Gate fees report 2017

Comparing the costs of waste treatment options

WRAP's tenth gate fees report analyses the gate fees charged for a range of waste treatment, recovery and disposal options as reported by local authorities. In addition, gate fees are supplied by organic and wood waste facility operators for both local authority, and commercial and industrial waste sources.

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Executive summary

This report summarises the findings of WRAP's tenth annual gate fee survey. The survey covers gate fees charged to local authorities in the UK for a range of municipal waste recycling, recovery, treatment and disposal options, for the calendar year 2016. Some commercial gate fees are also reported, which have been provided by organic and wood waste treatment facilities.

The aim 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 may reduce a local authority's ability to make informed decisions on waste management options. The publication of indicative gate fee information, such as this, should assist authorities in making better informed decisions regarding waste management options.

Summary gate fee data reported by local authorities from 2016 for a range of technology types are presented in Table 1. This year the survey coverage has changed slightly in that:

- Open air windrow was not included in the survey, due the stability of this market over a number of years;
- Residual waste treatment processes, such as the manufacture of a refuse derived fuel (RDF), were included this year.

Table 1: Summary of UK gate fees reported by local authorities, 2016 (£/tonne)[1]

Treatment	Materials / Type of facility / Grade	Median	Mode[2]	Range[3]	No of gate fees reported
MRF	All contracts (4 materials or more)	£15	£0 to £5	-£77 to £90	94
Organics	In-Vessel Composting (IVC)[4]	£46	£45 to £50	£28 to £60	37
	Anaerobic Digestion (AD)	£29	£35 to £40	£0 to £65	64
EfW[5]	All	£83	£50 to £55	£26 to £144	56
	Pre-2000 facilities	£56	£50 to £55	£26 to £90	22
	Post-2000 facilities	£91	£80 to £85	£50 to £144	34
Landfill	Non-hazardous waste including landfill tax[6]	£107	£99 to £104	£89 to £149	90
	Non-hazardous waste	£22	£15 to £20	£5 to £64	90

[1] *All gate fees reported excluding haulage costs.*
[2] *Mode is the gate fee range (in £5 increments) which received the most responses in the survey data.*
[3] *Range lists simply the ranges between the maximum and minimum data points in the survey data collected.*
[4] *IVC gate fee is for mixed food and green waste.*
[5] *Incineration with energy recovery.*
[6] *The standard rate of landfill tax for 2016/17 is £84.40 /tonne.*

Treatment	Materials / Type of facility / Grade	Median	Mode[2]	Range[3]	No of gate fees reported
	excluding landfill tax				
Other Residual Waste Treatment	Mechanical Biological Treatment (MBT)	£88	£80 to £85	£66 to £170	16
	Residual Waste MRF	£94	£90 to £95	£55 to £117	20
	Other Refuse Derived Fuel (RDF) production	£98	£95 to £100	£80 to £120	7
Wood Waste	All Grades /tonne collected from Household Waste Recycling Centres (HWRCs)[7]	£35	£45 to £50	-£7 to £80	62

Some of the commercial gate fees as reported by organic and wood waste operators are reported in Table 2 below. However it should be noted that the response rates of operators are low and therefore the sample sizes small, meaning these figures may not truly represent the market. Limited results for each material type are also presented due to the limited number of responses.

Table 2: Summary of commercial gate fees provided by operators, 2016 (£/tonne)

Facility type	Gate fee type	No. of gate fees	Gate fee (£/tonne)	
			Median	Range
IVC – all waste streams	Contract	23	£44	£20 to £142
	Spot	13	£28	£0 to £70
	Overall	36	£44	£0 to £142
AD – all waste streams	Contract	59 (3 negative)	£22	-£20 to £65
Wood waste reprocessors – all grades	Contract	95 (8 negative)	£20	-£10 to £60
	Spot	93 (2 negative)	£25	-£10 to £75

Introduction

Data gathering for this gate fee survey was conducted in November and December 2016, collecting data for the calendar year 2016. The survey targeted three main stakeholder groups: local authorities (including unitary, waste collection and waste disposal authorities); private sector operators of waste management facilities; and senior managers of large waste management companies operating within the UK market.

[7] *Local authority reported gate fees for the onward management or treatment of waste wood.*

The pricing of municipal waste management services can be complex. In providing summary gate fee information (as in this report) other factors relating to the provision and operation of waste management services, which may also be important to a local authority, are not addressed. Users of the gate fee information in this report should be aware of the following:

- Not all waste management services are costed or charged on a simple gate fee basis (£/tonne). In some cases a tonnage-related payment is just one element of a wider unitary charge[8] paid by an authority. For many authorities it is not appropriate, or practicable, to isolate a pro-rata cost per tonne for a facility that may form just part of a broader integrated service provision. **As a consequence, only services for which it has been possible to identify a gate fee (£/tonne) are included within this report**.
- The gate fee information for individual treatment options may not be directly applicable in instances where multiple services are being procured, for example, a service that combines a MRF with MBT, or a service that includes collection together with EfW (every effort is made to eliminate such responses from the sample).
- Contract terms, risk allocations and performance guarantees may vary significantly between different authorities' contracts, even in instances where the same technology is being utilised. Such differences could have a significant impact on the associated gate fees.
- A significant proportion of municipal waste management services are delivered under medium to long-term contracts[9]. Gate fees for such historic long-term contracts are included in the survey sample but may not be reflective of the current market. However, where reasonable samples were available the gate fees associated with more recent contracts have been separately reported.
- Year on year changes in gate fees may reflect sampling variation, in that although overall local authority response rates increased slightly this year, 32% of individual local authorities responding this year did not respond to the survey last year.
- Gate fees in this report are presented in nominal terms with no adjustment for inflation.

[8] For an integrated or PFI infrastructure waste services contract, the private sector contractor can bundle the payments for a variety of waste management services (including potentially the initial capital spend and the ongoing maintenance and operation cost for associated waste management facilities) into a single ('unitary') charge to the local authority customer, rather than charging individual gate fees for each individual service.

[9] For instance in this survey, of the 396 individual contracts reported, 62% were for a term of greater than 5 years, 40% greater than 10 years.

Key findings

The key findings of this year's survey are as follows for the UK:

Materials Recovery Facilities (MRF)

- The median MRF gate fee for contracts sorting 4 or more materials is £15/tonne, compared to £25/tonne last year. This year, 20% of local authority respondents[10] report not paying a gate fee for MRF services i.e. a zero or negative gate fee, in comparison to 28% last year and 46% in 2014/15. For contracts signed in 2016, the median gate fee is £29/tonne. Of the authorities supplying responses, 59% report a change in gate fee in 2016 (55% in 2015), with 23 (6 in 2015) reporting a decrease and 25 (48 in 2015) an increase in gate fee, suggesting a trend to reduction in gate fees between 2015 and 2016. Of those reporting a change in gate fee and providing a reason, 22% report the signing of a new contract, 14% report fee change as result of a regular contractual review, 29% changes in commodity prices, 10% a change in the level of contamination (both increases and decreases in level of contamination reported), and 19% contractual RPI increases.
- Interviews with 7 waste contractors for this survey confirmed a strengthening in recyclate commodity pricing and confirm an overall drop in MRF gate fees in 2016. They also talked of a continued trend towards risk sharing in new contracts. Respondents expect that MRF gate fees will continue to fluctuate year-on-year, dictated by changes in commodity prices.

In-Vessel Composting (IVC)

- The median for all types of municipal feedstock being sent to IVC facilities in 2016 is £43/tonne, which is the same as last year. For mixed food and green waste, the median is £46/tonne, a £1/tonne decrease from last year's median. The median for new contracts starting in both 2015 and 2016 is £35/tonne, suggesting an overall slow downward trend. Interviews with waste management contractors confirmed the survey results and observed trends. Waste contractors (during the interviews) reported that the sector has ongoing capacity issues, as mixed green & food waste is a declining waste stream, with local authorities either considering introduction of separate collections of food and garden waste to be able to reduce treatment costs (by sending food waste to AD (which they anticipate will decline even further to £20/tonne) and green waste to open windrow (last year reported as £24/tonne)), or dropping food waste collection altogether from the food/green waste mix to be able to send collected material (i.e. green waste only) to open windrow. It should be noted, however, that WRAP's work with local authorities suggests that the lower treatment costs does not necessarily offset the cost of rolling out additional separate food waste collection services.
- The common opinion amongst the waste companies interviewed is that the average for IVC gate fees for all municipal feedstock types will decline towards £40 in the next few years as operators try to fill free capacity.

[10] *Local authorities running their own waste management facilities (i.e. not paying a gate fee reflecting market conditions) have been excluded from the data*

- For commercial waste, operators reported an overall median gate fee of £44/tonne. However spot gate fees were lower than those under contract, at £28/tonne.

Anaerobic Digestion (AD)

- The median AD gate fee reported by local authorities for 2016 is £29 /tonne, which is notably lower than the £40/tonne gate fee from last year's survey. In last year's operator survey and waste contractor interviews, decreases in gate fees for AD facilities were reported; however, these were not reflected in median results from local authorities at that time. The lag-time may be due to local authorities reporting contract gate fees which have been agreed a number of years ago. Therefore this decline was anticipated, is confirmed by the current survey and has been reiterated in this year's waste contractor interviews, although there are differences between the nations.
- For England, the pattern of gate fees over the last three years has been of steady decline to the current £26/tonne. Waste operator interviews have verified this finding, quoting figures as low as £15-20/tonne, reflecting likely over capacity (based on what is currently collected separately in a form suitable for AD treatment) in the market, although this does vary from region to region and impact can be very localised. Some of the operators expressed that low gate fees may only be addressed in the future by capacity closures. In Wales, the median gate fee has increased to £50/tonne, compared to last year's £42/tonne, potentially maintained by long term PFI contracts.
- The median contracted gate fee for commercial waste, as reported by operators, was £22/tonne.

Energy from Waste facilities (EfW)

- This year, reported median gate fee for incineration with energy recovery (EfW) is £83/tonne compared to £86/tonne last year. For pre-2000 EfW facilities, the median gate fee is £56/tonne, compared to £58/tonne last year. For post-2000 facilities, median gate fee is £91/tonne compared to £95/tonne last year. For post 2000 facilities, new contracts are being signed with gate fees lower than the median, suggesting a slow softening in gate fees. Eight authorities reported new contracts in 2016 for post-2000 facilities with a median gate fee of £84/tonne.

Landfill

- Across the UK the median non-hazardous landfill gate fee reported by local authorities in 2016 is £22/tonne, ranging from £5 to £64/tonne, and mode £15 to £20, excluding landfill tax and haulage costs. This is an increase on last year's median (£19/tonne). Feedback from local authority officers and waste management contractors suggest that lack of landfill capacity in some regions due to closures could be the reason for this upward trend.

Other Residual Waste facilities

- The median gate fee reported by local authorities for MBT from this year's survey is £88/tonne compared to £85/tonne last year, showing little change. Figures this year included 2 new contracts started in 2016, both at gate fees above the reported median.

- For Residual Waste MRFs a median gate fee of £94/tonne is reported, with 6 out of 21 respondents reporting a change of gate fee in the last year (2 because of a new contract and 4 due to inflation increase; averaged increase £3.10). For other RDF processing a median gate fee of £98/tonne is reported with only 1 respondent (out of 9) reporting a change (inflation increase) in the last year.

Wood Waste

- The median gate fee for recycling/recovery of all types of wood waste from HWRCs has remained the same as last year's at £35/tonne for the UK as a whole. There is still considerable variation by nation which has also been identified in previous years' results. The median in England has increased from £38/tonne last year to £45/tonne this year. However there is great variety in gate fees within England itself at regional level with gate fees varying from £23/tonne in the north to £50/tonne in the south.
- Interviews with two waste companies revealed that increased biomass capacity, with a number of facilities currently in construction, is anticipated to impact on gate fees and the wood waste market in a similar way to AD i.e. where there is new biomass capacity this will impact on the local market by lowering gate fees. This is already seen in the north east of England.
- Commercial contracted gate fees are the lowest at £20/tonne, compared with £25/tonne for commercial spot gate fees and all local authority sourced wood waste.

More detailed observations regarding the gate fees associated with each of the major technology options in the latest survey are provided in the sections below and in the full technical report.

Materials Recovery Facilities (MRF)

- The median MRF gate fee (for MRF contracts which sort 4 materials or more) is £15 /tonne (based on 94 responses from local authorities), down from a median of £25/tonne last year.
- Only 20 local authorities (21% of 94 responding) report not paying a gate fee for MRF services i.e. a zero (6 authorities) or negative gate fee (14 authorities) in 2016. This compares to 30 (28% authorities) of responses in last year's survey and 38 (46% authorities) in 2014/15.
- The local authority gate fees reported include historic (long term contracts) therefore the median may not necessarily reflect the current market. For contracts signed in 2016, the median MRF gate fee has increased to £29/tonne (28 reported contracts started in 2016) from a low point of -£19/tonne in 2013/14.
- Of the 106 authorities supplying responses, 63 (59%) report a change in gate fee in 2016 (55% in 2015), with 23 (6 in 2015) reporting a decrease and 25 (48% in 2015) an increase in gate fee, again suggesting some softening in gate fees between 2015 and 2016. Of those reporting a change in gate fee and providing a reason, 14 (22%) report the signing of a new contract, 9 (14%) report fee change as a result of a regular contractual review, 18 (29%) report changes in commodity prices, 6 (10%) a change in the level of contamination, and 12 (19%) contractual

RPI increases. A single authority reports gate fee changes due to an increase in processing costs, and 3 (5%) gave no explanation.

- Most gate fees reported ranged from £0 to £5/tonne (i.e. the mode); the full range of responses was from -£77 to +£90. Reported gate fees are influenced by a wide range of factors including material mix, contract length and age, contractual pricing mechanism, annual tonnage, MRF technology employed, and degree of risk share between the authority and contractor.
- Although this year English authorities report an overall decrease in median MRF gate fees at £13/tonne (from a median of £15/tonne last year), increases were noted in Wales £70/tonne (from £43/tonne last year) and Northern Ireland £54/tonne (from £37/tonne last year).
- 73 respondents (of 115 i.e. 63%, compared to 54 of 101 i.e. 54% in the 2015 survey), report short term MRF contracts i.e. 5 years or less, suggesting a continued trend in shortening of contract lengths, with 22 responses (19% compared to 21% in 2015 survey) between 6 and 10 years.
- In last year's survey, significant drops in the values of key recyclate types were cited by local authorities as instrumental in an overall increase in gate fees to a median of £25/tonne. This year commodity prices have recovered somewhat from levels at the end of 2015. Recovered materials prices from WRAP's Materials Pricing Report, price changes for key traded material from January 2016 to January 2017 show increases such as +125% for mixed cans and +55% for plastic bottles, with only glass and some plastic mixes showing price reductions over the same period.
- Of factors which local authorities report as influencing MRF gate fees, commodity prices, input material quality and operating costs are deemed to be those having most impact on gate fees now and in the future, mirroring the responses in last year's survey. Of the 118 respondents expressing an opinion, 78 (66%) expect gate fees to increase in the future (14% expected a decrease, 20% no change) – this compares to 80% of respondents in last year's survey.
- Waste contractor interviews for this survey confirm a strengthening in recyclate commodity pricing and confirm an overall drop in MRF gate fees in 2016, with new contracts at around £30/tonne. They also talked of a continued trend to risk sharing in new contracts, based on an operating cost + rebate on income from materials model. It is expected that MRF gate fees will continue to fluctuate year-on-year, dictated by changes in commodity prices.

Table 3: Summary of MRF gate fees reported by local authorities by nation (and London) (2016) (£/tonne)

Country/Region	Median	Mode	Range	Number of gate fees
Contracts started in 2016 (UK)	£29	£10 to £15	-£77 to £74	28
UK	£15	£0 to £5	-£77 to £90	94
England (incl. London)	£13	£0 to £5	-£57 to £71	66

London	£33	£30 to £35	-£27 to £71	10
Northern Ireland	£54	£35 to £40	£35 to £74	7
Wales	£70	£80 to £85	-£20 to £84	7

In-Vessel Composting (IVC)

As in previous years, IVC gate fees are reported by waste feedstock type:

- The median for all types of feedstock, as reported by local authorities, being sent to IVC facilities in 2016 is £43/tonne, which is the same as last year. The median for new contracts starting in both 2015 and 2016 is £35/tonne, suggesting an overall slow downward trend.
- For individual waste types, mixed food and green waste reported by local authorities median gate fee is £46/tonne, which is very similar to the four years previously, suggesting a stable market dominated by contracted waste. Median for food waste to IVC varies from nation to nation, for instance £55/tonne in Wales to £56/tonne in England. The median for green waste only shows a reduction from £37/tonne to £29/tonne, approaching that of OAW (reported as £24/tonne in last year's survey).
- IVC facility operators were also surveyed, for gate fees charged for both municipal and commercial waste feedstocks. Operators reported a median of £36/tonne for all feedstock types under contract is lower than the £43/tonne reported from the local authority survey. For individual feedstock types:
    - For mixed food and green, operators cited a lower rate of £37/tonne, than the authorities did at £46/tonne.
    - For food waste the operators survey median was £39/tonne and so lower than that cited by local authorities which was £55/tonne.
    - For green waste only, operators cited a figure of £25/tonne for green waste under contract which is slightly lower than the £29/tonne cited by local authorities.
- The discrepancy between gate fees specified by local authorities and operators may be due to local authorities reporting contract gate fees which have been agreed a number of years ago, and may not reflect the current market situation i.e. only 24% of the contracts reported by local authorities commenced in 2016, and as stated above, contracts started in 2015 and 2016 have gate fees lower than the current median (i.e. £35/tonne compared to £43/tonne).
- A small sample was obtained from IVC facility operators regarding the gate fees they charge commercial customers, and therefore gate fees are only reported by gate fee type, rather than feedstock type. The median gate fee for commercial wastes under contract was £44/tonne, which is higher than the spot gate fee reported as £28/tonne (the range being (£0 - £70/tonne).
- Interviews with waste management contractors confirmed the survey results and observed trends. Waste contractors (during the interviews) reported that the sector has ongoing capacity issues, as mixed green & food waste is a declining waste stream, with local authorities either looking to introduce further segregation to be able to reduce treatment costs, by sending food waste to AD (which they anticipate will decline even further to £20/tonne) and green waste to open windrow (last year reported as £24/tonne), or dropping food waste

collection altogether to be able to send collected material (i.e. green waste only) to open windrow. It should be noted, however, that WRAP's work with local authorities suggests that the lower treatment costs does not necessarily offset the cost of rolling out additional separate food waste collection services.

- The common opinion amongst the waste companies interviewed is that the average for IVC gate fees for all feedstock types will decline towards £40 in the next few years as operators try to fill free capacity.

Table 4: Summary of In-Vessel Composting gate fees reported by local authorities (£/tonne) by material type (2016)

Waste type	Median	Mode	Range	Number of gate fees
All feedstock materials	£43	£55 to £60	£18 to £67	65
Mixed food & green waste	£46	£45 to £50	£28 to £60	37
Food waste only	£55	£55 to £60	£25 to £67	10
Green waste only	£29	£25 to £30	£18 to £45	17

- For commercial waste, operators reported an overall contracted median gate fee of £44/tonne. However spot gate fees were lower than those under contract, at £28/tonne.

Anaerobic Digestion (AD)

- The median AD gate fee for 2016 is £29/tonne, which is notably lower than the £40/tonne gate fee seen from last year's survey.
- In last year's operator survey and waste contractor interviews, decreases in gate fees for AD facilities were reported; however these were not reflected in median results from local authorities at that time. The lag-time may be due to local authorities reporting contract gate fees which have been agreed a number of years ago. Therefore, this steep decline was anticipated, and has been reiterated in this year's waste contractor interviews, although there are differences between the nations.
- For England, the pattern of gate fees over the last three years has been of steady decline to the current £26/tonne – however the range is the same as last year. It should be noted that £0/tonne gate fees were reported only by a couple of local authorities.
- Waste operator interviews verified this finding, quoting figures as low as £15-20/tonne, reflecting increased capacity in the market (based on what is currently collected separately in a form suitable for AD treatment), although this does vary from region to region and impact can be very localised. In Wales, the gate fee has increased to £50/tonne, compared to last year's £42/tonne, potentially maintained by long term PFI contracts.
- London's median gate fee has increased to £26/tonne, from last year's figure of £12/tonne. However it should be noted that the sample for both years differs

significantly, and only 5 responses were received for each year, therefore the accuracy of this figure has to be questioned.

- Nearly half of responding local authorities believe that availability of capacity and competition between similar facilities are the greatest influencing factors on current AD gate fees. A third also believe that operating costs are the next most influential factor.
- The operators reported the median of municipal contract gate fees £37/tonne, which is notably higher than last year's reported figure of £15/tonne. This result does not reflect results seen from the local authority survey which generally has seen a decrease in gate fees.
- The operators reported commercial gate fees similar to last year's, with the most substantial change being a decrease in the contract median gate fee for packaged food waste from £35 to £25/tonne.
- Waste contractor interviews emphasised the significant difference between the AD market in England and that operating in Wales, and surmised that with low prices in England unless additional income streams can be found (e.g. Renewable Transport Fuel Obligation) closure of capacity in some regions may transpire.

Table 5: Summary of Anaerobic Digestion facility gate fees reported by local authorities (£/tonne) by nation (and London) (2016)

	Median	Mode	Range	Number of gate fees
UK	£29	£35 to £40	£0[11] to £65	64
England (incl. London)	£26	£25 to £30	£0 to £58	43
London	£26	£25 to £30	£24 to £54	5
Wales	£50	£10 to £15	£14 to £65	11

Note: A single response reported from Northern Ireland has not been provided separately in the table to prevent disclosure, although it has been included in the calculation of UK wide results.

- The median contracted gate fee for commercial waste, as reported by operators, was £22/tonne. As would be expected, packaged waste and that in polyethylene (PE) bags generally incurs higher gate fees (both £25/tonne) than unpackaged (£10/tonne) and food preparation waste (£18/tonne).
- 3 of the 59 reported gate fees were negative gate.

Incineration with energy recovery (EfW)

- As in previous years, results are reported for the UK as a whole, segregating results for facilities built before and after 2000.

[11] *Only 2 local authorities reported £0 gate fees (1 last year)*

- This year, the overall median gate fee reported by local authorities for EfW (incineration with energy recovery) is £83/tonne compared to £86/tonne last year.
- For pre-2000 EfW facilities, the median gate fee is £56/tonne, compared to £58/tonne last year. For post-2000 facilities, median gate fee is £91/tonne compared to £95/tonne last year.
- Looking at trends in gate fees over time, the pre 2000 gate fee has consistently hovered around £60/tonne. No authorities reported new contracts with pre 2000 facilities in 2016. For post 2000 facilities, median gate fees appear to have peaked at £100/tonne in 2014/15 and have been on a downward trend since then.
- Based upon the responses to this survey, in the period 2012 to 2016, a total of 27 new contracts are reported to have started. For pre 2000 facilities, new contracts were being signed between 2012 and 2015 at gate fees above the overall median gate fee suggesting an upward trend in pricing for new contracts – reflecting contemporary residual waste market prices. There were no new contracts reported in 2016. For post 2000 facilities, new contracts are being signed with gate fees lower than the median, suggesting a slow softening in gate fees. Eight authorities reported new contracts in 2016 for post-2000 facilities with median gate fee of £84/tonne.
- The range in reported gate fees is broad at £25 to £144 (£50-55 mode range). This is because there is a significant range of contractual and funding factors which can have an influence on gate fee charged including mode of financing (PFI/PPP or prudential borrowing), whether the asset reverts to the local authority or not, contract length, and whether the authority made a capital contribution. Operators reported that contracts are getting more sophisticated and more unique, therefore making it difficult to compare individual gate fee figures.
- Discussions with the waste management contractors suggested that, with most of the large municipal PFI facilities delivered, recently negotiated contract prices are typically lower than the medians reported from this survey due to competition from free capacity at PFI facilities and merchant sites, even for long term contracts. This is particularly true for non-contracted or relatively low volume municipal contracts, and areas well served with residual waste capacity e.g. the M62 corridor.

Table 6: Summary of Energy from Waste (Incineration with energy recovery) gate fees reported by local authorities 2016 (£/tonne)

Type of facility	Median	Mode	Range	Number of gate fees
All	£83	£50 to £55	£26 to £144	56
Pre-year 2000	£56	£50 to £55	£26 to £90	22
Post-year 2000	£91	£80 to £85	£50 to £144	34

Non Hazardous Landfill

- Across the UK the median landfill gate fee reported by local authorities in 2016 is £22/tonne, ranging from £5 to £64/tonne, and mode £15 to £20, excluding landfill tax and haulage costs. This is an increase on last year's median (£19/tonne).
- A nation by nation review suggests a potential upward trend in gate fees in England, whilst prices continue to reduce in Wales (£26/tonne v £27/tonne last year) and Northern Ireland (£12/tonne v £15/tonne last year).
- Regionally, within England, London has the highest gate fee at £32/tonne, lowest Yorkshire & Humber at £15.50/tonne.
- From the local authorities responding, 80% believe that landfill gate fees will increase over the next 12 months. Availability of capacity is cited as one of the main reasons for this.
- The waste contractor interviews confirmed that there is upward pressure on gate fees in some (unspecified) regions as landfills are closed before replacement capacity is available from alternate technologies such as EfW. In some regions, this will further increase gate fees in the short to medium term.
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Table 7: Summary of landfill gate fees reported by local authorities by nation (and London) 2016 (£/tonne)

Type of facility	Median	Mode	Range	Number of gate fees
UK (including £84.40 landfill tax, 2016/17 tax year)	£107	£99 to £104	£89 to £149	90
UK (excluding landfill tax)	£22	£15 to £20	£5 to £64	90
England (incl. London; excluding landfill tax)	£23	£20 to £25	£5 to £64	63
London (excluding landfill tax)	£32	£35 to £40	£27 to £37	7
Wales (excluding landfill tax)	£26	£25 to £30	£19 to £30	5
Northern Ireland (excluding landfill tax)	£12	£5 to £10	£8 to £49	4

Other Residual Waste Treatments

- This year, the survey questions regarding other residual waste treatments have been expanded, from just covering mechanical biological treatment (MBT) to include other processes which produce a refuse derived fuel (RDF) for energy recovery. This therefore covers residual waste MRFs ("dirty MRFs") and other RDF production technologies.
- Median gate fee for MBT from this year's survey is £88 compared to £85 last year, showing no significant market changes. Figures this year included 2 new contracts started in 2016, both at gate fees above the reported median.
- For Residual Waste MRFs a median gate fee of £94/tonne is reported, with 6 out of 21 respondents reporting a change of gate fee in the last year (2 because of a new contract and 4 due to inflation increase; averaged increase £3.10). For other

RDF processing a median gate fee of £98/tonne is reported with only 1 respondent (out of 9) reporting a change (inflation increase) in the last year.

- All of the processes surveyed produce a fibre or a solid fuel for subsequent energy recovery. Respondents were asked for the final destination of this RDF. In total 23 (51%) respondents have their RDF exported to continental Europe, 15 (33%) energy recovered in the UK in EfW plants or cement kilns, and 7 (16%) energy recovered at various destinations within the UK and abroad.
- For MBT, contract length ranged from 3 years to 28 years (23 responses), with 40% of reported contracts of 20 years or more. For Residual Waste MRFs the 14 contracts reported were relatively short term, with contract length ranging from 1 to 9 years, and for RDF processing 8 reported contracts were of short length (i.e. 8 years or less) with 2 reported at 27 years.
- For current pricing, respondents cite operating costs, competition and output end market prices (e.g. RSF/SRF) as key factors. The same factors were cited for future prices.
- Operators report rises in RDF export gate fees and expect further increases to >£100/tonne in the future for a number of reasons, including the impact of Brexit and the weak value of sterling (£) cutting into European operator margins and increasing Euro based transport costs. This will inevitably impact financially on UK based RDF producers who export to facilities in Europe. This, plus the impact of significant UK energy recovery capacity opening in the next few years (e.g. Ferrybridge 2 (570ktpa), Kemsley (550ktpa)), will potentially cut the volumes of RDF exported to Europe and increase demand for UK based energy recovery and landfill.

Table 8: Summary of Other Residual Waste Treatment gate fees reported by local authorities 2016 (£/tonne)

	Median	Mode	Range	Number of gate fees
MBT	£88	£80 to £85	£66 to £170	16
Residual Waste MRFs	£94	£90 to £95	£55 to £117	20
RDF production	£98	£95 to £100	£80 to £120	7

Wood waste recycling and recovery

- The median gate fee for recycling/recovery of all types of wood waste from HWRCs remains the same as last year's at £35/tonne for the UK as a whole.
- However, there is still considerable variation by nation which has also been identified in previous years' results. Northern Ireland's median remains unchanged from last year's £30/tonne year. Wales is the highest at £59/tonne (which is a considerable increase from last year's £46/tonne). The median in England has increased from £38/tonne last year to £45/tonne this year. However there is great variety within England itself, with a median of £23/tonne in the north compared to £40/tonne in the Midlands and £50/tonne in the south.
- The survey of operators showed commercial contracted gate fees are the lowest at £20/tonne, compared with £25/tonne for commercial spot gate fees and all

local authority sourced wood waste. Of the wood reprocessors surveyed, 14 of the 18 facilities send a biomass fuel output to energy recovery facilities. Of this, 45% goes exclusively to UK facilities, 21% to continental EU facilities, and the remainder (33%) goes to either UK or continental EU facilities.

- Operators think that the energy (biomass fuel) market will be the most influential factor on gate fees over the next twelve months, followed by competition from similar facilities and availability of capacity.
- Interviews with waste contractors revealed that increased biomass capacity (i.e. new facilities in construction) is anticipated to impact on gate fees and the wood waste market in a similar way to AD i.e. where there is new biomass capacity this will impact on the local market by lowering gate fees. This impact is seen already in the north east England regional gate fees generated by the survey. Therefore an area with a biomass plant would give a market price of £20-25/tonne or less; area without plant £35-45/tonne. Overall, waste contractors expect gate fees to reduce in the next few years. This over capacity problem may be mitigated, however, for plants which could switch to a solid recovered fuel (SRF).

Table 9: Summary of gate fees (£/tonne) for the recycling or recovery of all grades of HWRC wood waste reported by local authorities by nation (and London) (2016)

Nation	Median	Mode	Range	Response
UK	£35	£45 to £50	-£7 to £80	62
England (incl. London)	£45	£45 to £50	£10 to £80	33
London	£50	£45 to £50	£31 to £70	5
Wales	£59	£60 to £65	£25 to £73	10
Northern Ireland	£30	£30 to £35	Not reported	3

- Commercial contracted gate fees are the lowest at £20/tonne, compared with £25/tonne for commercial spot gate fees and all local authority sourced wood waste.

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Glossary

AD	Anaerobic Digestion
C&I	Commercial and Industrial
C&D	Construction and Demolition
Dirty MRF	Residual Waste MRF
EfW	Energy from Waste
HWRC	Household Waste Recycling Centre
IVC	In-Vessel Composting
MBT	Mechanical Biological Treatment
MHT	Mechanical Heat Treatment
MRF	Materials Recovery Facility
OAW	Open-Air Windrow
PFI	Private Finance Initiative
SRF	Solid Recovered Fuel
RDF	Refuse Derived Fuel
WCA	Waste Collection Authority
WDA	Waste Disposal Authority
WRA	Wood Recyclers Association

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1.0 Introduction

This report contains the findings of WRAP's tenth annual gate fees survey. It summarises the gate fees charged to local authorities for a range of waste treatment, recovery and disposal options. Some commercial gate fees are also reported, which have been provided by organic and wood waste treatment facility operators. The report also looks at the factors likely to influence future gate fees and includes comparisons to the previous year's results.

The aim of the gate fees survey 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. Therefore, the publication of indicative gate fee information, such as that contained within this report, should assist local authorities in making better informed decisions regarding waste management options. The year-on-year changes in gate fees are also valuable in informing the changes in the state of the market for different ways of managing waste.

The objectives of this year's survey were as follows:

- To capture the variation in gate fees by treatment/disposal option, by surveying local authorities that procure waste disposal services and service providers including Waste Management Companies (WMCs), operators of organic treatment facilities, and wood waste recyclers;
- To encompass a broad regional distribution of gate fees for facilities across England (including London as a separate region, and where possible, to carry out analysis on a regional basis within England), Wales and Northern Ireland;
- To refocus the scope of this year's survey by including a variety of residual waste treatments; and
- To assess market trends via a comparison of gate fees over time.

This report presents a review of gate fees for a range of options for the treatment and disposal of waste, together with a forward looking analysis of the factors likely to influence future gate fees.

2.0 Approach to this study

2.1 Scope

This survey compiles information regarding gate fees charged in 2016 for a variety of waste management services. The geographic scope covers the whole of the UK with the sub regional data by English region where sample size allows.

Requests for gate fee information were issued to local authorities, including all Unitary Authorities, Waste Disposal Authorities (WDAs), and Waste Collection Authorities (WCAs) within the UK. The waste management services included in the local authority survey questionnaire were:

- Materials Recovery Facilities (MRF);
- In-Vessel Composting (IVC);
- Anaerobic Digestion (AD);

- Energy from Waste (EfW);
- Non-hazardous landfill;
- Other residual waste treatment including Mechanical Biological Treatment (MBT) and Refuse Derived Fuel (RDF) manufacture; and
- Wood waste recycling and recovery.

This differs from last year's survey (and other previous surveys) as Open Air Windrow (OAW) composting was excluded (due to the apparent stabilisation of the market). Mechanical Biological Treatment (MBT) facilities were included within a new category entitled 'Other residual waste treatment', which was designed to incorporate the broader range of treatments, namely those which produce a Refuse Derived Fuel (RDF) output, to better understand the local authority residual waste market.

Changes were also made with regard to how the gate fee data for wood waste recycling and recovery were collected, with less focus on the grade of wood, and more emphasis placed on the output, especially that being used as a wood waste and/or biomass fuel.

Separate requests for information were also distributed to waste management operators in the following sectors:

- In-Vessel Composting;
- Anaerobic Digestion; and
- Wood waste recycling and recovery.

Organic waste treatment facilities accepting wastes supplied from commercial and industrial sources and/or municipal sources were also surveyed but in line with the local authority survey, OAW facility operators were not included. Again, this was because the OAW market is seen as mature and static, and gate fees reported in previous surveys have not varied significantly for a number of years.

In addition to the above, telephone or face-to-face interviews were held with representatives of major waste management companies. These interviews were flexible in their scope, in that they addressed all major waste service types offered by the company in question.

3.0 Survey response rates

3.1 Local authorities

A summary of response rates by authority type and the gate fee data by facility type that have been secured by this year's survey are shown in Table 10 below. For comparison purposes the same data reported in last year's survey are shown in Table 11.

Table 10: Local authority response rates 2016

	England				Scotland	Wales	NI	UK
	WDA	**WCA**	**Unitary**	***London***	**Unitary**			**Total**
No. of Local Authorities	32	230	91	*37*	32	22	11	418
No. of emails sent out	127	505	286	*90*	81	59	56	1,114
No. of Local Authorities responding	29 (91%)	100 (43%)	54 (59%)	*19 (51%)*	25 (78%)	15 (68%)	10 (91 %)	227 (54%)
No. responding with gate fee(s)	23 (72%)	26 (11%)	44 (48%)	*11 (30%)*	23 (72%)	13 (59%)	8 (73 %)	137 (33%)
No. of LAs that provided gate fee data for the following facilities:								
MRFs	99 (24%)							
IVC	46 (11%)							
AD	41 (10%)							
EfW (Incineration with Energy Recovery)	49 (12%)							
Landfill	73 (18%)							
Other Residual Waste Treatment	38 (9%)							
Wood	59 (14%)							

Response rates were slightly higher than last year, increasing from 222 to 232 local authorities overall. The number of local authority respondents in London increased slightly from 17 to 19. However the response rate of another target region, Wales, decreased slightly from 17 to 15.

Of WCA respondents, 43% completed the survey themselves, whereas the remaining 57% deferred to the relevant WDA. The total response rate in England increased from 169 (48%) to 183 (52%).

This year 33% of local authorities responded with usable gate fees in comparison to last year's 35%. However, data cleaning does remove some reported gate fees; the proportion of usable gate fees is reported in the results section for each facility type, showing an increase of usable data for most types from last year.

Table 11: Comparative Local authority response rates 2015

	England				Scotland	Wales	NI	UK
	WDA	**WCA**	**Unitary**	***London***	**Unitary**			**Total**
No. of Local Authorities	32	230	91	*37*	32	22	11	418
No. of emails sent out	142	659	353	*116*	90	68	56	1368
No. of Local Authorities responding	25 (78%)	87 (38%)	57 (63%)	*17 (46%)*	25 (78%)	17 (77%)	11 (100%)	222 (53%)
No. responding with gate fee(s)	19 (59%)	31 (13%)	48 (53%)	*8 (22%)*	22 (69%)	16 (73%)	11 (100%)	147 (35%)
No. of LAs that provided gate fee data for the following facilities:								
MRFs	74 (18%)							
OAW	98 (23%)							
IVC	56 (13%)							
AD	39 (9%)							
MBT	32 (8%)							
EfW (Incineration with Energy Recovery)	51 (12%)							
Landfill	78 (19%)							
Wood	73 (17%)							

Although the size of the local authority sample increased this year from 222 to 232, the mix of responding local authorities was significantly different from last year. This difference in sample is common for this survey. For instance, of the 232 local authorities responding in 2016, 155 also responded to the 2015 survey (67%), but 72 did not, meaning they were unique respondents to the 2016 survey. This difference in sample needs to be considered when comparing 2016 survey results to those reported last year.

3.2 Reasons for not supplying gate fee data

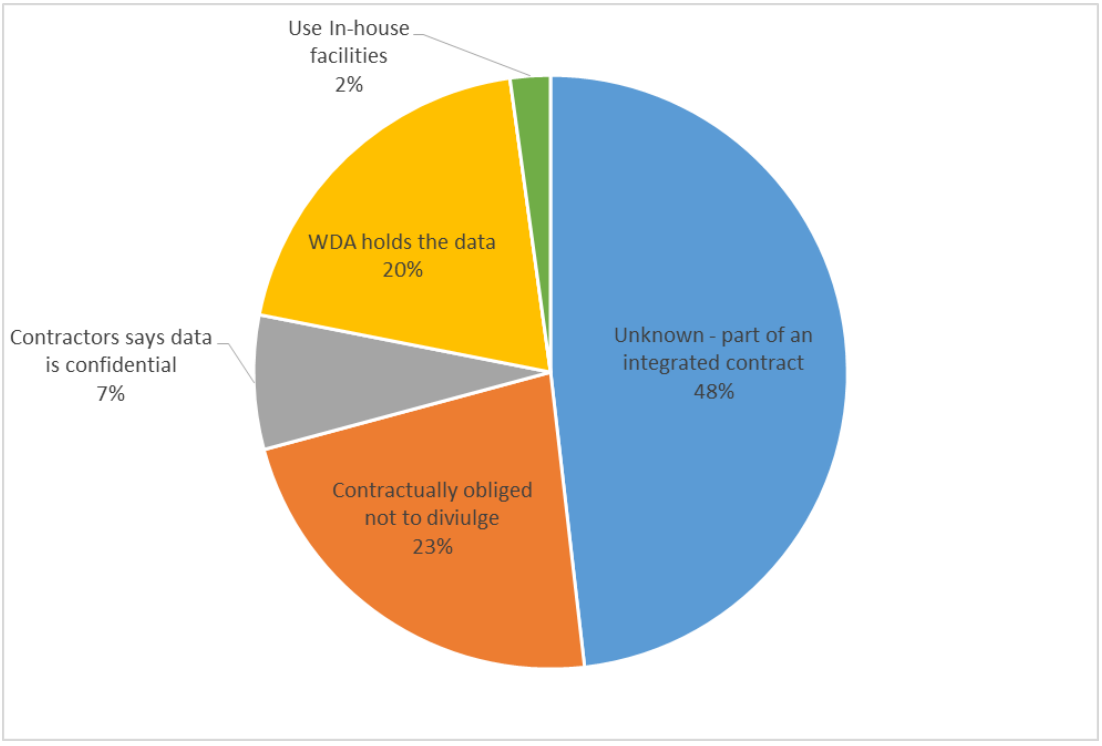
Every year there are a number of local authorities contacted that say they cannot supply gate fee data for a number of reasons. This year these reasons were captured as part of the survey and are presented as Table 12 following:

Table 12: Reasons given by local authorities not supplying gate fee data (count of responses, 2016 survey)

Survey Section	Unknown - part of an integrated contract	Contractuall y obliged not to divulge	Contractor says data is confidential	WDA holds the data	No gate fee - use In-house facilitie s	No of Responses with no gate fee data
MRF		7	3	1	2	23
AD	7	1		5		14
IVC	9	1		6		21
EfW	14	7	1	3		29
Landfill		2		1	1	13
Other Residual	14	7	1	4		33
Wood	22	6	5	7		53
Total	66	31	10	27	3	185

Note that not all local authorities that did not supply gate fee data provided a reason for not doing so. Overall results are presented in Figure 1:

Figure 1: Reasons given for local authorities not supplying gate fee data



Although data confidentiality was an issue with around a third of those respondents providing a reason, 68% of those not providing gate fees did so because they did not have access to gate fee data per waste management service type, either because they

paid a single price for an integrated contract, or because this information was held by their waste disposal authority (WDA). None of the respondents said that they were unwilling to provide data as it was being collected by a third party contractor to WRAP.

3.3 Organic operators survey

Although the overall number of respondents for both IVC and AD was lower than last year, the number who have provided useable gate fees has remained the same for IVC and increased (from 9 to 12) for AD. The response rates of the organic operators' survey are shown in Table 13.

Table 13: IVC and AD facility operator response rates 2016

	IVC	AD
No. of operators contacted in relation to each type of facility	76	83
Total No. of responses (and % operators that responded)	13 (17%)	15 (17%)
Total No. with usable gate fees (and % operators that responded)	11 (14%)	12 (14%)

The response rates achieved by this year's survey compared with previous years are shown in Table 14 below.

Table 14: Composting and AD facility operator response rates and (responses with usable gate fees) by survey year

Survey Year	IVC	AD
2016	13 (11)	15 (12)
2015	17 (11)	23 (9)
2014/15	14 (14)	12 (12)
2013/14	20(17)	32(10)
2012/13	10 (10)	14 (11)
2011/12	10 (7)	11 (9)
2010/11	9	3
2009/10	7	n/a
2008/09	13	n/a

3.4 Wood recyclers and reprocessors

A total of 66 wood recyclers, reprocessors and thermal processors were contacted to complete the survey. Of these 20 responses received, 17 provided some usable gate fee data. Of those providing usable gate fees, 4 were thermal processors and 13 were wood recyclers.

3.5 Interviews with waste management companies

Interviews were conducted at a senior level with 7 large waste management companies to test the draft conclusions from the local authority and operators' surveys. The interviews with these companies were timetabled such that the initial gate fee findings

of this year's surveys could be discussed. Discussions were open in scope, potentially including all aspects of the market that were relevant to gate fees in the UK.

4.0 Results and analysis

As with previous years, analysis of the cleaned survey data focussed upon generation of:

- Median gate fee i.e. the value in the midpoint of the distribution of gate fee data collected, with an equal probability of falling above or below it;
- Gate fee range i.e. the range between the minimum and maximum values obtained in the survey.

As introduced last year, the Mode has also been calculated, due to the problems of interpreting the sometimes large range between minimum and maximum figures collected. In this case, mode is the gate fee range (in £5 increments) which received the most responses in the survey data. Note that the median gate fee does not always reside within the mode range.

4.1 Materials Recovery Facilities (MRF)

To make the reported data compatible and comparable to that published last year, only gate fees for mixed recyclate streams of 4 materials or more have been included in the following analysis.

Of a total of 168 responses from 145 local authorities, 28 were rejected as streams containing less than 4 materials, 2 for being residual waste MRFs, 2 for local authority operated MRFs which gave £0 gate fees, and 21 for being part of integrated contracts. Of those 117 accepted responses (from 105 local authorities: 75 in England, 16 in Scotland, 6 in Wales and 8 in Northern Ireland), 94 included usable gate fee data upon which the following analysis was based. Of those not reporting gate fees, 7 reported that they were contractually obliged not to provide gate fees to third parties and 3 reported that their contractor has asked for gate fees not to be provided.

4.1.1 Current gate fees and trends

The high level results from the survey are given in Table 15. The median MRF gate fee (for MRF contracts which sort 4 materials or more) in the current survey is £15/tonne from 94 responses reported by local authorities, with a range of responses between -£77/tonne (i.e. an income) and £90/tonne.

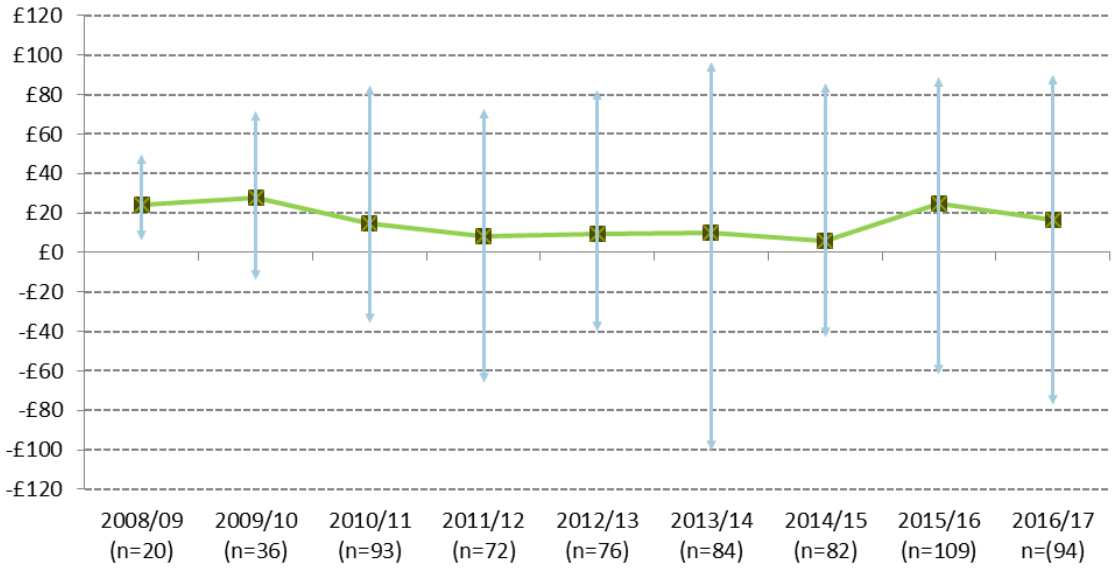
Table 15: MRF gate fees reported by local authority by nation and London (2016) (£/tonne)

Country/Region	Median	Mode	Range	Number of gate fees
UK	£15	£0 to £5	-£77 to £90	94
England (incl. London)	£13	£0 to £5	-£57 to £71	66
London	£33	£30 to £35	-£27 to £71	10

Northern Ireland	£54	£35 to £40	£35 to £74	7
Wales	£70	£80 to £85	-£20 to £84	7

The median gate fee is significantly less than the £25 reported last year for the UK as a whole, suggesting a year on year softening in gate fees. Figure 2 charts the median MRF gate fee over time from the 2008/9 survey, plus min-max ranges.

Figure 2: UK MRF gate fees reported by local authorities over time (£/tonne)



In last year's survey, 30 local authorities (28% of those responding) report not paying a gate fee for or earning an income from MRF services i.e. a zero or negative gate fee. In 2014 this was 38 authorities, 46% of those responding. This year this number is 20 local authorities (21% of those responding), with 6 authorities paying a zero gate fee and 14 authorities a negative gate fee (i.e. receiving an income). Of these, the majority have fixed rather than variable price gate fee contracts (65% v. 42% for all responses) and the majority are short term contracts (=<5 years, median 4.5 years) started between 2009 and 2016.

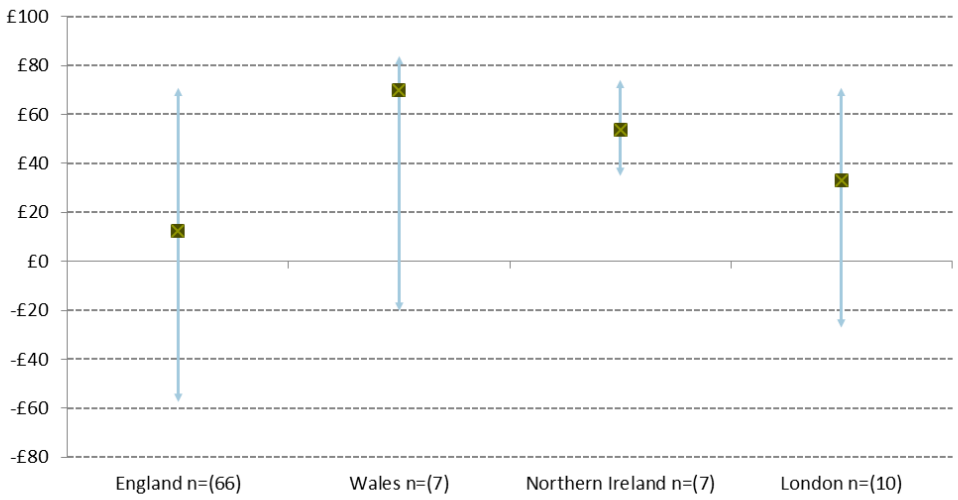
Most gate fees reported ranged from £0 to £5/tonne (i.e. the mode); the full range of responses was from -£77 to +£90. Reported gate fees are influenced by a wide range of factors including material mix, contract length and age, contractual pricing mechanism, annual tonnage, MRF technology employed, and the degree of risk share between the authority and contractor.

Of those local authorities reporting gate fees, 59% report a change in gate fee during 2016. A number of different payment mechanisms are described as the reason for this change, most related to a recalculation of gate fee on a monthly or quarterly basis based upon a change in the value of an agreed basket of recyclates, a change in the level of contamination (both increases and decreases in level of contamination reported), and/or change in operating costs. In addition, 27% of respondents report receiving annual rebates from the sale of recyclates. These rebates have been taken into account

in the calculation of the reported median gate fees. Median gate fee at UK level without these rebates included is £19/tonne.

Analysing median gate fee and gate fee range per UK nation (plus London) shows Wales and Northern Ireland experiencing higher median gate fees and minimum gate fees than England, potentially due to relative market size. For Wales in particular, this corroborates trends seen in previous years. Median gate fee and range per nation are shown in Figure 3.

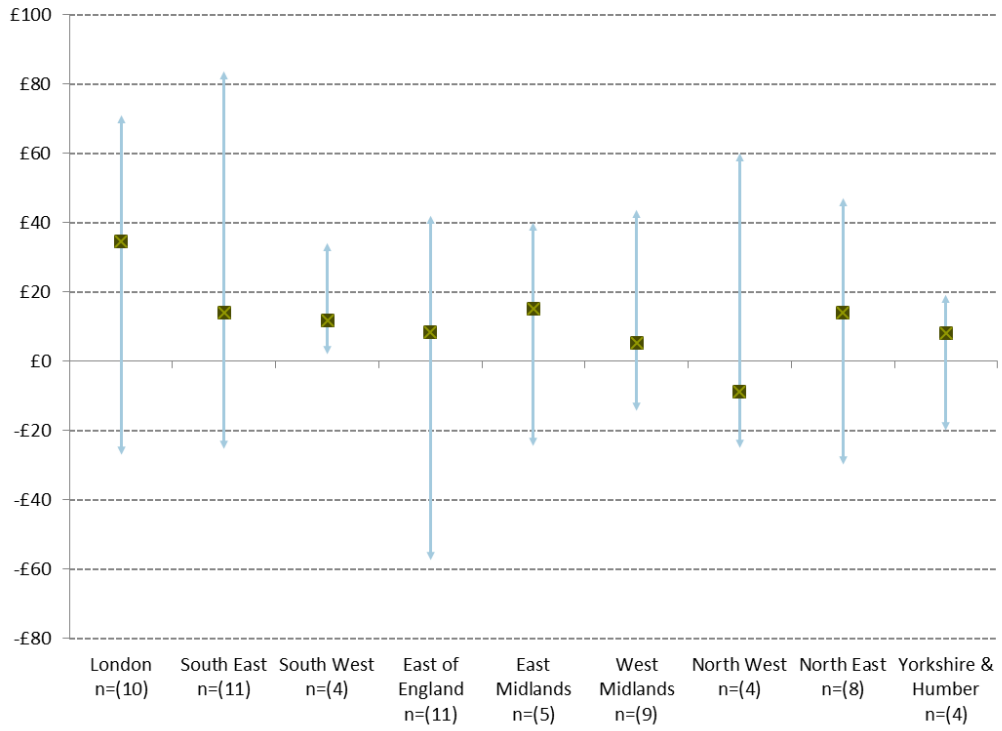
Figure 3: MRF gate fees reported by local authorities by nation and London (2016 in £/tonne)



To this end, reduced gate fees compared to last year, are evident in England only at £13/tonne (v. £15/tonne last year), whereas increases were noted in Wales at £70/tonne (£43/tonne last year) and Northern Ireland £54/tonne (£37/tonne last year).

Low response rates in some regions mean that direct comparisons between English regions are difficult. The data collected does show peaks in gate fee in London and the South East. Previous surveys have indicated stronger gate fees in the capital compared to other regions of England. Median gate fees and ranges per English region are shown in Figure 4.

Figure 4: MRF gate fees reported by local authorities by English region (2016 in £/tonne)



4.1.2 Gate fee by contract year

Of the 117 responses received, 99 (85%) report being under contract for MRF services. The data received from local authorities includes a considerable amount of historic (long term contract) data which does not necessarily reflect current market conditions. Median gate fees were therefore determined for each contract start year, from which trends could be identified. This shows an increasing trend in median gate fees for each contract start year from 2013. New contracts reported this year had a median gate fee of £29 (from 28 contracts). In last year's survey median gate fee for new contracts was £38 (from 20 contracts). Results are summarised in Table 16.

Table 16: MRF gate fees reported by local authorities by contract start year (from 2016 data in £/tonne)

Contract start year	Median	Mode	Range	Number of contracts started
2016	£29	£10 to £15	-£77 to £74	28
2015	£18	£10 to £15	-£25 to £84	15
2014	£13	£10 to £15	-£5 to £25	7
2013	-£19	N/A	-£43 to £4	2
Before 2013	£14	£10 to £15	-£57 to £75	19

Of the 106 authorities supplying responses to this question, 63 (59%) report a change in gate fee in 2016 (55% in 2015), with 23 (6 in 2015) reporting a decrease and 25 (48 in 2015) an increase in gate fees, again suggesting some softening in gate fees between

2015 and 2016. Of those reporting a change in gate fee and providing a reason, 14 (22%) report the signing of a new contract, 9 (14%) report fee change as result of a regular contractual review, 18 (29%) changes in commodity prices, 6 (10%) a change in the level of contamination, and 12 (19%) contractual RPI increases. A single authority reports gate fee change due to an increase in processing costs, and 3 (5%) gave no explanation. These results are summarised in Table 17.

Table 17: Changes in MRF gate fee reported by local authorities in 2016 with reasons

Change in Gate Fee in 2016	Responses	Reason	Responses
Yes	63 (60%)	New contract	14 (22%)
		Contractual regular review	9 (14%)
		Commodity Price Change	18 (29%)
		Change in level of contamination	6 (10%)
		RPI	12 (19%)
		Increased processing costs	1 (2%)
		None	3 (5%)
No	43 (40%)		
Total	106		63

4.1.3 Contract review

Reported contract length covers a wide range, although the majority (73 responses, 63% compared to 53% in 2015 survey) are short term i.e. 5 years or less, suggesting a continued trend in shortening of contract lengths, with 22 responses (19% compared to 21% in 2015 survey) between 6 and 10 years. Nevertheless, there are some long term contracts reported with 15 responses (14%) giving contract lengths over 20 years.

Table 18: MRF contract length (2016)

Contract length (Years)	Count	Proportion of count
<1	0	0%
1	10	9%
2	26	23%
3	15	13%
4	8	7%
5	14	12%
6	5	4%
7	6	5%
8	2	2%
9	2	2%

Contract length (Years)	Count	Proportion of count
10	7	6%
15	3	3%
18	2	2%
23	2	2%
24	2	2%
25	8	7%
>25	3	3%

Note: percentages do not add to 100% due to rounding.

4.1.4 Materials collected and sorted

Respondents reported the materials collected and sent to MRFs for sorting. Almost all report the collection of key recyclates such as cans, plastic bottles, card and paper, with a significant proportion (92%) including aerosols. This mirrors the results obtained in last year's survey.

Of those responding 69% report collecting glass in their comingled collections (65% in 2015). The range and frequency of local authority responses per material type is shown in Table 19.

In last year's survey, significant drops in the value of key recyclate types were cited as instrumental in an overall increase in gate fees to a median of £25/tonne. This year commodity prices have recovered somewhat from an end of 2015 minimum. From WRAP data, price changes for key material types from January 2016 to January 2017 are also given in Table 19. These show increases such as +125% for mixed cans and +55% for plastic bottles, only glass and some plastic mixes showing price reductions over the same period.

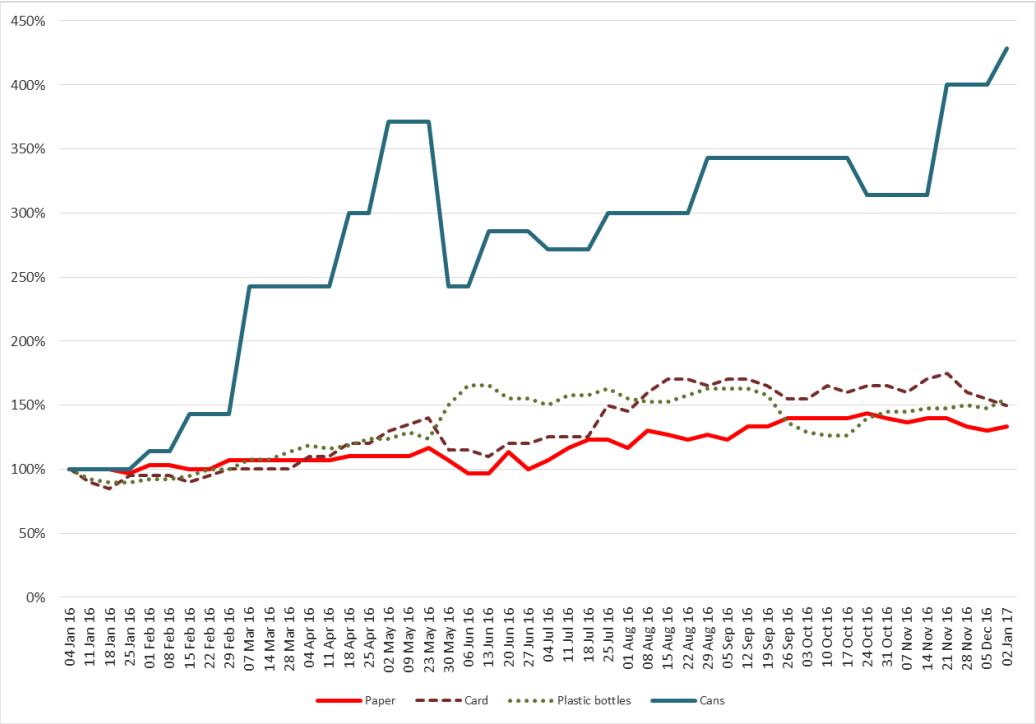
Table 19: Range and frequency of materials being sorted at MRFs reported by local authorities in 2016, with material prices changes in 2016 per key recyclate material (as %)

Material	Number of times material is cited as part of MRF gate fee	% of responses	Materials price change 2016[1]
Cans (mixed cans)	95	100%	+125%
Plastic bottles (clear PET)	94	99%	+55%
Card (mixed paper and board exc. drinks cartons)	88	93%	+50%
Aerosols	87	92%	
Paper (NEWS and PAMS)	84	88%	+33%
Drinks cartons e.g. Tetrapak	72	76%	
Glass (clear glass)	66	69%	-38%
Foil	66	69%	
Plastic: non-bottle rigids (mixed rigids)	60	63%	-28%
Plastic other (mixed polymers)	35	37%	+65%
Plastic film (LDPE film)	33	35%	+20%
Other	12	13%	

Key:
1 Source of data: WRAP Materials Pricing Report, comparing first week Jan 2016 to first week Jan 2017

Plotting WRAP sourced key recyclate prices from January 2016 to January 2017 (as in Figure 5) clearly illustrates a gradual increase in prices for most key recyclate materials during 2016.

Figure 5: Selling prices of key recyclates January 2016 to January 2017 (where January 2014 price = 100%) Source: WRAP Materials Pricing Report



4.1.5 Key influencing factors

As part of the survey, local authority officers were asked to select, from pre-defined lists, up to three factors that they felt were important in influencing current and future gate fees (respondents could select 'other' if they wished to add additional comments not covered in the lists). All percentages quoted here are based on the total number of local authorities that responded to these questions.

Of factors influencing gate fees, commodity prices, input material quality and operating costs are deemed those having most impact on gate fees now and in the future, mirroring the responses in last year's survey. Of the 118 respondents expressing an opinion, 78 (66%) expect gate fees to increase in the future (14% expect a decrease, 20% no change) – this compares to 80% of respondents in last year's survey. Results are summarised in Table 20 and Table 21 following.

Table 20: Key influencing factors – current MRF pricing (indicated by local authority survey – 118 respondents)

Influencing factor	No. of responses	%
Product/commodity end market prices	86	73%
Quality of input materials	59	50%
Operating costs	40	34%
Competition between similar facilities	16	14%
Complying with the MRF Code of Practice	15	13%

Influencing factor	No. of responses	%
Cost of managing residues	15	13%
Availability of capacity	14	12%
Inflation (RPI, RPIX)	11	9%
Contractual changes, other than inflation increase	9	8%
Other	9	8%
Legislative requirements	7	6%
Investment/capital costs	4	3%
Competition from alternative treatment options	1	1%
Government incentive schemes e.g. renewables	1	1%

"Other" responses included increased transport costs and the fall of sterling (£) since the Brexit referendum.

Table 21: Key influencing factors – future MRF pricing (indicated by local authority survey – 118 respondents)

Influencing factor	No. of responses	%
Product/commodity end market prices	95	81%
Quality of input materials	69	58%
Operating costs	38	32%
Competition between similar facilities	15	13%
Legislative requirements	15	13%
Cost of managing residues	13	11%
Availability of capacity	12	10%
Complying with the MRF Code of Practice	12	10%
Inflation (RPI, RPIX)	10	8%
Investment/capital costs	10	8%
Competition from alternative treatment options	3	3%
Other	2	2%
Government incentive schemes e.g. renewables	1	1%
Contractual changes, other than inflation increase	0	0%

Of the "Other" responses, 4 respondents cited the Brexit referendum as potentially having an impact on gate fees in the future.

4.1.6 Waste contractor interviews

In the 2015 survey, waste management company interviews identified a number of factors which contributed to increasing MRF gate fees at that time, including the collapse of commodity prices and the need for more risk sharing i.e. pushing more of the risk onto the client authority.

Waste contractor interviews for this survey confirm a strengthening in recyclate commodity pricing and an overall drop in MRF gate fees in 2016, with new contracts agreed at around £30/tonne. Contractors also talked of a trend to risk sharing in new contracts, based on an operating cost + rebate on income from materials model.

The relatively high gate fees in Wales are reported to reflect contamination issues and the requirement to collect waste paper, plastic, metal and glass separately (since 1st January 2015) thus lowering demand for, and therefore volume through, local MRFs.

It is expected that MRF gate fees will continue to fluctuate year-on-year, dictated by changes in commodity prices.

4.2 In-vessel composting (IVC)

Of 73 responses from 67 local authorities (46 of which provided gate fees), a number were rejected on clean-up leaving acceptable responses from 44 authorities (20 England, 12 Scotland, 6 Wales, 6 Northern Ireland), from which 65 gate fees were used to calculate the median. As in previous years, IVC gate fees are reported by waste feedstock type.

4.2.1 Current gate fees and trends

The median for all types of feedstock being sent to IVC facilities in 2016 is £43/tonne. However there are differences depending on the type of feedstock, as shown in Table 22 and Figure 6, with a median gate fee for mixed food and green waste of £46/tonne.

Table 22: IVC gate fees provided by local authorities by waste material type (2016 in £/tonne)

Waste type	Median	Mode	Range	Responses
All materials (UK)	£43	£55 to £60	£18 to £67	65
Mixed food & green waste	£46	£45 to £50	£28 to £60	37
Food waste only	£55	£55 to £60	£25 to £67	10
Green waste only	£29	£25 to £30	£18 to £45	17

No median figures were generated for mixed food, green and card waste, mixed green waste and card, and for 'other' as only one response for the first was received, and no responses for the latter two. This could mean that fewer local authorities are sending mixed food waste, green waste & card to IVC facilities, which has been corroborated by feedback from operators.

Of the feedstocks able to be reported, food waste is the most expensive at £55/tonne, followed by mixed food and green waste at £46/tonne, and £29/tonne for green waste. For all the specific material types, the median falls within the mode range. This is not the case when considering all materials together, which demonstrates the wide variation in reported gate fees. This is unsurprising as the markets for each material type can vary; as food waste gate fee will be influenced by the local availability of anaerobic digestion capacity, and green waste on availability of local open air windrow (OAW) capacity.

Figure 6: IVC gate fees reported by local authorities by material stream in 2016 (£/tonne)

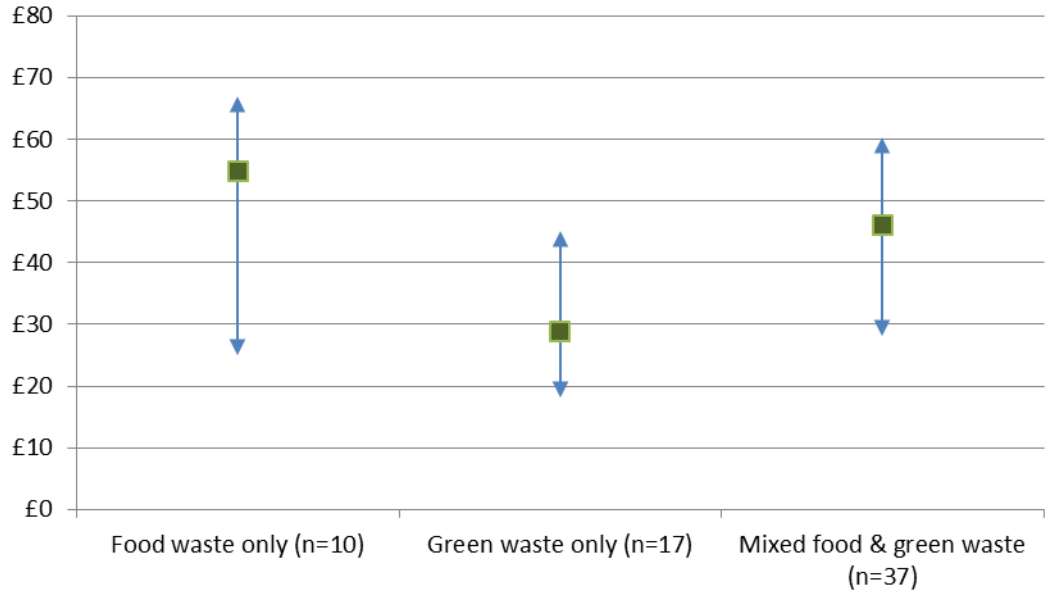


Figure 7 shows how the gate fees for the three types of reported feedstock have changed since 2009/10. The following changes can be seen:

- The median gate fee for IVC using mixed food and green waste is £46/tonne, which is very similar to the four years previously. The range in gate fees has reduced for a second year, from £22/tonne to £61/tonne last year, to £28/tonne to £60/tonne this year. This could be an indication of a stabilising market or a market dependent upon contracted business.
- The median for food waste has increased since last year, from £45/tonne to £55/tonne. Of responses received for gate fees for food waste only, 5 of the 10 were from Scotland, where the market is different, partially due to the Waste (Scotland) Regulations 2012 boosting food waste collections and therefore giving a much better balance of demand to capacity.
- The median for green waste only, has decreased from £37/tonne to £29/tonne. This brings the gate fee down to levels seen in the survey results from three years ago, and is also more in line with gate fees seen for OAW composting facilities (the survey showed a median of £24/tonne last year).

Figure 7: IVC gate fees reported by local authorities over time by material stream (2016 in £/tonne)

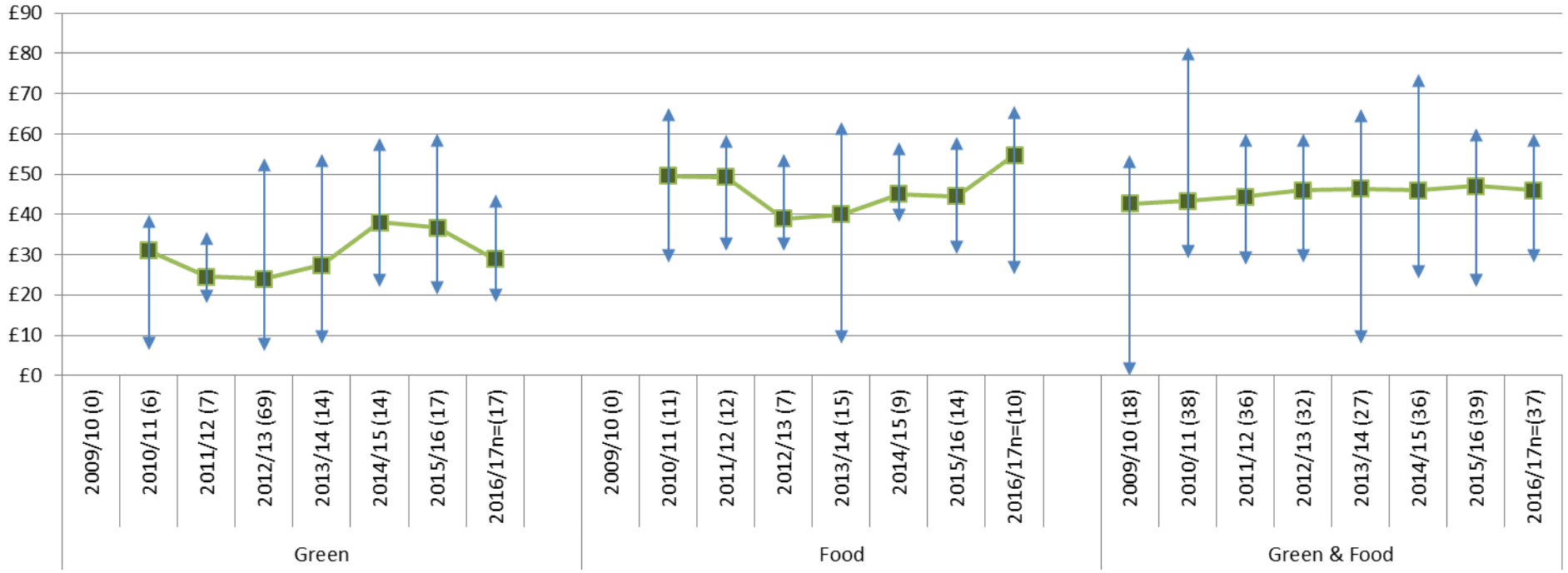
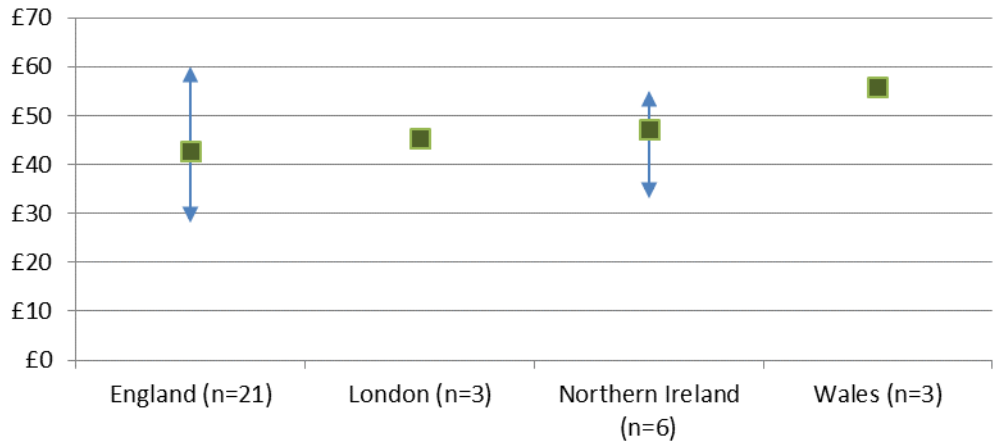


Figure 8 shows the difference between nations for gate fees for mixed green and food waste. The number of responses for some nations was relatively low and so should be used with caution. Gate fees in England have fallen from £47/tonne last year, to £43/tonne, whilst in Northern Ireland gate fees have remained the same at £47/tonne. Figures in London are slightly higher than the English median at £45/tonne. The Welsh gate fee was substantially higher at £56/tonne, which is a sizeable increase from last year's £31/tonne, which mirrors AD pricing trends in the nation (see section 4.3.1). However, both years have only had samples of three authorities, and the authorities which responded to this question have differed between the years, and therefore this may be representative of a different sample, rather than specific trends.

Figure 8: IVC gate fees reported by local authorities for mixed green and food waste, by nation (and London) for 2016 (£/tonne)



4.2.2 Contract review

Of those providing data, 74% of the authorities report sending material to an IVC facility under a contract, while 11% said they are not using a contract at present; 13% of the authorities did not provide a response.

Of those under contract, 73% of the authorities provided start and end dates, which has allowed for calculation of the contract length. Table 23 demonstrates that 49% of contract gate fees are associated with contracts of a duration of 5 years or less, 61% were for a duration of 10 years or less, and 90% being 15 years or less.

Table 23: IVC contract lengths (for which contract length data was submitted)

Contract length (years)	Number of contracts	
	No.	%
1	2	5%
2	4	10%
3	5	12%
4	7	17%
5	2	5%

Contract length (years)	Number of contracts	
	No.	%
6	1	2%
7	1	2%
9	1	2%
10	2	5%
11	3	7%
12	2	5%
14	2	5%
15	5	12%
18	1	2%
25	2	5%
25	1	2%
Total	**41**	**100%**

There is no clear trend in gate fees based upon the year the contract started. However, Table 24 does show that, based on data provided in this year's survey, the median for contracts started in both 2015 and 2016 is £35/tonne, which is less than the overall median, suggesting a softening of gate fees.

Table 24: IVC gate fees reported by local authorities based on contract start year (£/tonne)

Contract Start Year	Median Gate Fee per tonne	No of contracts started
2016	£35	12
2015	£35	6
2014	£47	10
2013	£28	5
Before 2013	£45	17

Of the local authorities supplying responses, 38% report that their gate fees had changed in the last 12 months. Two thirds were accountable to inflation/indexation, and a quarter were new contracts, contract negotiation or contract extensions. There were no clear patterns, with some gate fees decreasing whilst others increased.

4.2.3 Key influencing factors

Table 25 shows that over 40% of the local authority respondents think that operating costs and quality of input materials are the most influential factors on their existing gate fees. This is followed by availability of capacity.

Table 25: Factors influencing current IVC gate fees (indicated by local authority survey – 53 respondents)

Factor influencing current gate fees	Response Rates	
	No.	%

Factor influencing current gate fees	Response Rates	
	No.	%
Operating costs	23	43%
Quality of input materials	23	43%
Availability of capacity	17	32%
Legislative requirements	14	26%
Competition between similar facilities	13	25%
Competition from alternative treatment options	11	21%
Product/commodity end market prices	10	19%
Inflation (RPI, RPIX)	7	13%
Investment/capital costs	6	11%
Contractual changes, other than inflation increase	5	9%
Government incentive schemes e.g. renewables	2	4%
Cost of managing residues	1	2%

Of the factors that local authorities identify as being most likely to influence future gate fees (see Table 26), availability of capacity is seen to be the most influential, followed by competition from alternative treatment options, then legislative requirements and operating costs.

Table 26: Factors most likely to influence future IVC gate fees (indicated by local authority survey – 52 responses)

Factor influencing future gate fees	Response rates	
	No.	%
Availability of capacity	22	42%
Competition from alternative treatment options	18	35%
Legislative requirements	16	31%
Operating costs	16	31%
Competition between similar facilities	15	29%
Quality of input materials	15	29%
Product/commodity end market prices	10	19%
Contractual changes, other than inflation increase	6	12%
Inflation (RPI, RPIX)	6	12%
Cost of managing residues	3	6%
Investment/capital costs	3	6%
Government incentive schemes e.g. renewables	1	2%

Of the 52 local authorities expressing an opinion, 56% think that gate fees will increase in the future, compared to 27% that think they will stay the same and just 17% that they will decrease.

4.2.4 Survey of IVC operators

A total of 13 responses were received from IVC operators, providing 109 usable gate fees (including both contract and spot market gate fees, for both municipal and commercial waste sources). Table 27 shows a summary of the contract and spot gate fees provided by IVC facility operators for both municipal and commercial waste sources.

As reported by the operators, all gate fees for all waste feedstock types have decreased. For example, for the median for all waste streams under contract has decreased from £43/tonne to £39/tonne. The median spot gate fee for all waste streams has decreased substantially from £55/tonne to £28/tonne.

Table 27: Contract and spot IVC gate fees, for both municipal and commercial waste, provided by facility operators (2016, £/tonne)

Feedstock	No. of gate fees	Gate fee (£/tonne)	
		Median	Range
CONTRACT GATE FEES			
All waste streams	67	£39	£12 to £142
Mixed food & green waste	15	£38	£30 to £50
Mixed food, green waste & card	0	No data	No data
Food waste only	20	£41	£12 to £60
Green waste only	26	£26	£18 to £60
Other	6	Not reported	Not reported
SPOT MARKET GATE FEES			
All waste streams	44	£28	£0 to £70
Mixed food & green waste	5	£32	£32 to £45
Mixed food, green waste & card	0	No data	No data
Food waste only	19	£45	£0 to £60
Green waste only	17	£25	£20 to £28
Other	3	Not reported	Not reported

Municipal waste gate fees reported by operators

Table 28 shows the municipal gate fees provided by the operator survey. The median of £36/tonne for all feedstock types under contract is lower than the £43/tonne reported from the local authority survey. For individual feedstock types:

- For mixed food and green, operators cited a lower rate of £37/tonne, than the authorities did at £46/tonne.
- For food waste the operators survey median was £39/tonne and so lower than that cited by local authorities which was £55/tonne.
- For green waste only, operators cited a figure of £25/tonne for green waste under contract which is slightly lower than the £29/tonne cited by local authorities.

All spot gate fees reported by operators are lower than the contract gate fees, with the exception of food waste.

Table 28: Contract and spot IVC gate fees, for municipal waste, provided by facility operators (2016, £/tonne)

Feedstock	No. of gate fees	Gate fee (£/tonne)	
		Median	Range
CONTRACT GATE FEES			
All waste streams	44	£36	£12 to £142
Mixed food & green waste	12	£37	£30 to £50

Feedstock	No. of gate fees	Gate fee (£/tonne)	
		Median	Range
Food waste only	12	£39	£12 to £45
Green waste only	17	£25	£12 to £45
Other	3	Not reported	Not reported
SPOT MARKET GATE FEES			
All waste streams	30	£28	£0 to £55
Mixed food & green waste	5	£32	£32 to £45
Food waste only	13	£45	£0 to £55

The discrepancy between gate fees specified by local authorities and operators may be due to local authorities reporting contract gate fees which have been agreed a number of years ago, and may not reflect the current market situation. Table 24 provides some analysis regarding what years the contracts of participating local authorities commenced, and only 24% of the contracts commenced in 2016. Contracts started in 2015 and 2016 have gate fees significantly lower than the current median (i.e. £35/tonne compared to £43/tonne).

During interviews with the waste contractors (see Section 4.2.6), some mentioned that the trend was for local authorities to reduce their treatment costs by collecting food and green waste separately, therefore not needing to pay the (generally) higher gate fees for IVC and instead opting for AD and OAW. These operator figures perhaps mirror this, in showing a decrease in contract gate fees for mixed food and green waste, as they lower their prices to attract the required feedstock to meet the facilities' capacities.

Commercial waste gate fees reported by operators

Only 36 commercial gate fees from 6 operators were provided, and therefore limited analysis has been carried out, due to the small sample size. Therefore Table 29 shows gate fees summarised as per gate fee type, as opposed to by feedstock type. Overall, spot gate fees are lower than contract gate fees.

Table 29: Contract and spot IVC gate fees, for commercial waste, provided by facility operators (2016, £/tonne)

Gate fee type	No. of gate fees	Gate fee (£/tonne)	
		Median	Range
Contract	23	£44	£20 to £142
Spot	13	£28	£0 to £70
Overall	36	£44	£0 to £142

4.2.5 Key influencing factors - operators

The key factor influencing current gate fees cited by operators was competition from similar facilities and availability of capacity, as shown in Table 30. Operating costs and quantity of input materials then follow with the same number of responses.

Table 30: Factors influencing current IVC gate fees (indicated by IVC operators surveyed – 8 responses)

Factor influencing current gate fees	Response rates	
	No.	%
Competition from similar facilities	4	50%
Availability of capacity	4	50%
Operating costs	3	38%
Quantity of input materials	3	38%
Legislative requirements	2	25%
Cost of managing residues	2	25%
Competition from alternative treatment options	1	13%
Product/commodity end market prices	1	13%
Government incentive schemes e.g. renewables	1	13%
Inflation (RPI, RPIX)	0	0%
Investment/capital costs	0	0%
Other (please state below)	0	0%

Table 31 shows that operating costs was the biggest influencing factor on future gate fees. Availability of capacity and competition from similar facilities were the next highest scoring options.

Table 31: Factors most likely to influence future IVC gate fees (indicated by IVC operators surveyed – 8 responses)

Factor influencing future gate fees	Response rates	
	No.	%
Operating costs	6	75%
Availability of capacity	4	50%
Competition from similar facilities	3	38%
Quantity of input materials	2	25%
Competition from alternative treatment options	2	25%
Legislative requirements	1	13%
Inflation (RPI, RPIX)	1	13%
Government incentive schemes e.g. renewables	1	13%
Cost of managing residues	1	13%
Product/commodity end market prices	0	0%
Other (please state below)	0	0%
Investment/capital costs	0	0%

Of those responding, 50% of the operators think that gate fees will increase, with 25% saying they will decrease and the remaining 25% saying they that think they will remain the same.

4.2.6 Waste contractor interviews

Interviews with waste management contractors confirm the survey results and observed trends. They reported that the sector has ongoing capacity issues as the green/food waste mix is a declining waste stream, with local authorities looking at further segregation to be able to save money by sending food waste to AD (which they anticipate will decline even further to £20/tonne) and green waste to OAW (last year reported as £24/tonne) or by dropping food waste collection altogether to be able to send all collected organic material (i.e. green waste only) to OAW. It should be noted, however, that WRAP's work with local authorities suggests that the lower treatment costs does not necessarily offset the cost of rolling out additional separate food waste collection services.

The common opinion was that IVC gate fees will decline towards £40/tonne, or lower, in the next few years as operators try to fill free capacity; a downward trend but less dramatic than for AD.

4.3 Anaerobic Digestion (AD)

Of a total of 63 responses from 54 local authorities (41 of which provided one or more gate fees), a number were rejected on clean-up leaving acceptable responses from 39 local authorities (21 England, 8 Scotland, 9 Wales, 1 Northern Ireland) from which 64 gate fees were used to calculate the median.

4.3.1 Current gate fee and trends

Table 32 and Figure 9 show the median AD gate fee is £29 /tonne this year, which is significantly lower than the £40/gate fee in last year's survey. The range is similarly large as last year, again with some local authorities citing £0/tonne gate fees.

Table 32: AD gate fees reported by local authorities by nation (and London) in 2016 (£/tonne)

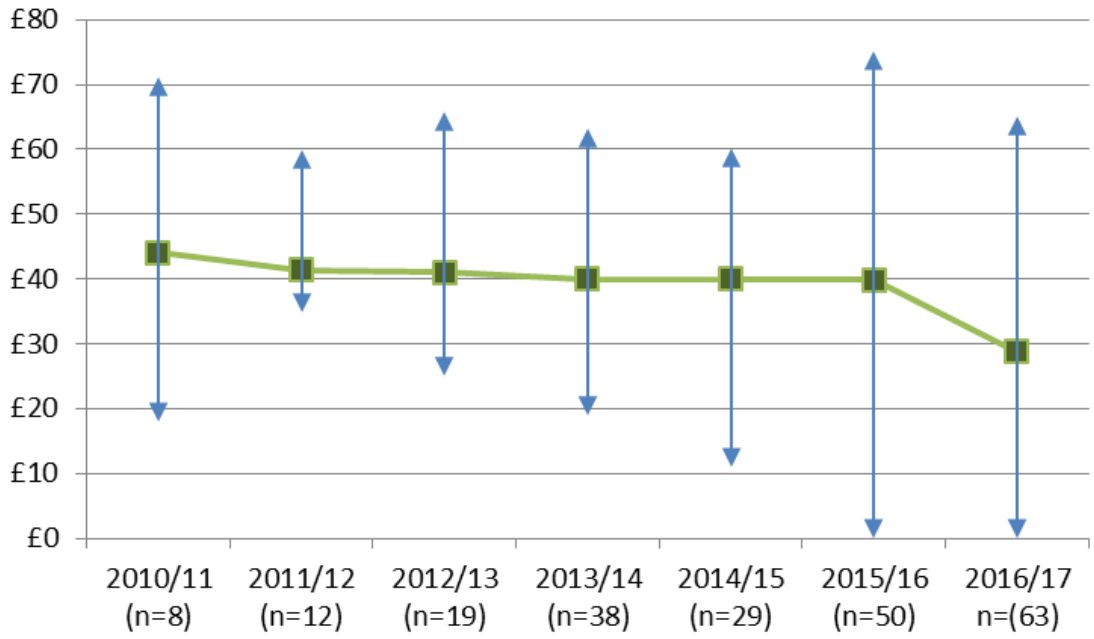
	Median	Mode	Range	Responses
UK	£29	£35 to £40	£0 to £65	64
England (incl. London)	£26	£25 to £30	£0 to £58	43
London	£26	£25 to £30	£24 to £54	5
Wales	£50	£10 to £15	£14 to £65	11

Note: A single response reported from Northern Ireland has not been provided separately in the table to prevent disclosure, although it has been included in the calculation of UK wide results.

The median AD gate fee reported over time is summarised in Figure 9. This shows a very steep decline over the last twelve months, in addition to an overall decreasing trend since 2010/11. The range has also widened over time, and the fact the median does not fit within the modal range (£35/tonne to £40/tonne) reiterates that there is wide variability across the UK in AD gate fees.

In last year's operator survey and waste contractor interviews, decreases in gate fees for AD facilities were reported, however these were not reflected in the median results from local authorities at that time. The time-lag seen in decreases in gate fees reported by local authorities may be due to local authorities reporting contract gate fees which have been agreed a number of years ago. Therefore this steep decline was anticipated, and has been reiterated in this year's waste contractor interviews and operators survey data, although there are regional differences.

Figure 9: AD gate fees reported by local authorities over time for the whole of the UK (£/tonne)



For England, the pattern over the last three years has been of steady decline (£35/tonne in 2014/15) to the current £26/tonne – however the range is the same (£0[12] - £58/tonne). Waste operator interviews verify these findings, quoting figures as low as £15-20/tonne, reflecting either a possible over capacity in the market or conversely low capture of the unavoidable food waste available for AD[13]. However, results from this year's operator survey actually show an increase in municipal gate fees (these results should be used with caution due to very small sample size).

In Wales, the median gate fee has also increased to £50/tonne, compared to last year's £42/tonne. Comments from interviews suggest that PFI contracts are artificially maintaining prices in Wales.

London's median gate fee has increased to £26/tonne, from last year's figure of £12/tonne. However it should be noted that the sample for both years differs

[12] *It should be noted that £0/tonne gate fees were reported by only 2 local authorities.*

[13] *WRAP research suggests theoretically there is nearly 4.0m tonnes of unavoidable food waste, 7.3mt of house hold food waste.*

significantly, and only 5 responses were received for each year, therefore the accuracy of this figure has to be questioned.

4.3.2 Contract review

Of those responding, 79% of the authorities report sending material to an AD facility under a contract, while 15% said they are not using a contract at present; 7% of the authorities did not provide a response.

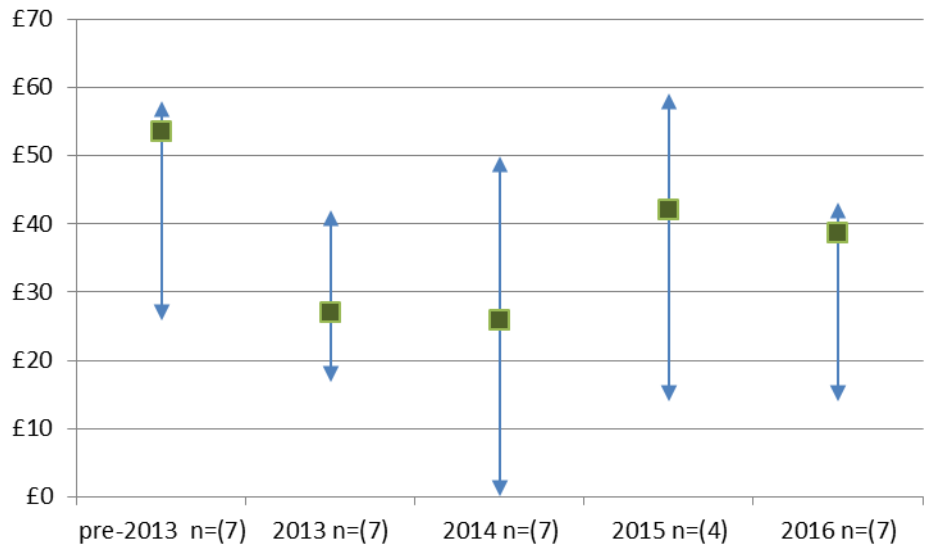
Of those under contract, 63% of the authorities provided start and end dates, which has allowed for calculation of the contract length. Table 33 demonstrates that 50% of contract gate fees are associated with contracts of a duration of 5 years or less, 67% were for a duration of 9 years or less, and 90% being 15 years or less.

Table 33: AD contract lengths 2016

Contract length (years)	Number of contracts	
	No.	%
1	3	10%
2	3	10%
4	8	27%
5	1	3%
6	1	3%
7	2	7%
8	1	3%
9	1	3%
12	1	3%
14	2	7%
15	4	13%
19	1	3%
20	1	3%
23	1	3%
Total	**30**	**100%**

Figure 10 shows the impact of contract start dates on AD gate fees. No clear patterns can be determined.

Figure 10: Impact of contract start date on AD gate fees reported by local authorities (£/tonne)



4.3.3 Key influencing factors

Table 34 shows that nearly half of local authorities believe that availability of capacity and competition between similar facilities, are the greatest influencing factors on current AD gate fees. A third also believe that operating costs is the next most influential factor. These two factors have reversed in their order of importance compared to last year.

Availability of capacity and competition between similar facilities are both considered to be the most influential factors on gate fees in the future, with 30% also believing legislative requirements will also have an impact.

Interestingly, as per last year, the majority of authorities (42%) think that gate fees are likely to remain the same over the next twelve months; 33% think they will increase and 25% think they will decrease.

Table 34: Factors influencing current AD gate fees (indicated by local authorities surveyed – 46 Reponses)

Factor influencing current gate fees	Response rates	
	No.	%
Availability of capacity	21	45%
Competition between similar facilities	21	45%
Operating costs	15	32%
Government incentive schemes e.g. renewables	12	26%
Competition from alternative treatment options	9	19%
Investment/capital costs	9	19%

Factor influencing current gate fees	Response rates	
	No.	%
Quality of input materials	9	19%
Contractual changes, other than inflation increase	6	13%
Inflation (RPI, RPIX)	6	13%
Legislative requirements	5	11%
Product/commodity end market prices	5	11%
Cost of managing residues	2	4%
Other	2	4%

Table 35: Factors most likely to influence future AD gate fees (identified by local authorities surveyed – 40 responses)

Factor influencing future gate fees	Response Rates	
	No.	%
Competition between similar facilities	25	54%
Availability of capacity	19	41%
Legislative requirements	14	30%
Government incentive schemes e.g. renewables	13	28%
Operating costs	13	28%
Competition from alternative treatment options	9	20%
Product/commodity end market prices	7	15%
Investment/capital costs	6	13%
Inflation (RPI, RPIX)	5	11%
Quality of input materials	5	11%
Contractual changes, other than inflation increase	4	9%
Cost of managing residues	3	7%

4.3.4 Survey of AD operators

Responses were received from 14 AD facility operators, at 15 different sites. The majority of these figures were provided by facilities in England, with a small number of facilities from Wales and Scotland. This is a small sample and therefore the results cannot claim to be truly representative of the market. From these operators, a total of 172 usable gate fees were provided, which were spread across different material categories (including food waste supplied from municipal and commercial sources) and the type of commercial arrangement entered into e.g. contract or spot gate fees.

A summary of the contract and spot market gate fees charged by AD operators, for both municipal and commercial waste, are presented in Table 36. The overall median

reported for all waste streams under contract is £25/tonne. This is higher than last year's reported median of £15/tonne. However, the spot gate for all waste streams has decreased from £30/tonne last year, to £10/tonne.

Table 36: Contract and spot AD gate fees provided by facility operators in 2016 (£/tonne)

Feedstock	No. of gate fees	Gate fee (£/tonne)	
		Median	Range
CONTRACT GATE FEES			
All waste streams	90	£25	-£20 to £65
Unpackaged food waste	13	£10	-£20 to £50
Food waste in bio bags	16	£23	£5 to £50
Food waste in PE bags	18	£37	£5 to £50
Packaged food waste	18	£28	£10 to £65
Food preparation waste	19	£24	-£20 to £50
Other	6	£22	£10 to £50
SPOT MARKET GATE FEES			
All waste streams	82	£10	-£10 to £60
Unpackaged food waste	12	£10	-£10 to £60
Food waste in bio bags	18	£10	-£10 to £60
Food waste in PE bags	15	£37	-£10 to £60
Packaged food waste	15	£37	-£10 to £60
Food preparation waste	15	£37	-£10 to £60
Other	6	£18	-£10 to £20

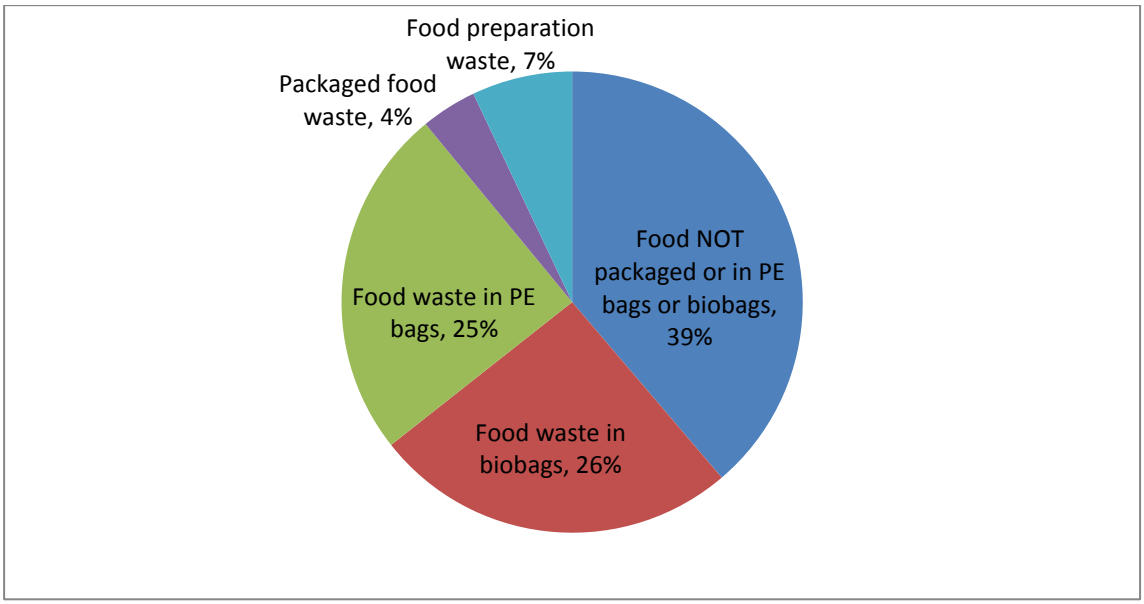
Municipal waste gate fees reported by operators

There was very little variation in contract gate fees by feedstock type. Given this, and the low numbers of operator responses, it is appropriate to report only as an aggregate of all feedstock types. This year the median is £37/tonne, which is notably higher than last year's reported figure of £15/tonne. This result does not reflect results seen from the local authority survey which generally has seen a decrease in gate fees. The gate fees ranged between £5 and £46/tonne, and the median was calculated from 31 gate fees.

Very few responses (from three operators) were received for spot market gate fees for municipal waste, and therefore this is not reported separately.

The total waste treated at the AD facilities surveyed is 345,000 tonnes. Waste from municipal sources makes up 37% of the tonnage throughput of the facilities surveyed. Figure 11 shows that unpackaged food waste is the most widely collected, with food waste collected in either biobags or PE bags, both individually making up a quarter of the municipal food waste treated.

Figure 11: Municipal inputs into surveyed AD facilities (2016)



Commercial waste gate fees reported by operators

Commercial waste gate fees reported by operators are lower than those for municipal customers. For those under contract, for all types of waste, the median was £22/tonne. Only three operators provided responses for spot commercial gate fees and therefore these have not been reported.

Table 37: Commercial contract gate fees provided by facility operators 2016 (£/tonne)

Feedstock	No. of gate fees	Gate fee (£/tonne)	
		Median	Range
CONTRACT GATE FEES			
All waste streams	59	£22	-£20 to £65
Food waste NOT packaged or in PE bags or biobags	11	£10	-£20 to £50
Food waste in biobags	8	£22	£5 to £50
Food waste in PE bags	7	£25	£20 to £50
Packaged food waste	13	£25	£10 to £65
Food preparation waste	14	£18	-£20 to £50
Other	6	£22	£10 to £50

Figure 12: Commercial waste contract gate fees for 2016 provided by facility operators (£/tonne)

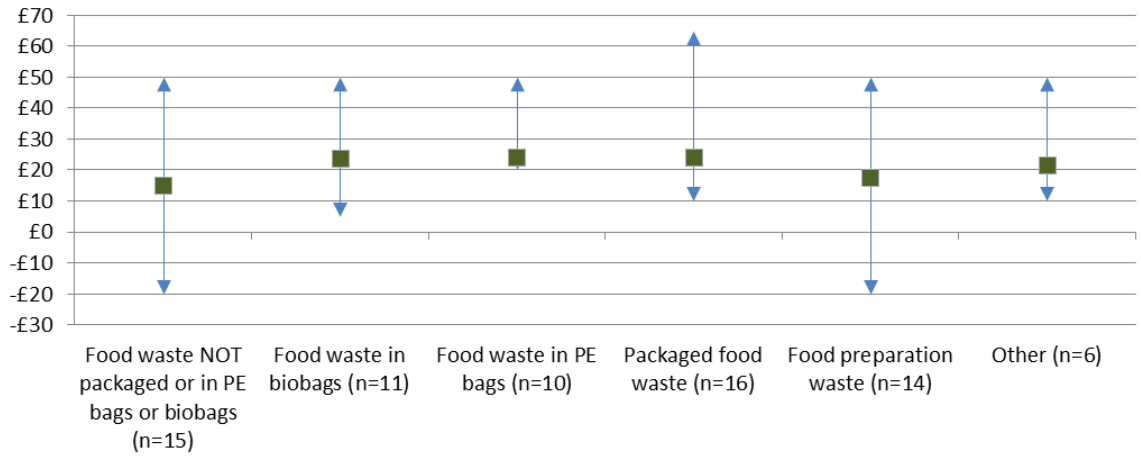


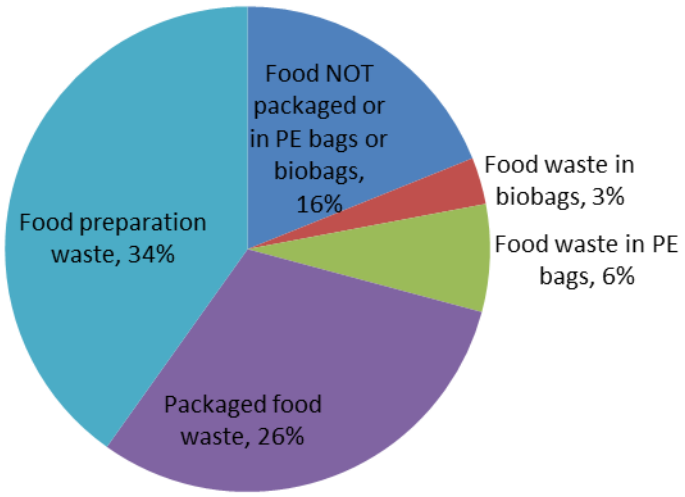
Table 37 and Figure 12 show there is variation between feedstock types. The median contract AD gate fee for unpackaged food waste is £10/tonne, which is the same as reported last year. The median contract gate fee for food waste in biobags is relatively similar to last year, reported as £22/tonne this year (with a range of £5 - £50/tonne), compared to £20/tonne last year. The contract median for food preparation waste is also similar to last year, at £18/tonne this year compared to £16/tonne last year.

Both unpackaged food waste and food preparation waste had minimum contract gate fees less than £0/tonne (3 of the 59 reported gate fees were negative), meaning that those providing the waste would receive an income for this rather than having to pay a gate fee, and continuing the trend from last year which was the first year to see negative gate fees.

As would be expected, packaged waste and that in polyethylene (PE) bags generally incurs higher gate fees than unpackaged and food preparation waste. The median for packaged food waste however is £10/tonne lower than last year, reported as £25/tonne this year, compared to £35/tonne last year. The range has also narrowed, being £0 - £70/tonne last year, compared to £10 - £65/tonne this year.

Waste from commercial sources makes up 63% of the tonnage throughput of the facilities surveyed. Figure 13 shows that food preparation waste is the largest type of commercial waste accepted, followed by packaged food waste. The exact sources of these types of waste are not know, however food preparation waste is most likely to be from food manufacturing operations, and packaged food waste could be from a variety of sources such as supermarkets.

Figure 13: Commercial inputs into surveyed AD facilities (2016)



4.3.5 Key influencing factors - operators

Although a small number of responses (from 13 facilities) were received, competition from similar facilities was overwhelmingly identified as the most influential factor on currently gate fees, which was the same as last year (see Table 38).

Table 38: Factors influencing current AD gate fees (identified by AD operators surveyed – 13 responses)

Factor influencing current gate fees	Response rates	
	No.	%
Competition from similar facilities	11	85%
Availability of capacity	8	62%
Quantity of input materials	4	31%
Competition from alternative treatment options	2	15%
Government incentive schemes e.g. renewables	2	15%
Operating costs	1	8%
Legislative requirements	1	8%
Cost of managing residues	1	8%
Investment/capital costs	1	8%
Other (please state below)	1	8%
Product/commodity end market prices	0	0%
Inflation (RPI, RPIX)	0	0%

Table 39 shows that very similar results came from the question about the greatest influence on future AD gate fees i.e., that competition and availability of capacity are likely to continue influencing gate fees.

Table 39: Factors most likely to influence future AD gate fees (identified by AD operators surveyed – 15 responses)

Factor influencing future gate fees	Response Rates	
	No.	%
Competition from similar facilities	11	73%
Availability of capacity	11	73%
Quantity of input materials	4	27%
Government incentive schemes e.g. renewables	3	20%
Operating costs	2	13%
Competition from alternative treatment options	2	13%
Cost of managing residues	2	13%
Legislative requirements	1	7%
Product/commodity end market prices	1	7%
Investment/capital costs	1	7%
Other (please state below)	1	7%
Inflation (RPI, RPIX)	0	0%

Of those responding, 56% of the operators thought that gate fees were going to decrease in the next twelve months, compared to only 23% of local authorities that thought they would increase; 20% each thought that gate fees would increase and remain the same.

4.3.6 Waste contractor interviews

Interviews with waste contractors (5 contractors participated) confirm the median gate fees obtained from the survey and observed trends. As first identified last year, market over-capacity (or lack of capture of available unavoidable food waste as feedstock) in various parts of the UK is driving gate fees down to an unsustainable level. In England in particular, operators are chasing feedstock and gate fees of £15-20/tonne are reportedly common. According to the waste contractors, feedstock availability is unlikely to improve as local authorities are not incentivised to collect food waste and many have abandoned plans to do so.

Again according to the waste contractors, high prices in Wales reflect a somewhat artificial market based upon long term PFI contracts established when market gate fees were higher.

In England, long term low prices will affect the viability of existing and new facilities; with other renewable incentives disappearing for new facilities, some may be able to switch to the Renewable Transport Fuel Obligation (RTFO) to boost income. Operators expect England 2017 gate fees to be £15-20/tonne; financial viability is said to be at £40-50/tonne.

4.4 Energy from Waste (EfW)

In total there were 89 responses to the survey (excluding repeats) from 78 different local authorities, who reported use of energy from waste as a residual waste recovery method. Of these responses, 2 were excluded from the analysis as they covered RDF manufacture and export, 1 because the reported gate fee part of an integrated contract and 1 because the data covered tyre energy recovery.

This left 87 responses from which 56 had usable gate fees. These responses were from 48 different local authorities, 42 of which were English authorities, 2 from Scotland, 4 from Wales and none from Northern Ireland.

4.4.1 Current gate fees and trends

As in previous years, results are reported for the UK as a whole, with results split for facilities built before and after 2000. Results are summarised in Table 40.

This year, the reported median gate fee for EfW (all responses) is £83/tonne compared to £86/tonne last year. Of the 56 respondents this year, 8 reported new contracts in 2016.

For pre-2000 EfW facilities, the median gate fee is £56/tonne, compared to £58/tonne last year. For post-2000 facilities, median gate fee is £91/tonne compared to £95/tonne last year.

Table 40: Summary of energy recovery (EfW) gate fees reported by local authorities 2016, with and without contracts (£/tonne)

Type of facility		Median	Mode	Range	Responses
All		£83	£50 to £55	£26 to £144	56
Pre-year 2000	All responses	£56	£50 to £55	£26 to £90	22
	With contracts	£57	£50 to £55	£26 to £90	17
	Without contracts	£45	£45 to £50	£44 to £75	5
Post-year 2000	All responses	£91	£80 to £85	£50 to £144	34
	With contracts	£93	£80 to £85	£50 to £144	28
	Without contracts	£89	£85 to £90	£77 to £144	6

The majority of responses received were for contracted gate fees (77% pre 2000, 82% post 2000). For pre 2000 facilities, non-contracted gate fees showed a lower median than for contracted (£45/tonne v £57/tonne). For post 2000 facilities, contracted and non-contracted medians shows a much smaller difference (£89/tonne v £93/tonne).

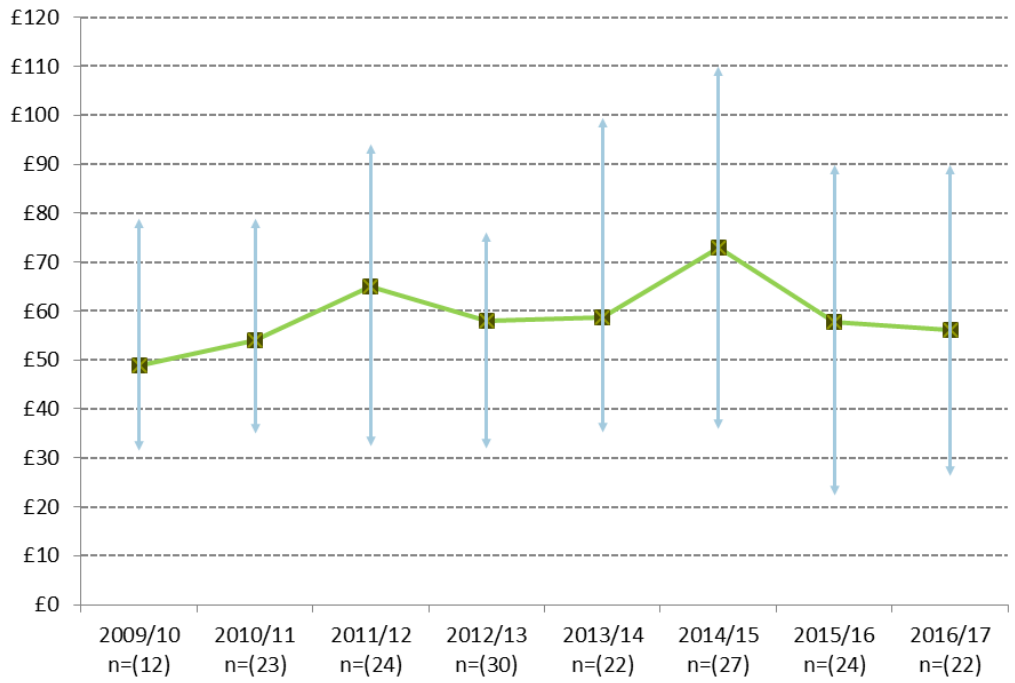
Of the 70 authorities responding to the question, 47 (67%) said their gate fee had changed in 2016. The majority of these (83%) were contracted. Of those that reported a

reason for the change in their annual gate fees (45 responses), all said this was due to an inflation increase or some other contractual annual uplift.

The range in reported gate fees is broad at £25 to £144 (£50-55 mode range). This is because there is a significant range of contractual and funding factors which can have an influence on gate fee charged including mode of financing (PFI/PPP or prudential borrowing), whether the asset reverts to the local authority or not, contract length, and whether the authority made a capital contribution. Operators reported that contracts getting more sophisticated and more unique, therefore making it difficult to compare individual gate fee figures.

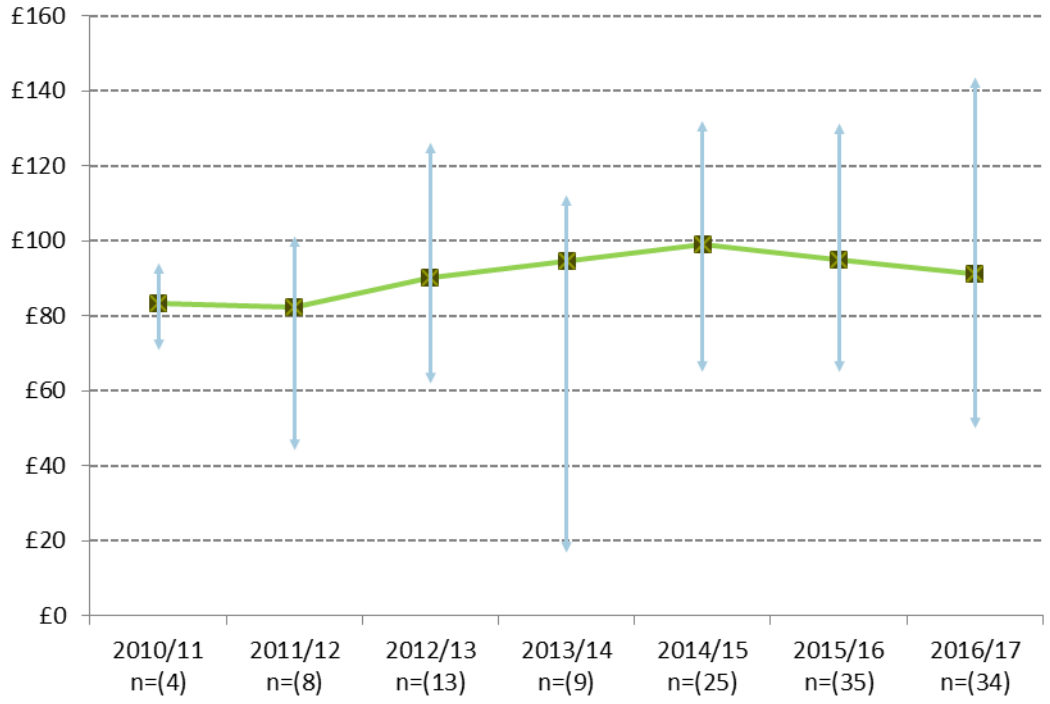
Looking at trends in gate fees over time, the pre 2000 gate fee has consistently hovered around £60/tonne. No authorities reported new contracts with pre 2000 facilities in 2016. Pre 2000 gate fee trends are shown in Figure 14.

Figure 14: Pre 2000 EfW gate fees reported by local authorities over time (UK, £/tonne)



For post 2000 facilities, median gate fees appear to have peaked at £100/tonne in 2014/15 showing a downward trend since then. 8 authorities reported new contracts with post 2000 facilities in 2016, with median gate fee £84. Data is summarised in Figure 15.

Figure 15: Post 2000 EfW gate fees reported by local authorities over time (UK, £/tonne)



Based upon the responses to this survey, in the period 2012 to 2016, a total of 27 new contracts are reported to have started. For these contracts, median gate fees and ranges are reported in Table 41. These show that for pre 2000 facilities, new contracts are being signed at gate fees above the overall median gate fee suggesting an upward trend in pricing for new contracts. For post 2000 facilities, new contracts are being signed with gate fees slightly lower than the median and range of all contracts reported for this type of facility, suggesting a slow softening in gate fees.

Table 41: EfW Contracts started and median gate fees reported by local authorities 2012-2016 (£/tonne)

Facility type	Contracts started	Median gate fee (£/tonne)	Range (£/tonne)
Pre 2000	4	£77	£65-£81
Post 2000	23	£84	£67-108

4.4.2 Contract review

A range of contract lengths were reported. The split was mainly between authorities sending material to established energy recovery facilities, with short to medium term contracts (19% of reported contracts of length 8 years or less) with a significant proportion of PFI/PPP related contracts for which dedicated energy recovery plants were constructed, with long term contracts (79% of reported contracts with length 20 year or more). Contract length data is summarised in Table 42.

Table 42: Energy recovery contract lengths reported 2016

Contract length (years)	Count	Proportion of count
1	1	2%
2	1	2%
3	1	2%
4	1	2%
5	2	4%
6	2	4%
7	1	2%
8	1	2%
14	1	2%
20	1	2%
22	1	2%
23	1	2%
24	1	2%
25	26	50%
>25	11	21%

4.4.3 Key influencing factors

Of factors influencing gate fees, respondents reported indexation (RPI), availability of capacity, and increased operating costs as having the most impact on current and future gate fees; similar to last year's responses. Respondents expected operating costs to become more of an issue in the future. Responses are summarised in Table 38 and Table 39.

Of the 65 respondents providing an opinion, 45 (69%) expected gate fees to increase in the future, only 9% expected a reduction.

Table 43: Key influencing factors – current energy recovery gate fees (indicated by local authority survey – 66 responses)

Influencing factor	No of responses	%
Inflation (RPI, RPIX)	29	44%
Availability of capacity	22	33%
Operating costs	22	33%
Legislative requirements	16	24%
Competition between similar facilities	12	18%
Contractual changes, other than inflation increase	12	18%
Investment/capital costs	10	15%
Cost of landfilling residues	9	14%
Competition from alternative treatment options	6	9%
Other	6	9%
Government incentive schemes e.g. renewables	5	8%
Product/commodity end market prices	4	6%
Competition from foreign incinerators	3	5%
Quality of input materials	3	5%
Cost of recycling residues	0	0%

Table 44: Key influencing factors – future energy recovery gate fees (indicated by local authority survey – 66 responses)

Influencing Factor	No of responses	%
Operating costs	25	40%
Inflation (RPI, RPIX)	22	35%
Availability of capacity	21	33%
Competition between similar facilities	18	29%
Legislative requirements	18	29%
Investment/capital costs	13	21%
Competition from alternative treatment options	9	14%
Contractual changes, other than inflation increase	8	13%
Government incentive schemes e.g. renewables	8	13%
Competition from foreign incinerators	7	11%
Cost of landfilling residues	4	6%
Product/commodity end market prices	4	6%
Cost of recycling residues	2	3%
Quality of input materials	2	3%
Other	2	3%

4.4.4 Waste contractor Interviews

Discussions with the waste management companies confirmed the figures generated by the survey.

With most of the large municipal PFI facilities delivered, it was reported that recently negotiated contract prices are typically lower than the medians reported from this survey (note that prices for new PFI facilities starting operation in 2016 reflect the

market 5 years ago when the original PFI contract was negotiated) due to competition from free capacity at PFI facilities and merchant sites, even for long term contracts. This can vary regionally, however.

Operators confirmed that there is likely to be downward pressure on gate fees particularly for:

- Non-contracted or relatively low volume contract prices to fill capacities at local authority dedicated PFI facilities. One operator explained that operators prefer municipal black bag material to C&I mixed residual, so they are likely to be more aggressive on prices to attract this rather than C&I wastes.
- Regions well served with residual capacity such as the M62 corridor.

However, this downward trend could be reversed in some regions such as the south east, where increased RDF export prices due to the falling value of sterling (£); and the shortage of landfill capacity is likely to push up non-contracted EfW gate fees, particularly before new EfW capacity is delivered.

4.5 Non-Hazardous Landfill

A total of 130 responses from 94 local authorities yielded 103 usable records after review, from 74 local authorities (51 England, 14 Scotland, 5 Wales, and 4 Northern Ireland) with 90 usable gate fees which are included in the analysis. Responses which included some form of processing were from an integrated contract, for a local authority operated facility (£0 gate fee given) or gate fees charged commercial customers, were excluded.

4.5.1 Current gate fees and trends

Across the UK the median landfill gate fee in 2016 is £22/tonne, ranging from £5 to £64/tonne, and mode £15 to £20, excluding landfill tax and haulage costs. This is an increase on last year's median (£19/tonne). Median gate fees since 2008/9 are shown in Figure 16 following, showing a fairly static around £21/tonne average gate fee over the period.

Figure 16: Landfill gate fees reported by local authorities over time for the whole UK (£/tonne)

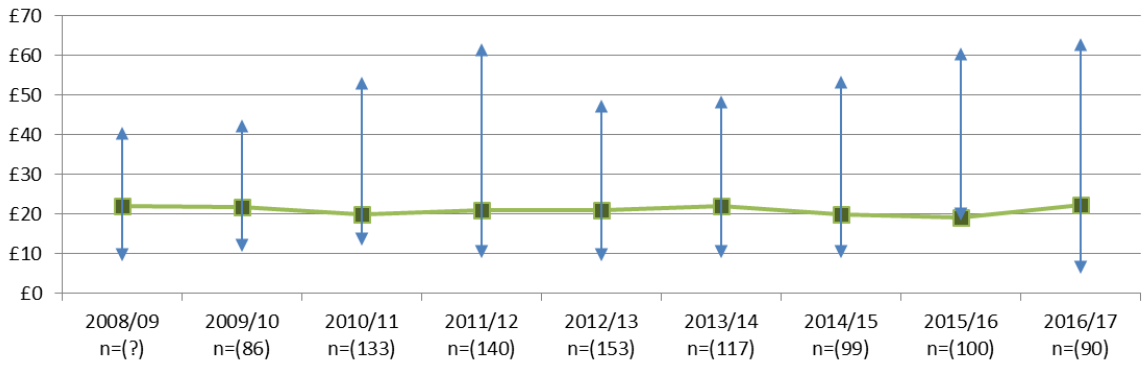


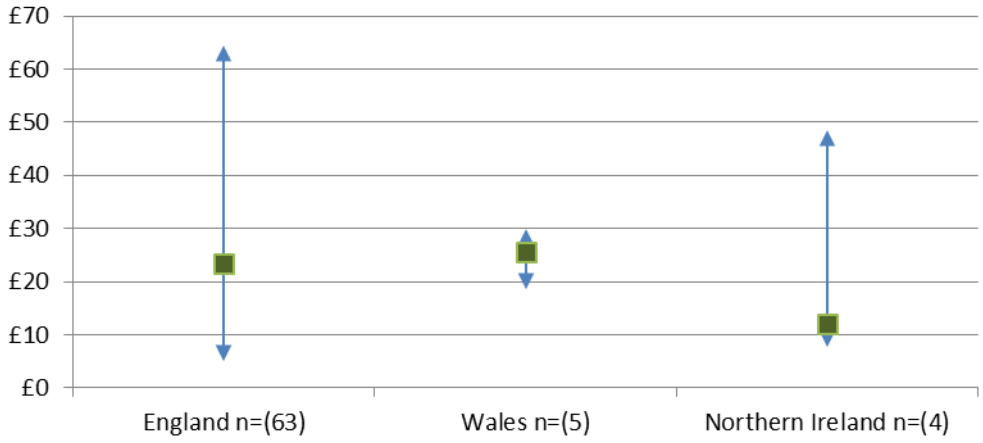
Table 45 shows the breakdown of gate fee data by nation as well as per region within England.

Table 45: Landfill gate fees reported by local authorities for 2016, broken down by nation and regions within England (£/tonne)

	Median 2016	Mode	Range	Number of gate fees	Median 2015
UK (including £84.40 landfill tax, 2016/17 tax year)	£107	£99 to £104	£89 to £149	90	
UK (excluding landfill tax)	£22	£15 to £20	£5 to £64	90	£19
England	£23	£20 to £25	£5 to £64	63	£20
London	£32	£35	£27 to £37	7	£31
South East	£22	£15 to £20	£9 to £64	10	£21
South West	£23	£20 to £25	£5 to £30	16	£23
East of England	£16	£15 to £20	£9 to £26	8	£15
East Midlands	No data	No data	No data	No data	£16
West Midlands	£24	£20 to £25	£5 to £30	8	£19
North West	£20	£15 to £20	£14 to £32	5	£19
North East	£24	£20 to £25	£18 to £24	4	£21
Yorkshire & Humber	£16	£20 to £25	£10 to £24	5	£13
Wales	£26	£25 to £30	£19 to £30	5	£27
Northern Ireland	£12	£5 to £10	£8 to £49	4	£15

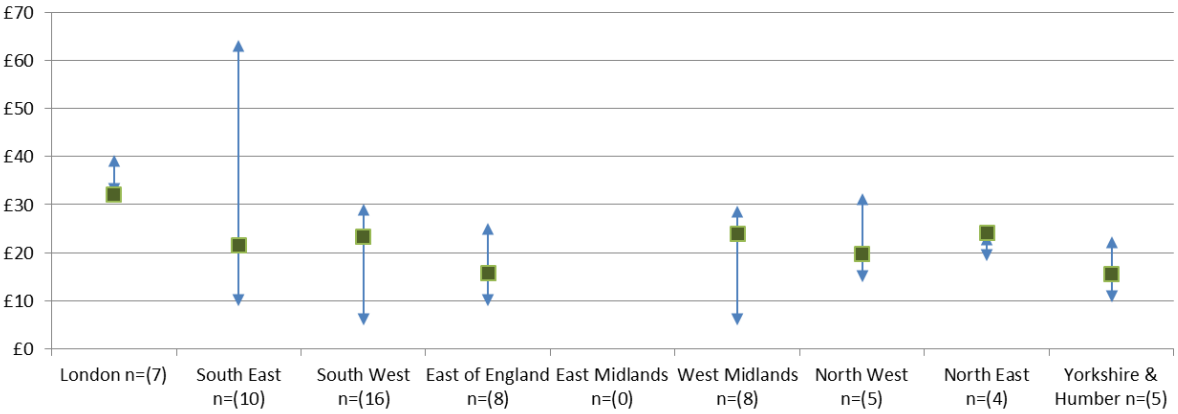
Figure 17 shows the results for each of the nations graphically and Figure 19 shows results by region over time. Figures for England show a slight year-on-year increase, with slight increases at regional levels too, particularly the North East, Yorkshire and West Midlands. The difference in sample between the 2015 and 2016 surveys may also have an impact here. The other nations show decreases. Similarly to last year, the lowest gate fee was found in Northern Ireland (at £12/tonne compared to £15/ last year). Gate fees in Wales (£26/tonne v. £27 last year) show a reduction since last year. Wales remains the most expensive nation in terms of landfill gate fee.

Figure 17: Landfill gate fees reported by local authorities by nation in 2016 (£/tonne)



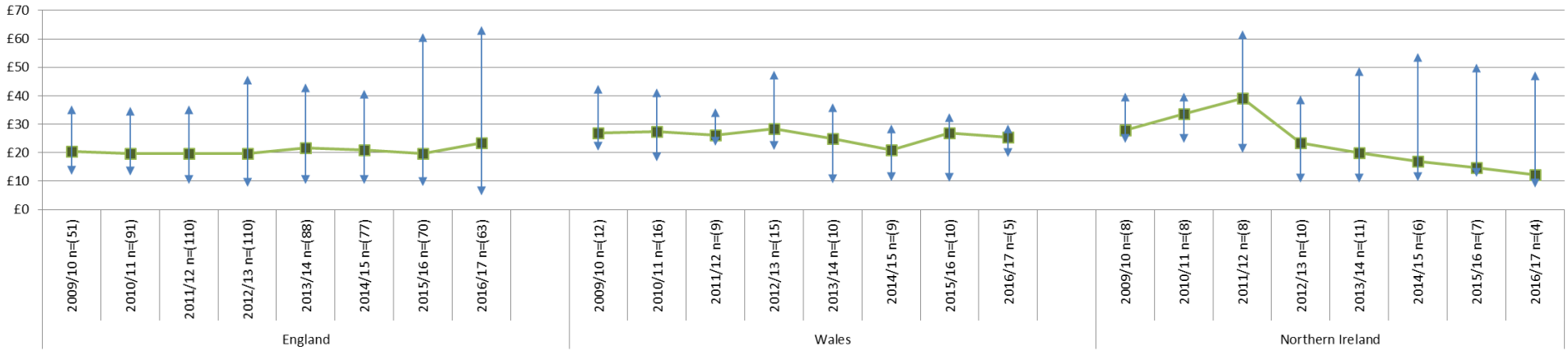
At a regional level, London has the highest gate fee at £32/tonne compared to £31 last year. Results per English region are summarised in Figure 18 following:

Figure 18: Landfill gate fees reported by local authorities by English region in 2016 (£/tonne)



As last year, approximately half of the authorities say their gate fee has changed in the last twelve months; the vast majority of which can be attributed to inflation increases or the introduction of a new contract. Median reported increase is £0.35 i.e. 1.6%.

Figure 19: Landfill gate fees over time reported by local authorities by nation (£/tonne)



4.5.2 Contract review

Of those authorities sending material to landfill, 82% (67% last year) did so under a contract, while 10% (22%last year) said they were not using a contract at present; the balance of authorities did not provide a response.

Of those under contract, 68 of the authorities provided start and end dates which has allowed for calculation of the contract length. Table 46 demonstrates that a little under a third (29%) of the contracts are of a duration of 5 years or less, just over half (56%) were for a duration of 15 years or less; 29% of contracts are 25 years or longer. This demonstrates longer term contracts for landfill, in comparison to some other waste management facility types.

Table 46: Landfill contract lengths (for which contract length data was submitted) reported 2016

Contract length (years)	Number of contracts	
	No.	%
<1	0	0%
1	3	4%
2	4	6%
3	5	7%
4	8	12%
5	5	7%
6	2	3%
7	3	4%
8	4	6%
10	1	1%
13	1	1%
14	1	1%
15	1	1%
16	3	4%
18	1	1%
20	1	1%
22	2	3%
23	1	1%
24	2	3%
25	13	19%
>25	7	10%
Total	68	100%

Figure 20 shows that there is a clear relationship between contract length and landfill gate fees, with longer contracts have higher gate fees than shorter contracts. This may

be related to longer term contracts having an infrastructure investment element. Figure 21 shows that there is no clear relationship demonstrated by considering the year the contract was started. However, it does appear to support the upward trend suggested for landfill gate fees 2015 to 2016.

Figure 20: Impact of landfill contract lengths reported by local authorities on gate fees (£/tonne)

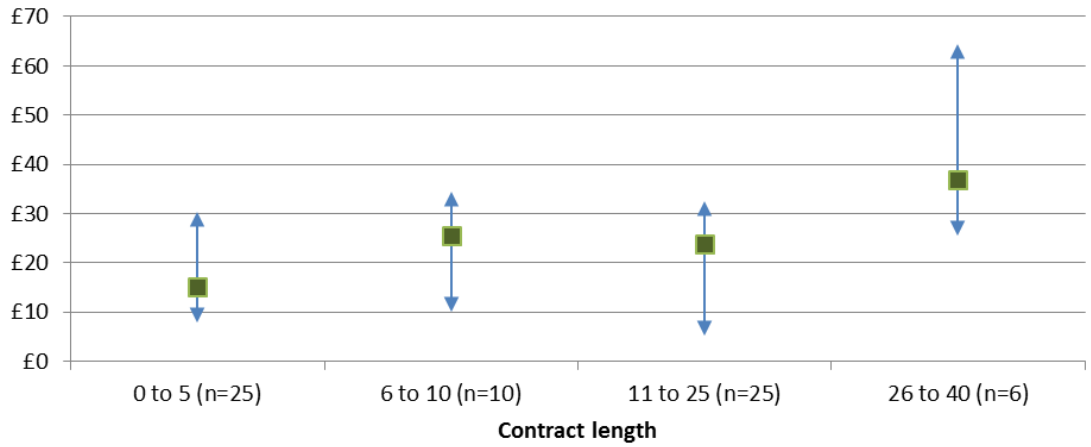
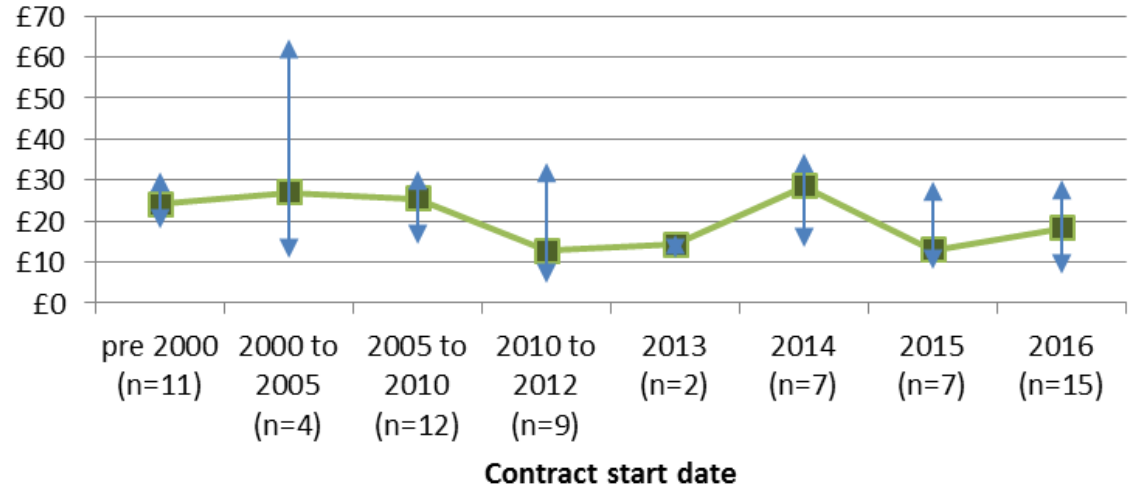


Figure 21: Impact of contract start date reported by local authorities on gate fees (£/tonne)



4.5.3 Key influencing factors

Table 47 shows that almost half (49%) of the authorities thought that landfill tax was the most influential factor on their existing gate fees. This year, availability of capacity increased in importance (ranked 2nd with 35% responses, compared to last year 6th with 29%) with competition from alternative treatment options ranked 3rd with 31% responses (30% last year).

The factors identified by local authorities as being the most likely to influence gate fees in the future are very similar (see Table 48) with availability of capacity ranked 2nd with 46% of responses (last year ranked 5th with 33% respondents)

Of the 79 authorities expressing an opinion, 80% (76% last year) thought that gate fees would increase in the future, compared to 14% (14% last year) that thought they would stay the same and just 6% (10% last year) that said they would decrease.

Table 47: Factors influencing current landfill gate fees (indicated by local authorities surveyed – 90 responses)

Factor influencing current gate fees	Response rates	
	No.	%
Landfill tax	39	49%
Availability of capacity	28	35%
Competition from alternative treatment options	25	31%
Operating costs	25	31%
Legislative requirements	24	30%
Inflation (RPI, RPIX)	18	23%
Competition between similar facilities	17	21%
Contractual changes, other than inflation increase	8	10%
Other	4	5%
Investment/capital costs	1	1%
Government incentive schemes e.g. renewables	0	0%
Product/commodity end market prices	0	0%
Quality of input materials	0	0%

Table 48: Factors most likely to influence future landfill gate fees (indicated by local authorities – 89 responses)

Factor influencing future gate fees	Response rates	
	No.	%
Landfill tax	39	50%
Availability of capacity	36	46%
Legislative requirements	33	42%
Competition from alternative treatment options	28	36%
Operating costs	20	26%
Competition between similar facilities	14	18%
Inflation (RPI, RPIX)	11	14%
Contractual changes, other than inflation increase	4	5%

Factor influencing future gate fees	Response rates	
	No.	%
Investment/capital costs	3	4%
Government incentive schemes e.g. renewables	1	1%
Product/commodity end market prices	0	0%
Quality of input materials	0	0%
Other	0	0%

4.5.4 Waste contractor interviews

Discussions with landfill facility operators confirm the regional nature of the market, and the upward trend of gate fees in some regions; with capacity squeezed as landfills are closed without capacity being replaced by alternative technologies such as energy recovery (EfW). It is suggested that this situation may get worse in some areas, further increasing landfill gate fees.

In London and the South East RDF export prices tend to keep landfill prices down, although landfill capacity is likely to disappear in some counties sending up gate fees in the short term until new EfW capacity (e.g. Kemsley, Rivenhall, SERC) comes on line. In addition, increasing RDF export prices could well increase landfill demand in the south east and elsewhere in the UK, putting further upward pressure on gate fees.

4.6 Other Residual Waste Treatments

This year, the questions regarding other residual waste treatments have been expanded from just covering mechanical biological treatment (MBT) to other processes which produce a refuse derived fuel (RDF) for energy recovery. This therefore covers Residual Waste MRFs ("dirty MRFs") and other RDF production technologies.

A total of 79 responses were received from 62 authorities (38 of which provided gate fees) that said they sent residual waste to these type of facilities. Of these, 78 were usable from 37 local authorities, providing 45 gate fees used in the analysis. Of the 37 authorities, 22 were from England, 8 from Scotland, 5 from Wales and 2 from Northern Ireland.

4.6.1 Current gate fees and trends

As with previous years, due to the relatively small number of contracts, results are reported at UK rather than national level.

Of the responses received, 16 are from MBT facilities, 20 for Residual Waste MRFs and 7 for other RDF production technologies. It was confirmed that all gate fees reported included the subsequent cost of energy recovery.

Median gate fee for MBT from this year's survey is £88 compared to £85 last year, showing no significant market changes. The most common (mode range) response was £80-£85/tonne.

For both Residual Waste MRFs and other RDF production facilities, their introduction to the survey this year means that there is no previous data for comparison. For Residual

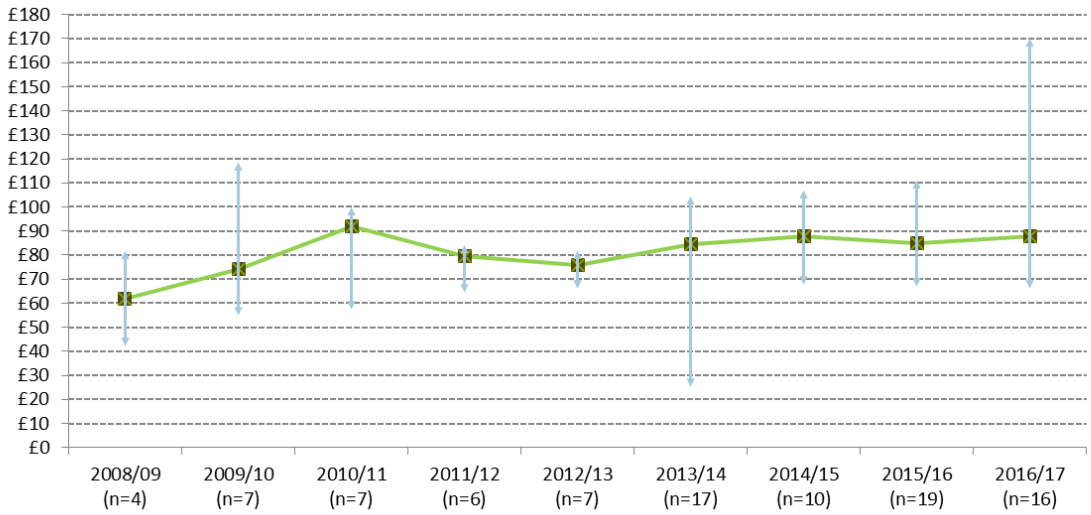
Waste MRFs a median gate fee of £94 is reported, and £98 for other RDF processing. Results are summarised in Table 49.

Table 49: Summary of Other Residual Waste Treatment gate fees reported by local authorities 2016 (£/tonne)

	Median	Mode	Range	Responses
MBT	£88	£80 to £85	£66 to £170	16
Residual Waste MRF	£94	£90 to £95	£55 to £117	20
Other RDF production	£98	£95 to £100	£80 to £120	7

For MBT gate fees, median prices have been stable for a number of years as shown in Figure 22. Note that of the 16 contracts reported, 2 started in 2016.

Figure 22: MBT gate fees over time (all UK in £/tonne)



4.6.2 RDF Destination

All of the processes surveyed produce a fibre or a solid fuel for subsequent energy recovery. Respondents were asked for the final destination of this RDF. As summarised in Table 50, in total 51% of respondents had their RDF exported to continental Europe, 33% energy recovered in the UK, and 16% energy recovered at various destinations within the UK and abroad.

Table 50: Destination of RDF reported by local authorities by residual waste treatment type, 2016

Treatment / Destination	UK	Continental Europe	Mix UK/Europe
MBT	13 (54%)	8 (33%)	3 (13%)
Residual Waste MRF		11 (79%)	3 (21%)
Other RDF Production	2 (29%)	4 (57%)	1 (14%)
All	33%	51%	16%

4.6.3 Contract review

Of those respondents providing contract data, the majority related to mid to short term contracts of 10 years or less (73% 10 years or less, 27% 5 years or less). The shorter term contracts tend to be supply of residual waste to already operating MBT facilities, whilst the longer term (up to 25 years) contracts tended to be of PFI/PPP type and included the construction of dedicated MBT facilities.

Of the reported contracts, 2 were signed in 2015. As the response rate was relatively low, it was not possible to analyse sufficiently any changes in gate fee and contract start dates to identify trends.

Table 51: Other Residual treatments contract lengths (for responses where contract length waste given)

Contract length (years)	Count	Proportion of count
1	1	2%
2	3	6%
3	3	6%
4	6	12%
5	8	16%
6	2	4%
7	3	6%
8	2	4%
9	5	10%
10	2	4%
18	1	2%
22	1	2%
23	1	2%
25+	12	24%

For MBT contracts ranged from 3 years to 28 years, with 40% of reported contracts of 20 years or more. For Residual Waste MRF contracts reported were or relatively short term, with contracts length ranged between 1 and 9 years, and for RDF processing 8 reported contracts were of short length (i.e. 8 years or less) with 2 reported at 27 years.

4.6.4 Key Influencing factors

In terms of likely future trends, of the 47 respondents expressing an opinion, 37 (79%) expected gate fees to increase in the future.

For factors likely to influence prices in the future, respondents' feedback is summarised in Table 52 and Table 53.

For current pricing, respondents cited operating costs, competition and output end market prices (e.g. RSF/SRF) as key factors. The same factors were cited for future prices.

Table 52: Key influencing factors – current pricing for other residual waste treatment (indicated by local authority survey – 47 responses)

Influencing factor	No of responses	%
Operating costs	22	47%
Competition between similar facilities	17	36%
Product/commodity end market prices	13	28%
Availability of capacity	11	23%
Competition from alternative treatment options	10	21%
Inflation (RPI, RPIX)	10	21%
Cost of managing residues	7	15%
Investment/capital costs	7	15%
Legislative requirements	7	15%
Quality of input materials	5	11%
Contractual changes, other than inflation increase	4	9%
Government incentive schemes e.g. renewables	1	2%
Other	1	2%

Table 53: Key influencing factors – future pricing for other residual waste treatment (indicated by local authority survey – 46 responses)

Influencing factor	No of responses	%
Operating costs	22	48%
Competition between similar facilities	19	41%
Product/commodity end market prices	16	35%
Competition from alternative treatment options	14	30%
Availability of capacity	10	22%
Legislative requirements	9	20%
Cost of managing residues	6	13%
Inflation (RPI, RPIX)	6	13%
Quality of input materials	5	11%
Investment/capital costs	4	9%
Contractual changes, other than inflation increase	3	7%
Government incentive schemes e.g. renewables	1	2%
Other	0	0%

4.6.5 Waste contractor interviews

Discussions with operators confirmed the reported prices.

RDF export prices clearly have an impact upon pricing for both EfW and landfill, particularly in areas to the east and south east of the UK, close to sea ports.

Operators spoken to have seen RDF export gate fees increase in the second half of 2016 and expect further increases of more than £100/tonne in the future. There are a number of reasons for this including:

- European capacity is full so operators are "bottom slicing" low gate fee and therefore low margin contracts;
- Impact of Brexit and the weak £ cutting into European operator margins and increasing Euro based transport costs.

This will inevitably put financial pressure on the UK based RDF producers. This, plus the impact of significant UK energy recovery capacity opening in the next few years (e.g. Ferrybridge 2, Kemsley) will potentially cut the volumes of RDF exported to Europe and increase demand for UK based energy recovery and landfill.

This has put off one operator spoken to, from investing further in RDF processing and baling equipment for export, and getting involved in long term RDF export contracts.

4.7 Wood waste recycling and recovery

The survey produced 120 responses from 109 authorities reporting the collection of wood waste separately at HWRCs. Of the 109 authorities, 59 provided gate fees. Data from two of the authorities were removed (due to integrated gate fees and transport costs) which left 57 authorities contributing to the final number of useable gate fees of 62 which have been used to calculate the median. Of the 57 authorities, 31 are from England, three are from Northern Ireland, 14 are from Scotland and nine are from Wales.

This year's survey has focussed on the outputs of wood waste that local authorities collect, rather than the grade. Therefore results are not directly comparable to previous years, although some trends for wood waste as a whole have been drawn out.

4.7.1 Current gate fees and trends

The results are shown in Table 54 below.

Table 54: Gate fees (£/tonne) paid by local authorities for the disposal, treatment and recycling of wood waste in 2016 by nation (and London)

Nation	Median	Mode	Range	Response
UK	£35	£45 to £50	-£7 to £80	62
England (incl. London)	£45	£45 to £50	£10 to £80	33
London	£50	£45 to £50	£31 to £70	5

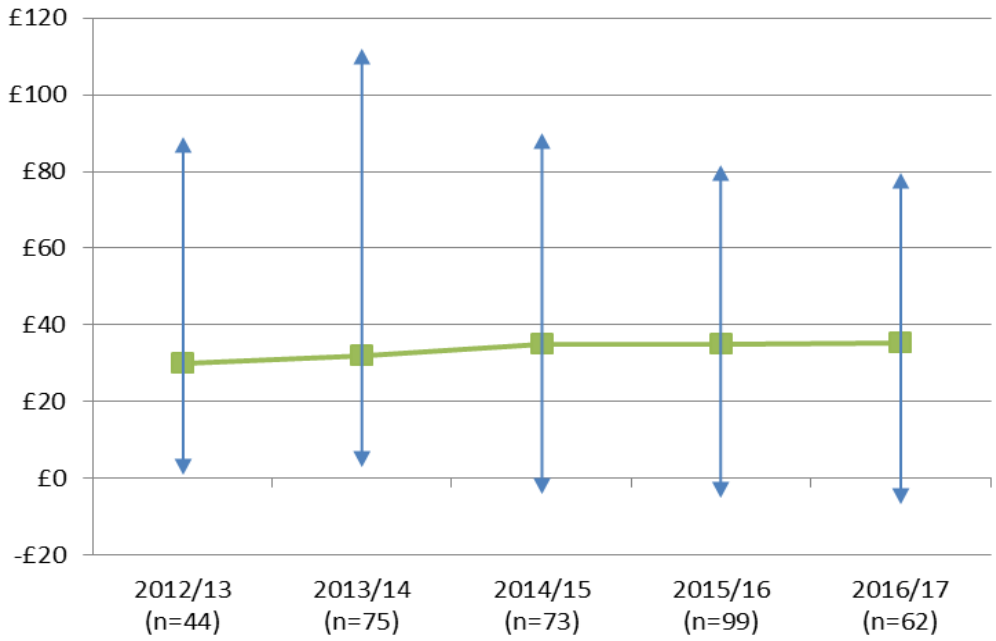
Wales	£59	£60 to £65	£25 to £73	10
Northern Ireland	£30	£30 to £35	Not reported	3

The median gate fee for recycling/recovery of all types of wood waste from HWRCs has remained the same as last year's at £35/tonne for the UK as a whole. Figure 23 shows gate fees paid over time, illustrating a slow increase in gate fees since 2012/13. It shows that the gate fee has remained the same for the last three years, with the range in gate fees also being similar for the last two years in particular. However, there is still considerable variation by nation which has also been identified in previous years' results.

Northern Ireland's median remains unchanged from last year's £30/tonne year.

Wales was highest at £59/tonne (which is a considerable increase from last year's £46/tonne). The median in England has increased from £38/tonne last year to £45/tonne this year. However there is great variety within England itself, as demonstrate by the very large range in gate fees. London has a median gate fee of £50/tonne.

Figure 23: Gate fees paid by local authorities for the disposal, treatment and recycling of all grades of wood waste (£/tonne)



Median gate fees for English regions are summarised in Table 55. There is a clear distinction in gate fees between the three regions considered here i.e. north, Midlands and south. Gate fees are highest in the south, with the overall median for the south being the same as the median for London. The median is reported as £40/tonne in the Midlands and lower still at £23/tonne in the north.

Table 55: Wood Waste Gate fees (£/tonne) paid by local authorities by English region in 2016

Nation	Median	Mode	Range	Responses
London	£50	£45 to £50	£31 to £70	5
South East, South West & London	£50	£45 to £50	£26 to £80	19
East of England, East Midlands & West Midlands	£40	£30 to £35	£21 to £68	8
North East, North West & Yorkshire & Humber	£23	N/A	£10 to £52	6

Of those responding, 66% of authorities send their wood waste to a reprocessor. The remaining 44% send directly either to be used in the production of products (such as animal bedding, wood chip and/or panel board), to be burnt as fuel in an incinerator or biomass fuel plant, or to be composted.

Figure 24: Type of facility wood waste is sent to directly from local authorities

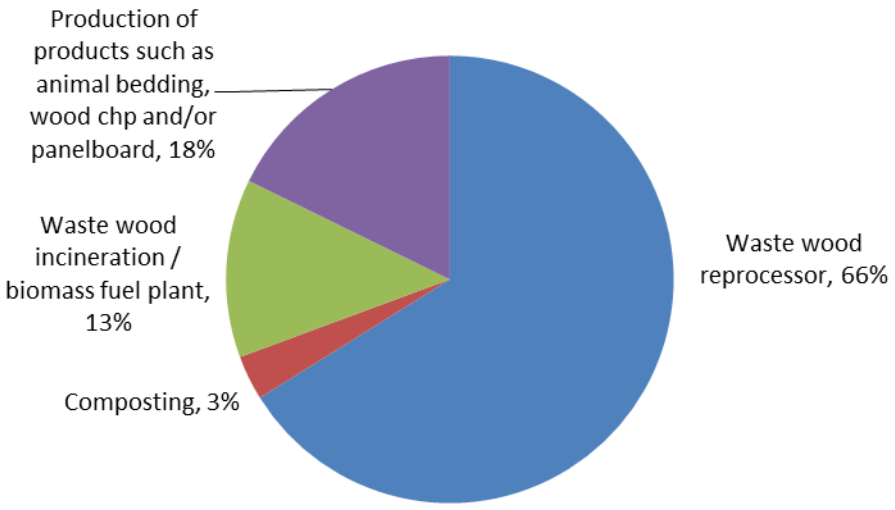


Table 56 shows that the lowest gate fees are for those facilities which produce a product out of the wood waste. These tend to accept the cleaner types of wood waste. The median gate fees paid direct to incineration facilities is the same as the median reported charged by reprocessors.

Table 56: Gate fees paid by local authorities for the disposal, treatment and recycling of all wood waste, split by outlet type (£/tonne)

Facility type	Median	Mode	Range	Responses
Production of products such as animal bedding, wood chip and/or panel board	£31	£30 to £35	£0 to £61	11
Waste wood reprocessor	£40	£45 to £50	-£7 to £80	41
Composting	£54	Not reported	Not reported	2
Waste wood incineration / biomass fuel plant	£40	£50 to £55	£0 to £68	8

All of the wood waste being sent direct to incineration was being sent to facilities in the UK.

Out of the 41 authorities sending wood waste to reprocessors, 28 authorities responded to the question asking whether any of their authority's wood waste was sent by the reprocessor on to an energy recovery facility. Of the 28, 40% said yes, 37% said no and the remaining 23% said they did not know.

Of the 12 authorities who said waste was subsequently sent to an energy recovery facility, 10 provided information as to whether the facility was in the UK or in continental Europe. 6 of the authorities said these facilities were in the UK and four authorities said their wood waste was sent to continental Europe.

4.7.2 Contract review

Of the authorities who responded to the wood waste section, 44% said their wood waste treatment arrangements were under contract, 43% said they were not, with the remainder choosing not the answer the question. This is lower than typically seen for other types of wastes being sent to other facility types.

Table 57 shows that 51% of the contracts are 4 years or less, and 78% of the contracts are 12 years or less. Contracts also tend to be a lot shorter in length for wood waste, in comparison to other types of waste and facilities.

Table 57: Wood waste contract lengths (for which contract length data was submitted)

Contract Length (years)	Number of contracts	Proportion of count
	No.	**%**
1	2	5%
2	9	22%
3	6	15%

Contract Length (years)	Number of contracts	Proportion of count
	No.	%
4	4	10%
5	4	10%
6	1	2%
7	3	7%
10	1	2%
12	2	5%
16	1	2%
23	2	5%
25	5	12%
>25	1	2%
Total	41	100%

4.7.3 Key influencing factors

Table 58 shows that 42% of respondents think that the quality of the input materials have the biggest influence on current gate fees. Operating costs, availability of capacity and product/commodity end prices all score similarly as the next influential factors. All four of these factors were at the top of last year's survey as key influencing factors.

Table 59 shows that the most influential factors considered by local authorities to have an impact on their future gate fees is operating costs, followed by product and commodity end prices.

Table 58: Factors influencing current wood waste gate fees (indicated by local authorities surveyed – 81 responses)

Factor influencing current gate fees	Response rates	
	No.	%
Quality of input materials	34	42%
Operating costs	31	38%
Availability of capacity	30	37%
Product/commodity end market prices	30	37%
Competition between similar facilities	25	31%
Competition from alternative treatment options	14	17%
Legislative requirements	11	14%
Inflation (RPI, RPIX)	7	9%
Government incentive schemes e.g. renewables	6	7%
Investment/capital costs	5	6%
Contractual changes, other than inflation increase	4	5%

Factor influencing current gate fees	Response rates	
	No.	%
Cost of managing residues	3	4%
Other	1	1%

Table 59: Factors most likely to influence future wood waste gate fees (indicated by local authorities surveyed – 77 responses)

Factor influencing future gate fees	Response Rates	
	No.	%
Operating costs	31	40%
Product/commodity end market prices	29	38%
Quality of input materials	28	36%
Availability of capacity	25	32%
Competition between similar facilities	23	30%
Competition from alternative treatment options	18	23%
Legislative requirements	16	21%
Inflation (RPI, RPIX)	8	10%
Investment/capital costs	5	6%
Government incentive schemes e.g. renewables	3	4%
Other	3	4%
Contractual changes, other than inflation increase	2	3%
Cost of managing residues	2	3%

Of those responding, 65% of local authorities believe that wood waste gate fees will increase in the next twelve months, with 27% believing they'll stay the same and only 8% think they'll decrease.

4.7.4 Survey of wood recyclers, reprocessors and thermal reprocessors

Wood reprocessors were asked a series of questions regarding the gate fees they charge and the results of this are presented below. There were responses from 18 companies, 14 of which were wood recyclers (operating 18 facilities), and the remaining 4 were operators of plant generating energy from the incineration of wood biomass.

Table 60 shows a summary of the gate fees charged by wood waste reprocessors, both to local authorities and the private sector. There is neither significant variation between the gate fees, nor whether it is under contract or not. Commercial contracted gate fees are the lowest at £20/tonne, compared with £25/tonne for commercial spot gate fees and all local authority sourced wood waste.

Table 60: Wood waste gate fees charged by wood reprocessors to local authorities and commercial organisation for 2016 (£/tonne)

Market source	No. of gate fees	Median	Range
Local authority (contracted)	79	£25	-£10 to £90
Local authority (uncontracted)	59	£25	-£5 to £70
Commercial (contracted)	95	£20	-£10 to £60
Commercial (uncontracted)	93	£25	-£10 to £75

The median for those generating energy from wood waste was £25/tonne (for both contracted and uncontracted waste) and the range was between £0 and £70/tonne.

Of the wood reprocessors, 14 of the 18 facilities send a biomass fuel output to energy from waste facilities. In relation to the annual throughput of the wood reprocessing capacity represented through the survey (2.4 million tonnes), 39% (0.94 million tonnes) is sent to energy recovery facilities. 45% of this goes exclusively to UK facilities, 21% to continental EU facilities, and the remainder (33%) goes to either UK or continental EU facilities.

Table 61 shows how much wood reprocessors receive in income (or pay with regards to negative figures) for the biomass fuels they produce from waste wood. The number of figures quoted from continental EU is only 5 and therefore should not be relied upon. However they do indicate that reprocessors may receive less income from these facilities than from those based in the UK.

Table 61: Incomes earned by wood waste reprocessors from biomass fuels produced from wood waste (£/tonne)

	Median	Range	Responses
All	£14	-£60 to £40	32
UK	£23	-£60 to £40	27
EU	-£10	-£60 to £7	5

4.7.5 Key influencing factors - operators

Operators were asked how they think local authority gate fees have changed over the last 12 months, and how they think they will change over the next 12 months. Responses for the last year were fairly mixed, with 46% saying they increased, 15% decreased and the remaining 38% saying they remained the same. For the next year, 54% of respondents said they would remain the same, 31% thought they would increase and 15% decrease.

Operators thought that the energy (biomass fuel) market would be the most influential factor over the next twelve month, followed by competition from similar authorities and availability of capacity (see Table 62).

Table 62: Factors influencing local authority gate fees for the next 12 months – 12 responses

Factor influencing gate fees	Response Rates	
	No.	%
Energy (biomass fuel) market demand	7	58%
Competition from similar facilities	6	50%
Availability of capacity	5	42%
Legislative requirements	3	25%
Inflation (RPI, RPIX)	3	25%
Competition from alternative treatment options	2	17%
Operating costs	2	17%
Product/commodity end market prices	2	17%
Quantity of input materials	1	8%
Local Authority funding cuts	1	8%

Table 63 shows the key factors operators thought would influence commercial gate fees over the next twelve months. Interestingly no one selected the energy (biomass fuel) market, however competition from similar facilities and availability of capacity are both the top scoring factors. Product/commodity end market prices also scored highly.

Table 63: Factors influencing commercial gate fees over next 12 months – 12 responses

Factor influencing gate fees	Response Rates	
	No.	%
Competition from similar facilities	10	83%
Availability of capacity	8	67%
Product/commodity end market prices	6	50%
Legislative requirements	4	33%
Inflation (RPI, RPIX)	3	25%
Operating costs	2	17%
Government incentive schemes e.g. renewables	1	8%
Other (please state below)	1	8%

4.7.6 Waste contractor interviews

It is thought that increased biomass capacity (currently in construction) will impact gate fees and the wood waste market in a similar way to AD i.e. where there is new biomass capacity this will impact on the local market by lowering gate fees. This impact is seen in the north east England regional gate fees generated by the survey. Therefore an area

with a biomass plant would give a market price of £20-25/tonne or lower; area without plant £35-40/tonne. Transport at £5-10/tonne has much more impact on a £20-45/tonne wood price than a £80-90/tonne residual waste, so this impact will be very much in the geographic area of the biomass facility. Overall, waste contractors expected gate fees to reduce in the next few years. Counter to this is the end of biomass subsidies in Germany making more material available in UK market as export declines. They expect after 2020 and with new capacity, prices will decrease. This over capacity problem may be mitigated for plants which could switch to a solid recovered fuel (SRF).

5.0 Recommendations for future surveys

This year the selection of waste management services and gate fee types has been refined to better reflect parts of the sector that are changing, as opposed to those that are mature and for which median gate fees have not changed in a number of years. This should be reviewed before each new survey. It should be noted in this review that changes in one sub-sector can impact other sub-sectors e.g. potential overcapacity in AD capacity impacting on IVC gate fees, impact of RDF export prices on landfill and EfW gate fees, so this should be taken into account when this selection of target sub-sectors is made.

Even though there was some condensing of the questionnaire this year to make its completion less of a task, this should continue to be reviewed each year. For example, the emphasis on collecting commercial waste gate fees, in addition to municipal gate fees, has increased in recent years. Therefore these surveys need to review to ensure they capture the data required, but are also streamlined to maximise responses, as these surveys are currently quite long. For example, this year, average, minimum and maximum gate fees were asked for a range of waste feedstock types. These should be streamlined.

This review should also look at response rates from previous years for individual sections of the questionnaire, and make a realistic assessment of which sections are unlikely to get adequate responses, either because of potential confidentiality issues or the easy of obtaining the data required, and judgements made as to whether to continue to include or not.

Appendix 1 - Data collection Methodology

Local authority survey

This year's survey followed the format of the last four years' surveys, in that it was conducted using a web-based questionnaire. The questionnaire was constructed and designed by Anthesis, and hosted by the website Survey Monkey.

The online questionnaire was publicised to local authorities by an email containing a survey link for each local authority contact. At least one email was sent to a specific contact at every local authority in the UK. Where multiple contact details were available within an authority, the survey was sent to each one. The survey was also publicised on WRAP's website.

The covering email contained summary information about the gate fees survey in general, and provided links to WRAP's webpage for the previous year's survey. As the summary report from last year's survey is available on WRAP's website, a link to the relevant webpage was provided for both of these reports rather than providing attachments in the email. The covering email also confirmed the support of relevant organisations[14]; this support was extremely important in demonstrating the credibility and importance of the survey.

The covering email was sent to all local authorities on 7th November 2016. A second email was then sent out to all contacts to remind them about the survey and of the deadline. The deadline was extended by a few extra days (from 9th until 14th December) and a third email was sent to inform those who had not already responded.

Authority responses were monitored throughout the survey. Extensive phone calling was made throughout the survey period to local authorities, to ensure they had received the invitation to participate, to ask if the correct people had received it, and to establish whether they intended or were able to complete the survey, by the required deadline. Local authorities were also offered the chance to complete the survey over the phone with the Anthesis team member making the calls. During the survey period a helpline and email address were made available by Anthesis to answer questions and support local authority officers with filling in the questionnaire.

Sampling strategy

The contact database for local authority officers was used to send emails to at least one contact from each local authority. If a bounce-back email message was received, which included details of a new officer, the contact list was updated and the email was re-sent. If no new contact details were provided, attempts were made to try to identify updated contact details (during the reminder phone calls) to which the questionnaire could be sent.

[14] *Supporting organisations include: Department for Environment, Food & Rural Affairs (England), The Welsh Government, The Welsh Local Government Association, the Department for the Environment (Northern Ireland), LARAC, Resource London, the Organics Recycling Group (ORG) and the Anaerobic Digestion & Bioresources Association (ADBA).*

All local authorities in the UK were targeted. The intention was to maximise responses across the board. However there were some priority areas, to which chase up phones call were given precedence. For example, London, partly due to the comparatively low number of authorities, required a high response rate in order to produce accurate results. Wales was also an area of particular interest. Phone calls were also concentrated on WDAs and Unitary authorities, as these were considered the most likely to be able to complete the survey and have most relevant data.

Questionnaire

A single questionnaire was used for capturing all data from local authorities. This questionnaire included detailed questions covering all waste management services listed within the survey scope (Section 2.1). Question logic was built into the survey so that if the authority answered 'no' to using a specific service (e.g. a MRF or IVC) they then bypassed all subsequent questions regarding that service type. In this manner the questionnaire was kept relevant to the individual authority.

The online questionnaire that was developed by Anthesis for the 2015 survey was used as the template. A number of alterations were made based on recommendations from last year's gate fees report, as well as additional feedback collated by WRAP from local authorities. Last year's experience of delivering the survey was drawn on, and some questions were altered slightly to ensure fewer clarifications with local authorities were required after the survey was complete. For example, rather than asking for gate fees including transport if authorities did not know the gate fee excluding it, they were asked to provide both, and that way it was easier to determine that it had been excluded or not.

All questions relating to gate fees and changes in gate fees were open questions that required the input of £/tonne values. Closed questions were restricted to the section that asked about current and future factors influencing gate fees. This section provided a number of possible options that respondents could select from a predefined list; however, respondents could also select 'other', and add additional comments in a free text box if relevant factors were not contained in the list.

Survey of organic waste treatment operators

The organic waste treatment operators' survey followed the same approach as the local authority survey, in that it was conducted using web-based questionnaires. A different questionnaire was compiled for each of IVC and AD operators (OAW operators were not surveyed this year). The questionnaires were constructed and designed by Anthesis, and hosted by market research website Survey Monkey.

The online questionnaires were publicised to organic waste treatment operators by a covering email containing the relevant survey links depending on the contact and which treatment technologies were relevant to them. Where multiple contact details were available within a company the survey was sent to each one. The survey was also publicised on WRAP's website.

The covering email contained summary information about the gate fees survey in general, and provided links to WRAP's webpage for the previous years' survey. As the summary report from last year's survey are now available on request via WRAP's website, a link to the relevant webpage was provided for both of these reports rather than providing attachments in the email. The covering email also contained the logos of the supporting organisations.

The introductory email was sent to organic waste treatment operators on 8th November 2016. A second email was then sent out to all contacts on 2nd December to remind them about the survey. A third email was sent out on 12th December 2016 to operators that had partially completed a survey or had not yet responded, and the survey deadline was extended to the 16th December 2016 (from the initial date of the 9th), to encourage further responses.

Operator responses were monitored throughout the entire duration of the survey. Phone calls were made throughout the survey period, to ensure they had received the invitation to participate, to ask if the correct people had received it, and to establish whether they intended or were able to complete the survey, by the required deadline. Operators were also offered the chance to complete the survey over the phone with the Anthesis team member making the calls. During the survey period a helpline and email address were made available by Anthesis to answer questions and support local authority officers with filling in the questionnaire.

For this year's study a contact database for IVC and AD operators, was updated from last year using Anthesis' contact details for relevant operators. A total of 272 emails were sent to approximately 150 operators at the start of the survey period (some with multiple contacts).

Questionnaires

Individual questionnaires were devised for IVC and AD operators, based upon those devised by Anthesis for last year's survey. If an operator was known to have more than one type of organic facility, multiple links were included within the emails sent to these contacts.

Wood waste recyclers, reprocessors and thermal processors

The wood waste treatment operators survey was also conducted using a web-based questionnaire. The questionnaire was constructed and designed by Anthesis, and hosted by market research website Survey Monkey.

The online questionnaires were publicised to wood waste treatment operators by a covering email containing the survey link. Where multiple contact details were available within a company the survey was sent to each one. The survey was also publicised on WRAP's website.

The covering email contained summary information about the gate fees survey in general, and provided links to WRAP's webpage for the previous years' survey, and also included logos of the supporting organisations.

The covering email was sent to organic waste treatment operators on 8th November 2016. A second email was then sent out to all contacts on 2nd December to remind them about the survey. A third email was sent out on 12th December 2016 to operators that had partially completed a survey or had not yet responded, and the survey deadline was extended to the 16th December 2016 (from the initial date of the 9th), to encourage further responses.

Operator responses were monitored throughout the entire duration of the survey. Phone calls were made throughout the survey period, to ensure they had received the invitation to participate, to ask if the correct people had received it, and to establish whether they intended or were able to complete the survey, by the required deadline. Operators were also offered the chance to complete the survey over the phone with the Anthesis team member making the calls. During the survey period a helpline and email address were made available by Anthesis to answer questions and support local authority officers with filling in the questionnaire.

The contact database was updated from last year using Anthesis' internal contact database. A total of 66 emails were sent to around 60 different operators. The focus was on understanding the wood waste fuel / biomass market, and therefore the main targets were wood waste recyclers (who may send to wood waste to these facilities) as well as waste wood incineration / biomass fuel facilities themselves.

Questionnaire

The questionnaire used question logic to ask a different set of questions depending on if the respondent was a wood recycler or generated energy from waste wood biomass.

Waste management companies

A number of waste management companies, that have a range of technology types and regional distribution, were identified. Key contacts within these companies were contacted to see whether they would be willing to take part in either a telephone or face-to-face interview, with a senior member of the Anthesis delivery team.

As was the case with previous years, it was anticipated that information gained from these interviews would not necessarily be actual gate fee figures associated with particular facilities, but, more likely, a range of gate fees and a market trend commentary. This information was used to 'sense check' the information received from local authorities. The rationale was that by not asking for gate fees for specific facilities, companies would be more willing to participate, and would also engage in a discussion about relevant drivers in the market place. The approach taken was to present a summary of the gate fees collected in the local authority survey (median and regional differences) and ask the company representatives to confirm or otherwise comment on them. General questions (rather than specific questions about gate fees) were also asked about the local authority and merchant markets.

Data analysis and quality assurance

Whilst there is some data analysis functionality available through the website used to host the online questionnaires it was insufficient for all the survey requirements. Consequently, the data was downloaded into Microsoft Excel file format to facilitate detailed analysis and the production of charts.

Data checking and cleansing

Once the data was downloaded it was checked for obvious errors, as well as less likely errors, which required potential clarification with the respondents. This primarily involved senior members of the team examining the data and highlighting potential errors using their knowledge of the market.

Typical issues which were identified during this data checking and cleaning stage include, for example:

- Where £0/tonne gate fees were stated, checking with the authority these were valid and that they hadn't intended to leave blank;
- The same gate fee entered in both the including and excluding haulage fields; and
- Data which appeared to be outlying (either high or low) or illogical.

Such issues were identified within the data, checked with the supplying local authority by phone or email and corrected prior to analysis of the data. In some cases, where responses were not received and gate fees looked significantly out of step with others, they were eliminated from the analysis.

Haulage costs

The key data for this survey are the gate fees charged at each type of facility (£/tonne). For comparability reasons these must exclude all other costs which may be associated with the management of a waste e.g. collection, bulking, or haulage costs. For this reason this survey has differentiated between prices for 'gate fees excluding transport' and 'gate fees including transport'.

For comparison calculations, only gate fees excluding haulage have been used in the analysis of data. Where responses had been received which included transport only, an estimate was made as to what the transport element of that gate fee was, so a gate fee excluding haulage could be calculated. Authorities were asked, where possible, to provide gate fees both including and excluding haulage. These were used to calculate an average 'transport /tonne' cost for each facility type and then removed from the gate fees which included haulage costs. This enabled additional data points to be considered in the overall analysis. Due care was taken to identify any calculated gate fees where transport costs were thought not be accurately accounted for through this method and these were removed from the analysis.

PFI / integrated contracts

A number of local authorities, with existing PFI or integrated contracts, quoted gate fees which were obviously not 'gate fees' for a specific treatment facility, but represented the whole, or part of a payment for an integrated service. Comments provided within the survey and further questioning of some of these authorities revealed that complex payment mechanisms were in place for waste treatment and disposal, whereby the true cost of the technology or technologies used was masked by the structure of the payment mechanism. This issue is particularly marked under integrated contracts, where service fees may be paid to operators covering a range of services.

Given the issues outlined above, all gate fees that were identified as being linked to complex payment mechanisms, and that led to unusual gate fees being quoted, were excluded from the dataset. Clear examples of this issue are when authorities quote the same gate fee for a range of services.

Materials Recovery Facilities

MRF gate fees depend on the range of materials collected for sorting, and therefore to allow for comparability, only gate fees provided which represented sorting of a typical mix of at least four key materials were included in the overall analysis.

Other Residual Waste Treatment

Authorities were asked whether they were liable for any risk or further costs for the onward disposal of residues and/or refuse derived fuel, either by landfill or energy recovery. Any gate fees provided where the authority was liable for further costs which were not reported were excluded from the analysis, as the gate fee specified was likely to be artificially lower.

Data analysis limitations

In the following analysis of the data collected, relevant sample sizes are reported. When examining data in detail, or comparing results per waste management service from this year to those obtained from previous years, the size of the sample on which results are based needs to be considered. This is particularly relevant when, for instance, comparing results for particular waste management type at national level, or comparing results between English regions, where a small sample size per individual nation or region may make robust comparison difficult. Where such issues arise, these are highlighted in the text.

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