

# Comparing the cost of alternative waste treatment options

**WRAP's (Waste and Resources Action Programme) sixth Gate Fees report summarises the gate fees charged for a range of waste treatment, recovery and disposal options. The report also looks at the factors likely to influence future gate fees in comparison with last year's results.**

The objective of this report is to increase price transparency and, by improving the flow of information, improve efficiency in the waste management market. A lack of market information can reduce a local authority's ability to make informed decisions on waste management options, in terms of both economic and environmental costs. Therefore, indicative gate fee information should assist in making better informed decisions regarding waste management options.

**Table 1:** Summary information on gate fees 2012/13 (£ per tonne)

Treatment	Material / Type of Facility / Grade	Median	Range
MRF	All	£9	-£40 to £82
	Contracts beginning in 2012 or later (all streams) <sup>1</sup>	-£7	-£40 to £13
Organics	Open-air windrow (OAW) <sup>2</sup>	£24	£6 to £45
	In-vessel composting (IVC) <sup>3</sup>	£46	£28 to £60
	Anaerobic Digestion (AD)	£41	£25 to £66
Wood Waste	All grades/types collected from Household Waste Recycling Centres (HWRCs) <sup>4</sup>	£30	£1 to £89
	Gate fees in end use markets		
	Animal bedding <sup>5</sup>	-£32	-£180 to -£6
	Panel board	-£11	-£12 to -£9
MBT <sup>7</sup>		£76	£66 to £82
		£58	£32 to £76
		£90	£62 to £126
EfW	Pre-2000 facilities <sup>8</sup>	£58	£32 to £76
	Post-2000 facilities <sup>8</sup>	£90	£62 to £126
	Defra gate fee data: <sup>9</sup>		
	<200kt	£111	£80 to £135
Landfill	200kt to 300kt	£78	£57 to £105
	350kt to 450kt	£68	£59 to £80
	Non hazardous gate fee only	£21	£8 to £49
Landfill	Non hazardous gate fee plus landfill tax <sup>10</sup>	£93	£80 to £121
	Hazardous waste code: 17 05 03 <sup>11</sup>	£35	£22 to £50
	Hazardous waste code: 17 06 01	£65	£40 to £90
	Hazardous waste code: 17 06 05	£56	£30 to £68

## Introduction

Facilities in England, Wales, Scotland and Northern Ireland were surveyed between December 2012 and February 2013. The survey covered both those procuring waste treatment, disposal and recovery services (primarily local authorities) and service providers. Following the survey work, interviews were carried out with senior managers of waste management companies (WMCs). The interviews were aimed at 'sense checking' the gate fees acquired as part of the survey work, and to provide additional understanding of the various market drivers.

A summary of the 2012/13 gate fees charged at different treatment, recovery and disposal facilities is provided in Table 1.

### Gate fee information in context

Reporting summary gate fee information:

- Provides a simple, accessible resource for the waste industry and local authorities; and
- Protects the commercially sensitive nature of those surveyed.

Caution should be exercised when looking at the typical gate fees reported here for the following reasons:

- Considerable variation in gate fees exists for similar treatment/disposal options within and between regions/countries;
- The gate fee information for individual treatment options may not be directly applicable in instances where multiple services are being procured. Examples include a service that combines a MRF with a Mechanical Biological Treatment (MBT), or a service that includes collection together with Energy from Waste (EfW). Every effort is made to eliminate such responses from the sample;
- The precise terms of individual contracts, in particular relating to the allocation of key operational risks, vary significantly across facilities and directly influence gate fees. We take account of these issues using additional information collected in the survey, but recognise that we cannot guarantee that all relevant factors are accounted for. Moreover, it should be noted that long term local authority Public Private Partnership (PPP) contracts, including those supported by private finance initiative (PFI) credits, can be structured in quite complex ways and with differing forms of indexation applied. As a result, such gate fees may not be directly comparable; and
- All prices reported are nominal, which means that when comparing with other year's gate fees the responses have not been adjusted to reflect inflation.

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## Key Findings

Gate fees for similar waste management options vary substantially. Indeed, the factors which determine specific gate fees at a facility are complex, ranging from the size of a facility, the facility's location, the nature and duration of contracts (including risk-sharing arrangements), financing arrangements, the age of the facility, the level of revenues generated from the sale of recovered materials and other outputs (such as energy, compost, digestate), the level of competition in the market and the cost of management of residues.

Notwithstanding these variations, the summary gate fee information **(Table 1)** from the survey indicates that:

- Local authorities who signed contracts with Materials Recovery Facilities (MRFs) in 2012 receive a median income of around £7 per tonne of material. This represents a fall in income when compared to what was reported in last year's survey<sup>12</sup>. If all MRF gate fees supplied by local authorities are considered – that is, across all years, including contracts signed as early as 1995 – then it would appear that there has been no change in the median gate fee since the last report (i.e. it has remained at £9 per tonne). The inclusion of historical contracts means that these median prices are less prone to fluctuation.
- The median Open-air Windrow (OAW) gate fee has fallen marginally since last year to £24 per tonne.
- The median In-vessel composting (IVC) gate fee for food waste has declined by approximately £10 since the previous report, while the median gate fee for green waste was found to be the same as that charged by OAW facilities.
- The median gate fee reported by local authorities for the treatment of food waste at AD facilities has remained unchanged since last year at £41 per tonne.
- The median UK gate fee charged to local authorities for the onward management of wood waste collected from Household Waste Recycling Centres (HWRCs) has risen marginally since last year.
- The median gate fee for landfilling non hazardous waste has remained unchanged since last year, but the annual increase in landfill tax means that the overall cost of landfilling has increased by £8 per tonne.
- With the rise in landfill tax, the median gate fees paid at EfW or MBT facilities are now slightly cheaper than landfill.
- The range in gate fees presented for landfilling the three hazardous materials considered here are broadly similar to those presented last year.

The following sections look more closely at the gate fees for the individual waste treatment, recovery and disposal options outlined above.

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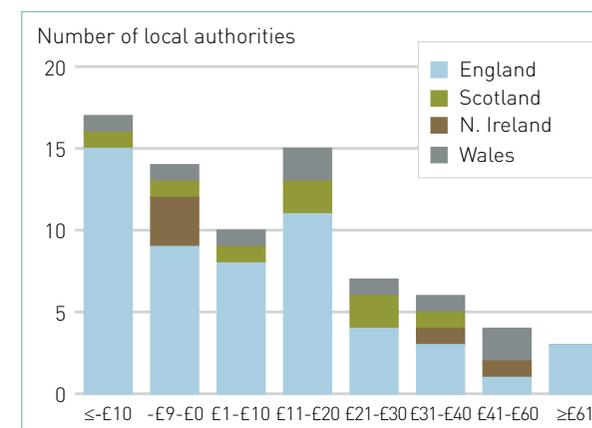
## Material Recovery Facilities

- The median MRF gate fee associated with contracts beginning in 2012 (irrespective of material coverage) was -£7 per tonne (i.e. the 10 local authorities who provided gate fees for contracts signed in 2012 were receiving a median income of £7 per tonne).
- In last year's survey, local authorities received a median revenue of £26 per tonne for contracts started in 2011. This indicates that there may have been a marked decline in the amount that MRFs pay for local authority dry recyclables<sup>13</sup>.
- The reduced revenue received by authorities in 2012 compared to 2011 most likely reflects the change in the market for secondary materials, which for some materials led to sharp falls in price between 2011 and 2012. These more recent contracts provide an indication of today's market, and align closely with the information received from MRF operator interviews, and comments on last year's survey.
- It must be stressed, however, that the median gate fee for contracts started in 2012 is based on 10 gate fees which range between -£44 per tonne and £13 per tonne. Given the wide range, the median value should be interpreted with caution and may not be reflective of the entire market (the same is true for last year's median gate fee of -£26 per tonne based on 8 gate fees ranging from -£55 per tonne to £4 per tonne).
- If all MRF gate fees supplied by local authorities are considered – that is, across all years, including contracts signed as early as 1995 – then there has been no change in the median gate fee since the last report (i.e. it remains at £9 per tonne). The inclusion of historical contracts means that the median gate fee is less variable.
- In this survey, the median MRF gate fee is lowest in Northern Ireland (£0 per tonne), followed by England (£8 per tonne), Wales (£15 per tonne) and Scotland (£17 per tonne) (Table 2).
- The marked range in gate fees paid by local authorities may be due to a variety of factors including local authority share of recovered materials sales, contract duration, the year in which the contract commenced, quality and quantity of materials received, operating costs and the market value of the materials when sorted.

**Table 2:** MRF gate fees (£ per tonne)<sup>14</sup>

	Median	Range	Responses
Contracts started in 2012	-£7	-£40 to £13	10
UK	£9	-£40 to £82	76
England	£8	-£40 to £82	54
Wales	£15	-£19 to £55	9
Scotland	£17	-£31 to £31	8
Northern Ireland	£0	-£9 to £51	5

**Graph 1:** MRF gate fees by country (£ per tonne)



## Organics

### Open-Air Windrow Composting

- The median OAW gate fee reported by local authorities has fallen by £1 per tonne since last year's report (i.e. from £25 to £24 per tonne this year).
- Median OAW gate fees tend to be lower in Northern Ireland and Scotland (both at £20 per tonne) than in England (£24 per tonne) and Wales (£28 per tonne) (Table 3).
- Feedback from some operators suggests that local/regional competition for materials from other facilities and competing treatment technologies were key drivers behind the current level of gate fees.
- Local authority and industry respondents had differing opinions regarding the future trajectory of OAW gate fees.

### In-Vessel Composting

- The most significant change has been the marked decrease in the gate fees charged for food waste, which has decreased from a median of £49 per tonne last year to £39 per tonne this year.
- IVC gate fees vary widely, with a key factor being the nature of the material treated. This is reflected by the ranges shown in Table 4. Since last year, the median gate fees reported by local authorities for food waste, mixed food waste, green waste & card have fallen by £1 per tonne and £7 per tonne, respectively. The median gate fee for mixed food & green waste, on the other hand, increased by £2 per tonne.
- Median values indicate that mixed food waste, green waste & card is the most expensive stream to treat, followed by mixed food & green waste (Table 4).
- In line with feedback received last year, IVC operators again reported that gate fees were being driven primarily by increased competition for materials from other IVC facilities, as well as from other treatment technologies (most notably AD). This seems to be reflected in the very different effects on gate fees for the mixed food & green waste fraction, where competition with AD is likely to be less strong, and for food wastes, where the competition from AD is much stronger.
- The feedback from operators of IVC facilities indicated varying opinions as to whether gate fees would increase or decrease over the coming years.

**Table 3:** Open-Air Windrow gate fees (£ per tonne)<sup>15</sup>

Nation	Median	Range	Responses
UK	£24	£6 to £45	124
England	£24	£15 to £45	98
Northern Ireland	£20	-	3
Scotland	£20	£6 to £27	14
Wales	£28	£19 to £33	9

**Table 4:** In-Vessel Composting gate fees (£ per tonne)

Waste Type	Median	Range	Responses
Food waste	£39	£31 to £55	7
Green waste	£24	£6 to £54	69
Mixed food & green waste	£46	£28 to £60	32
Mixed food waste, green waste & card	£48	£34 to £66	8

## Anaerobic Digestion

- This year's median gate fee reported by local authorities (Table 5) is the same as that reported last year, and £2 per tonne lower than that reported in 2011.
- The key factors cited by AD operators as influencing future gate fees included direct competition for feedstocks, energy prices, and broader economic pressures.
- The general consensus amongst AD operators<sup>16</sup> was that gate fees were likely to fall slightly over the coming years. Feedback from AD operators suggests that they are currently charging between £25 and £42 per tonne for local authority food waste delivered to their facilities, which sits at the lower end of the range quoted by local authorities in [Table 5](#).

**Table 5:** Anaerobic Digestion gate fees (£ per tonne)

Waste type	Median	Range	Responses
Household food waste	£41	£25 to £66	17


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## Wood Waste Recycling and Recovery

- The median UK gate fee charged to local authorities for treating/recycling/disposing of wood waste collected from HWRCs (e.g. for use in animal bedding, EfW, panel board) was £30 per tonne in 2012/13, up from £26 per tonne in 2011/12.
- From Table 6 it can be seen that a substantial range in gate fees reported by local authorities was recorded (i.e. from £1 per tonne to £89 per tonne). It is important to note that this range is for the disposing, treating and recycling local authority collected wood waste – unlike the gate fees discussed above, it is not related to a specific treatment option. For example, the gate fees at the upper end of the range are all related to energy recovery at EfW facilities, while the lower end of the range reflects circumstances where authorities are recycling their waste wood into MDF/chipboard and/or animal bedding.
- Gate fees reported by local authorities in Wales (£50 per tonne) and Northern Ireland (£35 per tonne) are higher than in England (£32 per tonne) and significantly higher than those reported in Scotland (£12 per tonne) (**Table 6**).
- Interviews with members of the Wood Recyclers Association (WRA) were undertaken again this year. Feedback from these operators confirmed (as last year) that the variation in gate fees across the UK reflects regional imbalances in supply and demand. Supply in the South East of England continues to exceed demand, which is acting to push up gate fees, whilst in Scotland, and, to a lesser extent, the North of England, demand is much stronger, so gate fees tend to be lower.
- Interviews with wood recyclers suggested that HWRC gate fees for unsegregated waste wood are on average £28 per tonne, but can vary from £15 per tonne in Scotland through to over £40 per tonne in areas geographically remote from major off-take facilities, such as in the South East and the South West of England. The feedback from operators is consistent with the local authority gate fees above.
- **Table 1** reports the median gate fees in various end use markets based on feedback from the industry.

**Table 6:** Gate fees for disposal, treatment, and recycling of HWRC wood waste (£ per tonne)

Nation	Median	Range	Responses
UK	£30	£1 to £89	75
England	£32	£1 to £89	43
Northern Ireland	£35	£25 to £69	9
Scotland	£12	£3 to £20	14
Wales	£50	£15 to £50	9

## EfW (Incineration with energy recovery)

- As in previous gate fee reports, existing facilities that are older (pre-2000) tend to have lower gate fees than newer (post-2000) facilities, although the sample size for newer facilities is smaller (Table 7).
- It is worth noting that gate fees at existing facilities may not be a reliable indicator of the gate fees that would be payable for facilities procured in the current market. Table 7 therefore also shows estimated gate fees made available by Defra for projects that have been procured since 2005. This data set includes 20 facilities, not all of which have reached contractual close. The calculation has been made to reflect a gate fee equivalent over the expected lifetime of the contract.
- Feedback from waste management companies suggested that the local authority reported gate fees were reflective of the market. Operators were of the opinion that gate fees were likely to remain static in the medium term due to greater competition from the export market.

**Table 7:** EfW gate fees (£ per tonne)

Type of facility	Median	Range	Responses
<b>Local authority survey</b>			
Pre-2000	£58	£32 to £76	30
Post-2000	£90	£62 to £126	13
<b>Defra gate fee data<sup>17</sup></b>			
<200kt	£111	£80 to £135	4
200kt –300kt	£78	£57 to £105	10
350kt–450kt	£68	£59 to £80	6



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## Mechanical Biological Treatment

- The wide range of facility types and the variety of treatment processes to which the label of MBT is attached makes it difficult to provide an accurate analysis of gate fees.
- The quality of the MBT output has a significant impact on the gate fee, as low quality process residues may have to be landfilled. Other major influencing factors on MBT gate fees are the SRF market (the price for off-take of solid recovered fuel), recovered materials prices, the level of support for energy generation and the allocation of contractual risk.
- The median MBT gate fee reported by local authorities was £76 per tonne, down from £79 per tonne in 2011/12 (Table 8).
- The sample of MBT gate fees has historically been very small; thus, the reported decrease of £3 per tonne should be interpreted with caution.
- It was reported by MBT operators that a key trend for local authority contracts was the reduction of contract lengths, with procurements now frequently being seen in the 7 to 12 year bracket.
- Factors likely to affect gate fees in the future include the landfill tax, the SRF/RDF (solid recovered fuel/refuse derived fuel) market both in the UK and, increasingly, in Europe, and the cost of labour and fuel.

**Table 8:** MBT gate fees reported (£ per tonne)<sup>18</sup>

Type of facility	Median	Range	Responses
MBT	£76	£66 to £82	7

## Non Hazardous Landfill

- The median landfill gate fee for the UK has remained unchanged since last year at £21 per tonne (Table 9).
- As in previous years, median gate fees in Scotland and England are lower than in Wales and Northern Ireland.
- As in previous years, operators noted the highly competitive marketplace for landfill. Reduced quantities of residual waste and increased competition from other treatments have caused some operators to reduce their prices to maintain volumes into their sites.
- This year's data continues the broad pattern of the last few years in which median gate fees have remained broadly constant (i.e. falling in real terms).

**Table 9:** Non hazardous landfill gate fees (£ per tonne, excluding landfill tax and haulage)

Nation	Median	Range	Responses
UK	£21	£8 to £49	153
England	£20	£8 to £47	110
Northern Ireland	£24	£10 to £40	10
Scotland	£18	£11 to £39	18
Wales	£28	£21 to £49	15


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## Hazardous Landfill

For a second year in a row, efforts were made to obtain gate fees for landfilling hazardous materials from hazardous landfill operators. As in last year's survey materials classified under the following three Hazardous Waste Codes were included:

- 1 17 05 03: soil and stones containing dangerous substances;
  - 2 17 06 01: insulation materials containing asbestos; and
  - 3 17 06 05: construction materials containing asbestos.
- The median gate fee for soil and stones containing hazardous substances (17 05 03) was the lowest at £35 per tonne, with a range of £22 to £50 per tonne being reported.
  - Gate fees for bonded asbestos materials (17 06 05) are significantly lower than for unbonded/fibrous insulation materials containing asbestos (17 06 01). This is because unbonded insulation materials take up a significant amount of space, are difficult to compress, and frequently require special management measures (Table 10).
  - Only a small number of responses were received, with marked variations in prices; thus, the median gate fees presented in Table 10 should be interpreted with caution.
  - In terms of the price of future gate fees, a mixed picture emerged from the interviews. Some operators expected gate fees to fall, while others were of the opinion that they were most likely to remain stable for the foreseeable future.
  - Operators expected that the main driver likely to influence future gate fees would be competition for material. The slow recovery in the construction industry and the increase in the range of hazardous wastes that mono-cell operators are now accepting has meant that competition for available material has increased.
  - A number of operators have partnered with haulage companies in back haul agreements in an effort to minimise transport costs.

**Table 10:** Gate fees at hazardous landfill sites (£ per tonne, excluding landfill tax and haulage)

Hazardous waste code	Median	Range	Responses
17 05 03	£35	£22 to £50	5
17 06 01	£65	£40 to £90	5
17 06 05	£56	£30 to £68	6

## Endnotes

1. This median figure is based on 10 gates fees which cover all materials and facilities, and should therefore be interpreted with caution.
2. This gate fee is for all waste streams being sent to OAW facilities by local authorities.
3. This gate fee is for mixed food and green waste.
4. Local authority reported gate fees for the onward management/treatment of waste wood.
5. Includes equine bedding, poultry bedding and cattle bedding.
6. Includes only wood waste sent to Waste Incineration Directive (WID) compliant facilities.
7. This median and range is based on 7 gate fees, and so should be interpreted with caution.
8. Facilities used by local authorities surveyed.
9. Based on size of facilities ('000s tonnes per annum) Defra information on PPP/PFI projects that have been procured since 2005 (not all of which have reached contractual close).
10. At the time of the survey the standard rate of landfill tax was £64 per tonne, it increased to £72 per tonne on 1 April 2013.
11. Excluding landfill tax, the Hazardous Waste Codes refer to the following materials: 17 05 03 – soil and stones containing dangerous substances; 17 06 01 – insulation materials containing asbestos; and 17 06 05 – construction materials containing asbestos.
12. for those who signed contracts in 2011.
13. Please note that the sample sizes are small for both those surveyed in this year's survey, who signed contracts in 2012 (10) and those surveyed in last year's survey who signed contracts in 2011 (8).
14. For all material streams where three or more materials are delivered co-mingled to a facility.
15. For all material streams delivered by local authorities to OAW facilities.
16. Please note these results are based on a small sample size of 12 respondents
17. Based on size of facilities ('000s tonnes per annum) Defra information on PPP/PFI projects that have been procured since 2005 (not all of which have reached contractual close).
18. These gate fees take into account costs associated with the disposal of process residues, including fuel/SRF and revenues from the sale of recovered materials.

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## Summary information on gate fees 2012

Treatment	Grade/material/type of facility	Median <sup>f</sup>	Range <sup>f</sup>
MRF	All	£9	-£66 to £73
	Contracts beginning in 2011 or later	-£26	-£55 to £4
Organics	Open-air windrow (OAW)	£25	£15 to £53
	In-vessel composting (IVC) <sup>g</sup>	£44	£28 to £60
	Anaerobic digestion <sup>h</sup> (AD)	£41	£35 to £60
Wood Waste	All grades/types collected from HWRCs <sup>i</sup>	£26	£0 to £70
	Gate fees for end use markets:		
	Animal bedding <sup>j</sup>	-£44	-£130 to -£12
	Panel board	-£22	-£36 to -£12
	Biomass <sup>k</sup>	-£21	-£38 to £25
MBT		£79	£65 to £84
Incineration	Pre-2000 facilities <sup>l</sup>	£64	£32 to £75
	Post-2000 facilities	£82	£44 to £101
	Defra gate fee data: <sup>m</sup>		
	<200kt	£90	£79 to £131
	200kt to 300kt	£76	£56 to £102
	350kt to 450kt	£68	£57 to £78
Landfill	Non hazardous gate fee only <sup>n</sup>	£21	£9 to £63
	Non hazardous gate fee plus landfill tax	£85	£73 to £127
	Hazardous <sup>10</sup> waste gate fee only (code: 17 05 03)	£29	£23 to £50
	Hazardous waste gate fee only (code: 17 06 01)	£85	£40 to £95
	Hazardous waste gate fee only (code: 17 06 05)	£40	£30 to £60

- f. UK wide figures, regional estimates appear elsewhere in the 2012 Gate fees report
- g. This gate fee is for mixed food and green waste.
- h. Local authority collected food waste
- i. Local authority reported gate fees for the onward management/treatment of waste wood.
- j. Includes equine bedding, poultry bedding and cattle bedding.
- k. Includes wood waste sent to WID compliant facilities and clean wood sent to non-WID compliant facilities.
- l. Facilities used by local authorities surveyed.
- m. Based on size of facilities ('000s tonnes per annum) Defra information on PPP/PFI projects that have reached contract closure in the last 5 years or were about to reach contractual close in the next 12 months at the time of the 2012 survey .
- n. At the time of the 2012 survey the standard rate of landfill tax was £56 per tonne, it increased to £64 per tonne on 1 April 2012.
- o. The Hazardous Waste Codes refer to the following materials: 17 05 03 – soil and stones containing dangerous substances; 17 06 01 – insulation materials containing asbestos; and 17 06 05 – construction materials containing asbestos.

## Summary information on gate fees 2011

Treatment	Grade/material/type of facility	Median <sup>a</sup>	Range <sup>a</sup>
MRF	All	£15	-£6 to £85
	Contracts starting in 2010 or later	£4	-£30 to £63
Organics	Open-air windrow (OAW)	£24	£6 to £51
	In-vessel (IV), food and garden waste	£43	£29 to £82
	Anaerobic digestion (AD)	£43	£36 to £64
Landfill	Gate fee only	£20	£12 to £55
	Gate fee plus Landfill Tax <sup>b</sup>	£76	£68 to £111
EfW <sup>c</sup>	Pre-2000 facilities <sup>d</sup>	£54	£35 to £79
	Post-2000 facilities <sup>e</sup>	£73	£54 to £97
MBT		£84	£57 to £100

- a. UK wide figures, regional estimates appear elsewhere in the 2011 report
- b. At the time of the 2011 survey the standard rate of landfill tax was £48 per tonne, it increased to £56 per tonne on 1 April 2011.
- c. Incineration with energy recovery
- d. Information from local authorities in the 2011 survey.
- e. Includes 2011 survey information from local authorities and information from Defra on planned EfW facilities in procurement through PPP/PFI.

## **WRAP's vision is a world where resources are used sustainably.**

We work with businesses, individuals and communities to help them reap the benefits of reducing waste, developing sustainable products and using resources in an efficient way.

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## **Feedback**

If you wish to comment on these findings or take part in the next WRAP gate fees survey, due to begin in November 2013, please e-mail [gatefees@wrap.org.uk](mailto:gatefees@wrap.org.uk) or call 0808 100 2040 (note that existing participants do not have to re-apply).

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