

# **A Regulatory Appraisal of implementation of the provisions of the Waste and Emissions Trading Act through the ‘Landfill Allowances Scheme (Wales) Regulations 2004’**

## **1 Purpose and intended effect of the measure**

- 1.1 The Landfill Allowances Scheme (Wales) Regulations [the Regulations] implement, in Wales, the Waste and Emissions Trading Act 2003 [the Act], which implements, in the UK, Articles 5 (1) and (2) of the EU Directive [the Directive] on the landfill of waste.
- 1.2 The Regulations enable the creation of a landfill allowances scheme, intended to ensure the diversion of biodegradable municipal waste (BMW) from landfill, as required by the Directive.
- 1.3 This Regulatory Appraisal is concerned with the costs and benefits of the measures referred to in 1.2, i.e. the introduction of the landfill allowances scheme in Wales. The costs and benefits of diverting BMW in accordance with EC Directive requirements are presented in ‘Wise About Waste: The National Waste Strategy for Wales’<sup>1</sup>. There is a brief summary of the key costs and benefits of meeting the Directive targets contained in Annex I.
- 1.4 The Directive requires that Member States reduce the amount of BMW sent to landfill:
  - by 2006 no more than 75% of the BMW produced in 1995 can be landfilled;
  - by 2009 no more than 50% of the BMW produced in 1995 can be landfilled;
  - by 2016 no more than 35% of the BMW produced in 1995 can be landfilled.

Those Member States that sent to landfill more than 80% of their collected BMW in 1995 may apply for a derogation to postpone the attainment of the above targets by no more than four years in each case. The UK Government has signalled an intention to apply for the derogation.

- 1.5 Biodegradable waste is defined in the Directive as:

“all waste that is capable of undergoing aerobic or anaerobic decomposition and is municipal.”

Municipal waste is defined as:

<sup>1</sup> Wise About Waste: The National Waste Strategy for Wales, ISBN: 0 7504 2760 4, published by the Welsh Assembly Government in June 2002

- “(a) waste from households; and
- (b) other waste that, because of its nature or composition, is similar to waste from households.”

Landfill is defined as:

“any site for the deposit of waste onto or into land, where the site is a waste disposal site or a site used for the storage of waste.”

- 1.6 Options for meeting the targets for BMW diversion contained in Article 5 (2) of the Directive were the subject of consultation in ‘Limiting Landfill’<sup>2</sup>. A landfill permit (now referred to as allowance) scheme was the preferred option. Under this option, Waste Disposal Authorities (WDAs) will have the duty of ensuring that they do not exceed the limits on the landfill of BMW set by the landfill allowances scheme. The primary legislation to enable the introduction of the landfill allowances scheme is the Waste and Emissions Trading Act.
- 1.7 Following further consultation in Managing Waste Sustainably<sup>3</sup>, the Assembly Government has decided, at least initially, not to implement the trading arrangements for landfill allowances that are enabled by the Act and which are being considered elsewhere in the UK.

## **2 Risk assessment**

- 2.1 When BMW is deposited in landfill it undergoes biodegradation. In landfills most of the processes of biodegradation take place in anaerobic conditions. The gaseous products of these processes include methane, which is 21 times as potent a greenhouse gas as carbon dioxide. This contributes to the phenomenon of global warming and consequent climate change, which poses serious threats to the ecosystems upon which humankind depends.
- 2.2 It is estimated that in 2001, approximately 25,000 tonnes of methane was produced from Welsh landfills. This is, in terms of global warming potential, the equivalent of 525,000 tonnes of carbon dioxide. This is about 1% of total greenhouse gas emissions in Wales.
- 2.3 In terms of climate change that is probably initiated by the phenomenon of global warming, it is likely that Wales will experience more episodes of extreme weather in future. Across the UK, weather damage in 1998 – 1999 cost approximately £710 million.<sup>4</sup>

<sup>2</sup> Limiting Landfill, published by the National Assembly for Wales and the Department of the Environment, Transport and the Regions in October 1999

<sup>3</sup> Managing Waste Sustainably, ISBN 0 7504 2662 4  
published by the National Assembly for Wales in July 2001

<sup>4</sup> Association of British Insurers

2.4 Wales produces approximately 1.6 million tonnes of municipal waste each year and 65% of this is BMW<sup>5</sup>. Included in the total municipal waste arisings figures are the tonnages of abandoned vehicles and construction and demolition wastes. In calculating landfill allowance allocations to WDAs in Wales, abandoned vehicles and construction and demolition wastes have been excluded (consistent with the determination of the baseline data through the 1995 Eurostat survey). Wales therefore produces over a million tonnes of BMW each year with over 90% of this sent to landfill. This proportion has been falling in recent years because of the measures announced in 'Wise About Waste'. These include:

- Assembly Government funding of sustainable waste management, through ring fenced specific grant to local authorities in Wales;
- targets for recycling and composting;
- practical guidance on diversion of BMW contained in Annex 11, Part 2 of 'Wise About Waste'; and
- advance warning of the imminent landfill allowance scheme in Wales.

2.5 In its waste strategy, 'Wise About Waste', published in 2002, the Welsh Assembly Government included its plan for the diversion of BMW from landfill<sup>6</sup>.

2.6 If no legislation is made, this may result in potentially large fines from the European Commission for infraction in relation to Article 5 of the EC Landfill Directive.

### **3 Options**

3.1 There is a range of options for meeting the Directive targets, which have been considered in consultations and strategies previously referred to. In the light of these consultations, the National Assembly for Wales and the Welsh Assembly Government have two basic options, which are to:

- introduce a landfill allowances scheme where allowances may be traded; or

<sup>5</sup> 64% was the estimate of the proportion of BMW in municipal waste contained in the report: 'Pilot Study on Municipal Waste Composition in Wales', published by the Welsh Assembly Government in February 2002. This was the first phase of the compositional analysis project. The report on the second phase of the project was published in November 2003 and estimates the proportion of BMW in municipal waste in Wales to be 61% (including abandoned vehicles and C & D wastes) and 65% if these wastes are excluded.

<sup>6</sup> Annex 11, 'Biodegradable Waste', on page 79 of Part Two of 'Wise About Waste: The National Waste Strategy for Wales'.

- introduce a landfill allowances scheme where allowances may not be traded.

A third, theoretical option, would be to do nothing. This option is considered only to illustrate the consequences of inaction.

Whilst the three options are considered below, a more detailed description of the proposed landfill allowance scheme is contained in Annex II.

### Option 1

- 3.2 The Waste and Emissions Trading Act places the burden of achieving the Directive targets on WDAs, in Wales each unitary local authority, through the creation of a landfill allowances scheme. One option would be to implement regulations on the same basis as other areas of the UK are planning, i.e. to establish a landfill allowances scheme in which the allowances are tradable. The scheme would be introduced in parallel with changes to landfill tax rates, which aim to provide additional pressure to meet the Directive targets.
- 3.3 The landfill allowances scheme will enable the allocating authority (in Wales the National Assembly for Wales) to allocate a total number of allowances to each WDA, in each year, equivalent to the quantity of BMW that they are allowed to landfill in that year. It would be possible to allow WDAs that have surpluses to sell them and WDAs that have deficits to acquire them. This trading in permits is intended to optimise the investment in the facilities that will be necessary for WDAs to meet future targets, by enabling WDAs to plan the introduction of such facilities over time, without being hurried into such decisions by the need to stay within their allowance allocations.

### Option 2

- 3.4 The landfill allowances scheme may also be introduced without the element of tradability of allowances. In effect the landfill allowances scheme would set targets for Welsh WDAs, which they could only meet by actually achieving the diversion of BMW from landfill. The advantage of this approach is that WDAs in Wales will all have to plan for actual diversion from landfill of BMW. This would result in investment in facility capacities to enable the diversion, would spread the benefits of diversion across all authorities and would promote the proximity principle, since all WDAs will need access to facilities to divert BMW from landfill.

### Option 3

- 3.5 If nothing is done, BMW deposited in landfills will continue to pose a risk of pollution to groundwater and will continue to generate methane. The contribution of landfill generated methane from Wales towards total greenhouse gas emissions will increase and with it the threat of global warming and climate change. By failing to take action, Wales may be responsible for contributing towards bringing the UK into infraction for failing to implement Article 5 of the Directive. The Welsh Assembly Government are determined to avoid this scenario.

## **4 Benefits**

- 4.1 The principal benefits of introducing a landfill allowances scheme with trading are that:
- it would enable Wales to take advantage of the same approach being taken elsewhere in the UK;
  - those WDAs in Wales that carry out significant diversion of BMW from landfill at an early stage in the process might profit from the sale of surplus landfill allowances;
  - theoretically at least, market forces will tend to encourage investment decisions that favour overall lower cost investment to achieve BMW diversion.
- 4.2 The principal benefits of introducing a landfill allowances scheme without trading are that:
- it would encourage all Welsh WDAs to implement plans for diversion of BMW from landfill, resulting in lower quantities of BMW being sent to landfill in Wales, thus reducing harmful methane emissions;
  - it would create a framework in which Wales as a whole would be more likely to meet its allocation of allowances under the Waste and Emissions Trading Act and consequently achieve its share of the UK targets under the Directive, avoiding possible infraction fines;
  - it would favour investment in sustainable methods of BMW diversion with short lead times, rather than methods of BMW which are more capital intensive, with longer lead times and more likely to involve unsustainable waste management techniques.
- 4.3 The only benefit of 'doing nothing' would be to avoid short-term expenditure.

## **5 Costs**

- 5.1 The costs of the landfill allowance scheme are likely to be borne by the WDAs and by landfill operators. WDAs will need to invest in alternative facilities for the collection of BMW and its diversion from landfill. For landfill operators, there will be significant reductions in the amounts of BMW being sent to landfill in future years, resulting in a reduction of the receipts from gate fees.
- 5.2 The principal costs involved in establishing a landfill allowances scheme will surround its administration, monitoring and reporting requirements. For a system including trading of allowances, the monitoring and reporting requirements will require additional resources
- 5.3 The costs of administration of a landfill allowance scheme without trading of allowances will be slightly less than with trading. The costs of monitoring the landfill allowance scheme in Wales are essentially the costs of employing staff at the Environment Agency Wales<sup>7</sup>. The development of the software to be used in collecting data from WDAs has been funded by the Chartered Institution of Wastes Management (Environmental Body) [CIWM (EB)], through funding over the past two years from the Welsh Assembly Government, Biffaward and the DEFRA administered landfill tax 'legacy fund'. The Environment Agency propose, at least initially, to use the Wastedataflow system developed by CIWM (EB).
- 5.4 The costs of doing nothing will be to fail to reduce methane emissions from landfill and to potentially contribute towards the UK breaching its Directive targets. In this eventuality, National Assembly for Wales would have to bear a portion of subsequent infraction fines.

## **6 Consultation**

- 6.1 The issues covered by this Regulatory Appraisal have been the subject of consultation in a number of papers, which are, in chronological order:
- Limiting Landfill – Department of the Environment, Transport and the Regions (DETR), October 1999;
  - Managing Waste Sustainably – The National Assembly for Wales (NAW), July 2001;
  - Wise About Waste: The National Waste Strategy for Wales – The Welsh Assembly Government (WAG), June 2002; and
  - Consultation on implementation of the Waste and Emissions Trading Bill including the Municipal Waste Management (Wales) Regulations – The Welsh Assembly Government, July 2003.

<sup>7</sup> The Environment Agency in Wales estimates that in order to fulfil its statutory duties under the Waste and Emissions Trading Act that it will need an additional 3.5 full time equivalent (FTE) staff.

6.2 There have been two seminars in Wales to explain the landfill allowance scheme proposals and to provide an opportunity for responses to the consultation. A copy of the consultation analysis has been published and is available at:

<http://www.cymru.gov.uk/subienvironment/content/consultations/wa-gov-anala-w.pdf>

<http://www.wales.gov.uk/subienvironment/content/consultations/wa-gov-anala-e.pdf>

6.3 In addition, the Environment, Planning and Countryside Committee scrutinised these Regulations on 03 March and did not recommend any changes to the draft.

## **7 Significant costs**

7.1 The Welsh Assembly Government has since 2001/02 been providing significant extra resources to local authorities to assist them in progressing towards sustainable waste management and achieving the targets set in "Wise About Waste". Diverting waste from landfill will save costs (including savings on Landfill Tax which is expected to increase significantly in future years). The Assembly Government funding and savings of costs avoided should ensure that there are no significant net costs to local authorities as a result of implementing the Waste and Emissions Trading Act in Wales.

## **8 Review**

8.1 The principal costs of implementing a landfill allowances scheme are those of administering, monitoring and reporting on the scheme. The Welsh Assembly Government, the Environment Agency, Waste Disposal Authorities and landfill operators are the principal players in these activities. The Assembly Government is providing funding of £105,000 for 2004-05 from the waste strategy budget to the Environment Agency to cover the costs of their role as Monitoring Authority under the scheme. Waste Disposal Authorities are faced with more frequent reporting of data (quarterly instead of annually), which may mean a slight resource requirement (covered by the sustainable waste management grant provided to local authorities in Wales). Landfill operators will have to supply information that they already collect.

8.2 The principal benefits of implementing a landfill allowances scheme are the long-term savings achieved by diversion of BMW from landfill and the avoidance of potentially large fines from the European Commission for being in infraction over Article 5 of the EC Landfill Directive.

## **9 Summary**

- 9.1 The Landfill Allowances Scheme (Wales) Regulations will mean modest short term costs, but will result in significant long-term environmental benefits and compliance with EC legislation. There is a potential for economic benefits, though an overall costs/benefits analysis will need to be carried out once better data is available.

## **Annex I The costs and benefits of meeting the BMW diversion targets of Article 5 of the EC Landfill Directive**

The costs and benefits of meeting the Directive targets for the diversion of BMW from landfill are summarised below.

The annual rate of growth in municipal waste arisings has been approximately 3% per year over the past couple of years. Indications from more recent (unpublished) data are that this rate of growth is slowing. Assuming that future growth continues at 2%, then the amount of BMW to be diverted from landfill in each of the Directive target years (assuming a proportion of 65% for BMW) is:

- \* 2010 = 626,000 tonnes
- \* 2013 = 934,000 tonnes, and
- \* 2020 = 1 278,000 tonnes

### **Benefits**

Assuming that there is no change to the planned increases in the landfill tax escalator, in April 2010 the landfill tax will £33/tonne and in 2013 and 2020 > £35/tonne.

Assuming the mean value of landfill gate fees to be £15 and for this to be unchanged in the three target years, then a conservative estimate of avoided landfill gate fees (excluding landfill tax) may be made.

All local authorities in Wales have the opportunity to enter into long term paper contracts, with stable prices. Contract prices are typically in the region of £35/tonne at present and it is assumed that this price will apply in all the target years. Paper makes up approximately 13% of MWS (Municipal Solid Waste) and the assumption is made that 20% of the diverted BMW will be paper in each of the target years (assuming 65% of MSW is BMW). In reality it would be expected that paper might provide a higher percentage, since it is the main biodegradable material targeted in both kerbside and bring collections and is relatively easy to collect.

Kitchen waste and garden waste make up approximately 18% of MWS in Wales (therefore about 28% of BMW). Assuming that this material is composted to manufacture soil conditioner (for various applications), it would be expected that the compost product (by weight) would be approximately 10% of total BMW. Taking the minimum compost value of £1/tonne, potential income from the sale of compost can be calculated. It is not possible at this stage to quantify the potential savings to local authorities (as corporate bodies) through substitution of waste derived composts for peat or other products currently being used.

**Table 1 The savings made through diversion of BMW from landfill**

Year	2010	2013	2020
BMW to be diverted (tonnes)	626,000	934,000	1 278,000
Savings in landfill tax avoided	£20.658 million	£32.690 million	£44.730 million
Savings in landfill gate fees (exc landfill tax) avoided	£9.39 million	£14.01 million	£19.17 million
Income from sale of paper	£3.38 million	£6.54 million	£8.95 million
Income/avoided costs of compost production	£62,600	£93,400	£127,800
Total savings through income or avoided costs	£33.5 million	£53.3 million	£73 million

### Costs

The costs of diverting the quantities of BMW identified will depend upon the methods of diversion employed. Assuming that recycling and composting are the preferred diversion methods and that the most expensive energy from waste options are used for the rest of the diverted materials, the costs of collection and treatment (over and above existing refuse collection) may be described as below.

**In the estimates of costs provided below, the assumption has been made throughout that the diversion of BMW will incur the highest costs presented in Wise About Waste, Annex 21 – Financial Appraisal. The estimates are indicative only and there is anecdotal evidence from around Wales that the costs in this Regulatory Appraisal are higher than those being experienced.**

The costs of recycling must include the provision of receptacles to each household in Wales. These costs are<sup>8</sup>:

- Recycling boxes = £0.5
- Green waste bins = £5.00
- Kitchen waste bins = £2.00

It is assumed that all households are supplied with receptacles in 2010 and that the additional households receive them subsequently. The costs used here are based on 2003 prices and do not allow for replacements.

<sup>8</sup> Wise About Waste, Annex 21 – Financial Appraisal

**Table 2** The costs of receptacles for kerbside collection of separated BMW materials

Year	2010	2013	2020
No of households	1 276,000	1 296,000	1 351,000
Recycling boxes	£638,000	£10,000	£27,500
Green waste bins	£6.38 million	£100,000	£275,000
Kitchen waste bins	£2.55 million	£40,000	£110,000
TOTALS	£9.57 million	£150,000	£412,500

- Paper = £200/tonne<sup>9</sup>
  - Textiles = £200/tonne
  - Green waste = £71/tonne (including collection, operational costs and capital costs of 25,000 tpa windrow facility)<sup>10</sup>
  - Kitchen waste = £140/tonne (including collection, operational costs and capital costs of 50,000 tpa in vessel composting facility)<sup>11</sup>
  - Residual BMW = £77/tonne (including collection and operational costs.
- = £19.6/tonne (including capital costs for a 50,000 tpa energy from waste facility averaged over 25 years)
- = £96.6/tonne total

<sup>9</sup> For the sake of consistency, the estimated costs of collecting paper and textiles (dry recyclables) are based on figures presented in Wise About Waste, Annex 21 – Financial Appraisal. There is anecdotal evidence from around Wales that the costs of collection of dry recyclables are actually much less than these figures.

<sup>10</sup> This includes all the capital costs in a single year.

<sup>11</sup> This includes all the capital costs in a single year.

**Table 3** The costs of diversion of BMW from landfill (using high cost scenarios)

Year	2010	2013	2020
BMW to be diverted (tonnes)	626,000	934,000	1 278,000
Tonnes of paper diverted	125,200	186,800	255600
Costs of collecting the diverted paper	£25 million	£37.4 million	£51.1 million
Tonnes of biodegradable textiles diverted	10,642	15,878	21,726
Costs of collecting the diverted textiles	£2.1 million	£3.2 million	£4.3million
Tonnes of green waste diverted	98,908	147,572	201,924
Costs of collecting and treating the green waste	£7 million	£10.5 million	£14.34 million
Tonnes of kitchen waste diverted	76998	114,882	157,194
Costs of collecting and treating the kitchen waste	£10.8 million	£16.1 million	£22 million
Balance of BMW to be diverted	314252	468868	641556
Costs of collecting and treating the balance of diverted BMW in an energy from waste facility	£30.35 million	£45.3 million	£62 million
Total costs for BMW diversion, excluding receptacles (see table 2)	£75.25 million	£112.5 million	£153.7 million

The conclusion to be drawn from this annex may be that the net costs of diverting BMW from landfill to achieve the EC Landfill Directive targets are:

- for 2010 = £41.75 million
- for 2013 = £59.20 million
- for 2020 = £80.70 million

### **Discussion**

**The figures used to calculate the costs/benefits are derived mainly from 'Wise About Waste: The National Waste Strategy for Wales'. There are important caveats concerning the way the data has been used. The**

**important conclusion that may reasonably be made, are that there are going to be significant net costs in meeting the Article 5 targets.**

**The unit costs of recycling and composting of MSW may fall over coming years, as the quantities of materials separately collected for both increases. There is the potential for new and stable markets for recyclables and compostables, through the work in Wales of the Wales Environment Trust (WET) and the Waste and Resources Action Programme (WRAP). As secure supplies of secondary materials become available, their prices may rise.**

**The unit costs of collecting residual MSW will be affected by the increase in recycling/composting. The costs of treatment technologies, such as in vessel composting, may be expected to fall as they are used more extensively.**

**The costs to WDAs of compliance with Article 5 will be high. So too however are the costs of non compliance. WDAs may face financial penalties (£200/tonne) from the National Assembly for Wales and significant supplementary financial penalties where their failure has contributed to the National Assembly for Wales sharing fines from the European Commission for failing to achieve its agreed BMW diversion targets.**

## **Annex II      The Landfill Allowance Scheme**

The Landfill Allowance Scheme (LAS) will operate differently in Wales to the other home administrations. In Wales, allowances will be allocated to local authorities and will serve as BMW diversion targets. The allowances will not be tradable within Wales or the UK.

Each Waste Disposal Authority (WDA) in Wales will receive a proportion of the total allowances available for allocation by the National Assembly for Wales. The first target year of the LAS will be 2010. Each WDA will receive its share of the total allowance allocation for 2010 on the basis of the proportion of the total municipal waste arisings that it produced in 2001/02. The 2010 target will be for every WDA in Wales to reach the same proportional 'end point'.

The initial allocation of allowances however will be made on the basis of the landfill need of each WDA as a proportion of the total landfill need for MSW in 2001/02. Abandoned vehicles and construction and demolition wastes will be excluded from the calculations of the landfill allowances.

A linear reduction will be made between the 2004 start of the LAS and the first target year of 2010.