets out the sampling and methods for testing wastes and identifies	Regulation 12 of and Part 4 of Schedule 1 to the 2002 Regulations (as amended) set out the sampling and test methods that shall be used by reference to the CEN standards. For tests and analysis for which CEN standards are not available,	The Environment Agency is responsible for regulating the

the Decision	the relevant CEN and other standards that should be used	the methods used must be approved by the Environment Agency	provisions of the Landfill Regulations
Article 5 of the Decision	Exclusion for waste resulting from prospecting, extraction, treatment and storage of mineral resources and from the working of quarries when they are deposited on-site. Member States are to apply national criteria	The Landfill Directive applies only to waste covered by the Waste Framework Directive (75/442/EEC). Non-minerals mining waste is excluded from that regime because it already covered by other legislation in the UK in the form of various legislation including Town and Country Planning Act 1990 (the "1990 Act") and the Mines and Quarries (Tips) Act 1969.	Mineral planning authorities will continue to regulate these deposits.
Article 7 of the Decision	Transposition **- Member states are required to comply with the Decision by 16 July 2004 and to apply the criteria by 16 July 2005.**	The amending Regulations will be in place by [8th June 2005] come into force on 16 July 2005 .	