

# UK Energy from Waste Statistics – 2015

September 2016



**TOLVIK**  
CONSULTING

## CONTENTS

|                                     |    |
|-------------------------------------|----|
| 1. OVERVIEW .....                   | 3  |
| 2. WASTE PROCESSED .....            | 4  |
| 3. ENERGY GENERATION .....          | 6  |
| 4. OPERATIONAL DATA .....           | 9  |
| 5. COMMERCIAL .....                 | 12 |
| 6. FUTURE MARKET DEVELOPMENTS ..... | 14 |
| APPENDIX 1 .....                    | 15 |
| APPENDIX 2 – GLOSSARY .....         | 16 |

## CONTEXT

This report looks to bring together data from a range of publicly available data sources into a single document for use by industry and others interested in the development of the UK Energy from Waste (“EfW”) sector.

The majority of the information relates to 2015 but where more recent data is available, it has been included.

Following the release of a preliminary report for 2014 it is hoped that the resulting analysis will, over time, become a consistent and reliable source of data on the UK EfW sector and support more detailed benchmarking.

Where necessary to provide a complete overview of the sector, missing data has been filled by Tolvik’s independent analysis of other relevant information sources.

Any use of the data in this report should reference Tolvik.

## DATA SOURCES

The principal data sources used to compile this Report were:

- ◆ Annual Reports from EfW Operators as required under permit, accessed via third party Freedom of Information request;
- ◆ Wastedataflow for year 2014/15;
- ◆ SEPA: Waste Data 2014;
- ◆ Specific discussions with EfW Operators.

## TOLVIK CONSULTING

Tolvik Consulting is a specialist provider of independent market analysis and commercial advisory services across the waste sector. Our clients include the UK’s leading waste companies, project finance lenders, independent developers and equity finance providers. Further details can be found at [www.tolvik.com](http://www.tolvik.com).

Front Cover Image: Ferrybridge FM1, fully operational July 2015

## 1. OVERVIEW

### 1.1. Scope

This report covers 37 EfW facilities identified by the UK environment agencies as generating energy from the combustion of Residual Waste – i.e. “Municipal and/or Industrial & Commercial Waste” during 2015. The facilities included are shown in Figure 1 and listed in more detail in Appendix 1.

The report excludes facilities in Jersey and the Isle of Man and those processing Waste Wood or other predominantly biomass wastes.



Figure 1: Location of EfW facilities included in this report (Shetland Islands not shown)

|                   | # of Facilities |           | # of Lines |           | Capacity Mtpa |              |
|-------------------|-----------------|-----------|------------|-----------|---------------|--------------|
|                   | 2014            | 2015      | 2014       | 2015      | 2014          | 2015         |
| Fully Operational | 26              | 32        | 51         | 62        | 6.77          | 8.87         |
| In Commissioning  | 7               | 5         | 12         | 6         | 1.65          | 1.21         |
| <b>Total</b>      | <b>33</b>       | <b>37</b> | <b>63</b>  | <b>68</b> | <b>8.42</b>   | <b>10.09</b> |

Table 2: Facilities included in the report

The weighted average age by individual processing line as at end of 2015 was 10.6 years (2014:11.7 years).

The capacity of an EfW used in this report is the capacity contained within the Environmental Permit except where an EfW Operator has publicly reported an alternative (which may be higher or lower).

## 2. WASTE PROCESSED

### 2.1. Total Input Tonnages

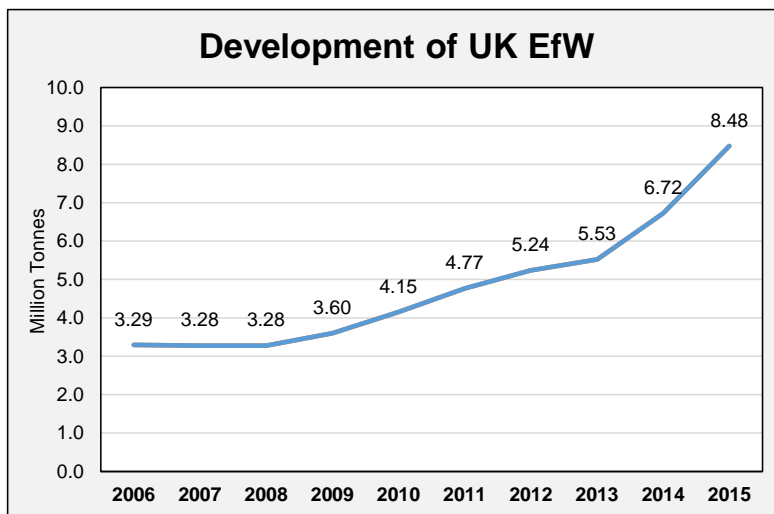


Figure 3: Total EfW Inputs in 2008-2015 Source: EA, Tolvik Analysis

In 2015 a total of **8.48Mt** of Residual Waste and RDF was processed at UK EfWs, up 26% on the equivalent 2014 figure. In the context of UK Residual Waste it is estimated that this tonnage represents 31.3% (2014: 24.5%) of the overall market.

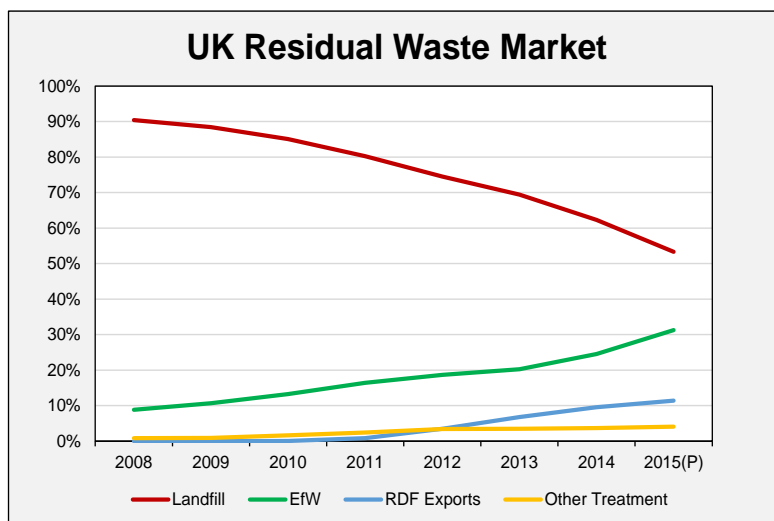


Figure 4: UK Residual Waste Treatment Source: EA, Tolvik Analysis

### 2.2. Waste Types

A detailed analysis of Wastedataflow and other sources for local authority year 2014/15 shows that 85.4% of EfW inputs were of Residual Local Authority Collected Waste (“LACW”) and the remainder Commercial and Industrial (“C&I”) Waste. In 2015 a number of facilities continued to report that they were accepting more than 95% LACW.

| Operator     | ktpa         | Share         |
|--------------|--------------|---------------|
| LACW         | 6,031        | 85.4%         |
| C&I Waste    | 1,030        | 14.6%         |
| <b>Total</b> | <b>7,061</b> | <b>100.0%</b> |

Table 5: Share of Inputs by waste type 2014/15 Source: Tolvik Analysis

### 2.3. Operator Market Share

Figure 6 provides the market share by operator based on input tonnages in 2015. With significant EfW capacity currently in construction (see Section 6) this will change over the next few years.

|               | ktpa         | Share         |
|---------------|--------------|---------------|
| Veolia        | 2,202        | 26.0%         |
| Viridor       | 1,833        | 21.6%         |
| Suez          | 950          | 11.2%         |
| Public Sector | 931          | 11.0%         |
| FCC           | 855          | 10.1%         |
| Cory          | 700          | 8.3%          |
| MES           | 375          | 4.4%          |
| MFE           | 351          | 4.1%          |
| Other         | 280          | 3.3%          |
| <b>Total</b>  | <b>8,478</b> | <b>100.0%</b> |

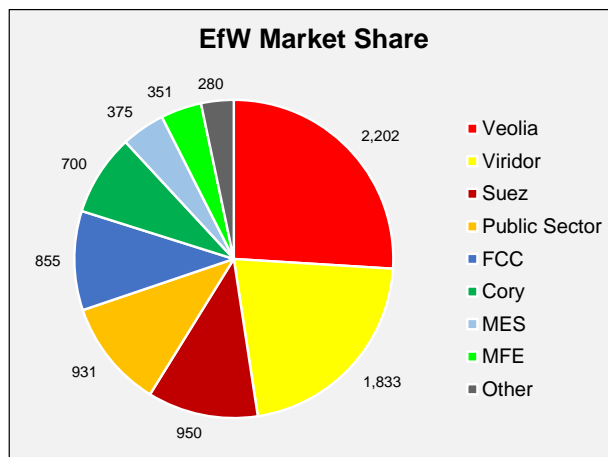


Figure 6: Share of Input Tonnage (Viridor includes 100% of Lakeside EfW) Source: Tolvik Analysis

### 3. ENERGY GENERATION

#### 3.1. Total Power Production

In 2015, total gross power production from UK EfWs, using the average parasitic load in Section 3.4, is estimated to have been 5.45TWh (2014: 3.93TWh) with a net figure of 4.63TWh (2014: 3.37 TWh).

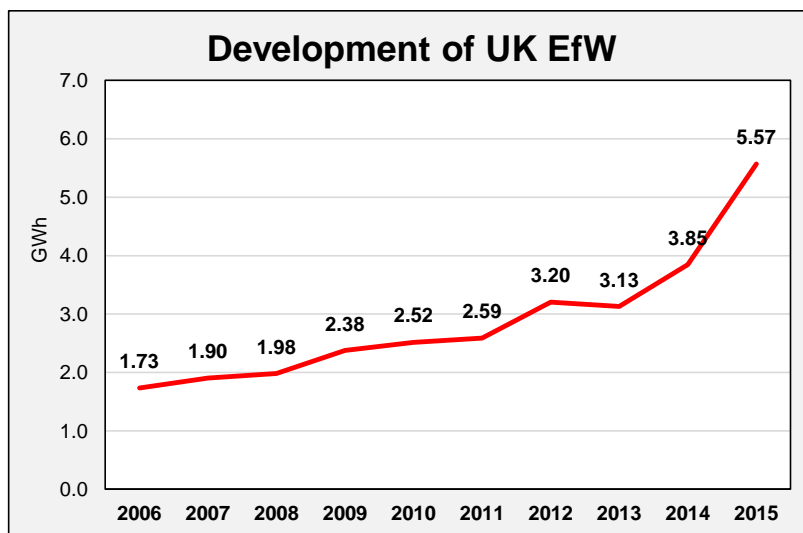


Figure 7: Total Power Production in 2006 - 2015 Source: DUKES

This compares closely with 5.57TWh estimated by DECC in Digest of UK Energy Statistics (“DUKES”). In 2015, according to DUKES, the UK EfW sector contributed 1.6% (2014: 1.1%) to the overall energy generated in the UK.

#### 3.2. Total Heat Offtake

In 2015 only 8 EfWs in the UK were understood to export heat for beneficial use alongside power.

| Facility  | Export (MWh) | Commentary   |
|-----------|--------------|--|
| Eastcroft | 343,916      | In the form of steam and hot water to EnviroEnergy                                     |
| Runcorn   | c. 260,000   | 340k tonnes of steam   |
| Sheffield | 117,959      | To Community District Energy Network   |
| Coventry  | 12,138       | Details not available  |
| Newlincs  | 2,487        | 18,187 MWh available but limited demand  |
| Gremista  | N/A          | Details not available  |
| SELCHP    | N/A          | Commenced Feb-15 to 16 residential blocks and 2,500 residents. Limited further details |
| Devonport | N/A          | Connected to Royal Naval Dockyard. No further details                                  |

Table 8: Heat Offtake in 2015 Source: Various

#### 3.3. Electricity Generation per Tonne of Input

In 2015 the weighted average net power export of electricity per tonne of waste input was **546kWh/t**, a rise of more than 10% when compared with an average of 495kWh/t for 2014.

There has been a steady rise in this average as newer, larger and more efficient EfWs enter operation – in 2009 for example the equivalent average figure was 459kWh/t.

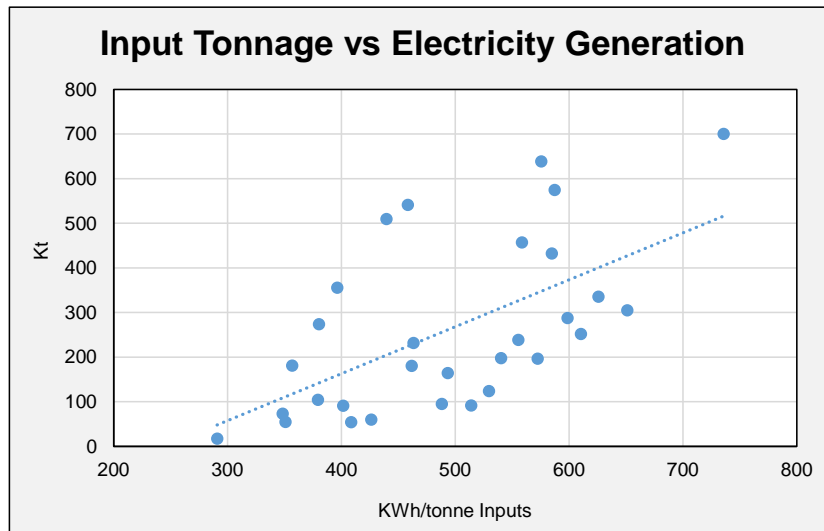


Figure 9: KWh/tonne waste processed vs Input Tonnage Source: Annual Reports

As Figure 9 shows – there is a clear linkage between the scale of the EfW and the electricity generated per tonne of input.

### 3.4. Parasitic Load

The average parasitic power load across the 20 operational EfWs which reported was 15.1% (2014: 14.4%) with a range of 4.4% - 38.3%.

Of the two facilities with the highest parasitic load, one encountered major operational issues during 2015 and the other is one of the smallest EfWs in the UK.

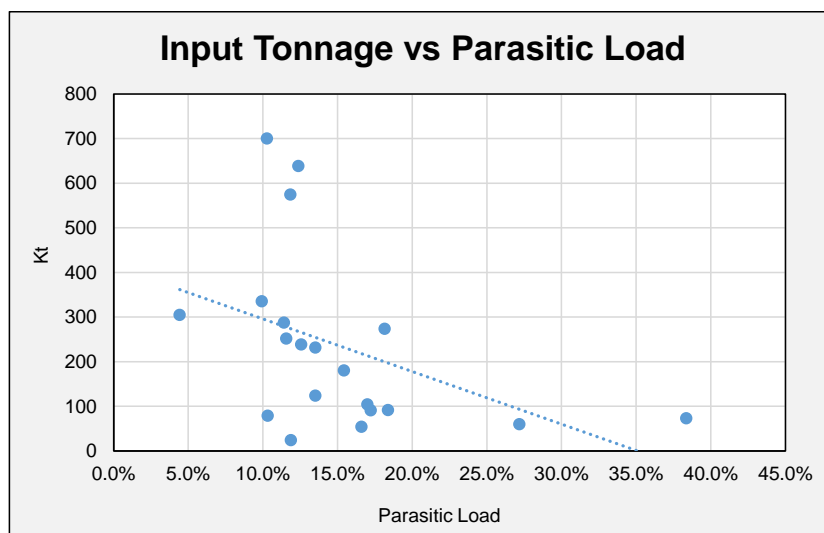


Figure 10: Parasitic Loads Source: Annual Reports

There is a reasonable statistical correlation between facility capacity and parasitic load. Further research on this is required.

### 3.5. Efficiency and R1

By the end of November 2015 the number of EfWs accredited as R1 (“Recovery”) operations rather than disposal facilities had increased from 3 to 17. More are expected to follow.

This in theory means that they could import waste for combustion.

| 2014        | 2015        |              |
|-------------|-------------|--------------|
| Riverside   | Ardley      | Ferrybridge  |
| Newhaven    | Four Ashes  | Kirklees     |
| Tees Valley | Leeds       | Peterborough |
|             | Portsmouth  | SELCHP       |
|             | Sheffield   | Shropshire   |
|             | Southampton | South Devon  |
|             | Suffolk     | Tyseley      |

Table 11: R1 EfWs by date of accreditation EfWs Source: Letsrecycle.com

### 3.6. International Benchmarks

As Table 12 shows, whilst in the UK EfWs are largely focussed on electricity export, in most other European markets energy is exported through a mix of power, hot water and steam. This clearly changes the economics of EfW from country to country, with most European EfWs less reliant on gate fee revenue than those in the UK.

| Country            | Source   | Electricity (MWh/t) | Heat (MWh/t) | Total (MWh/t) |
|--------------------|--|---------------------|--------------|---------------|
| Sweden (2014)      | Avfall Sverige: Svensk Avfallshantering 2015                           | 0.36                | 2.55         | 2.91          |
| Denmark (2014)     | BEATE Benchmarking af affaldssektoren 2015 (data fra 2014) Forbrænding | 0.40                | 2.11         | 2.51          |
| Norway (2014)      | CEWEP Country Report 2016  | 0.25                | 1.90         | 2.15          |
| Germany (2014)     | ITAD: Jahresbericht 2014   | 0.44                | 0.89         | 1.33          |
| Netherlands (2014) | Afvalverwerking in Nederlands, gegevens 2014                           | 0.47                | 0.74         | 1.21          |
| UK (2015)          |  | 0.54                | 0.09         | 0.63          |

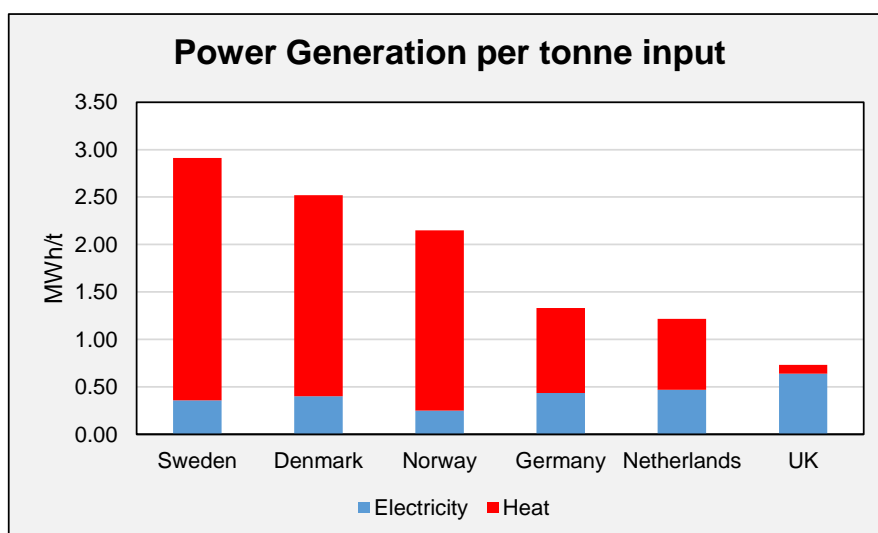


Table 12: European Benchmarks – Energy Production



#### 4. OPERATIONAL DATA

##### 4.1. Availability

For those EfWs for which operational hours were reported and which were operational throughout 2015 (i.e. excluding those commissioning during the year), the average availability in 2015 was 88.1% (2014: 89.0%). The highest reported availabilities were Newhaven (95.9%) and Four Ashes (95.7%).

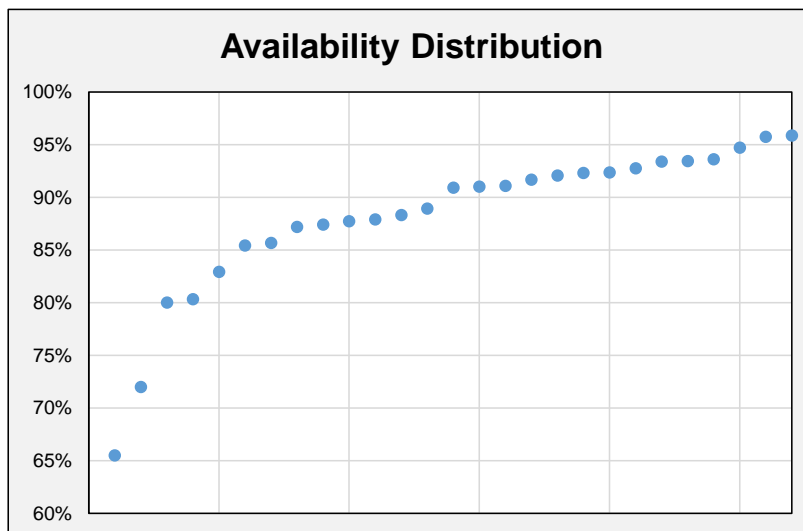


Figure 13: Availability (based on operational hours) for UK EfWs in 2015 Source: Annual Reports

##### 4.2. Capacity Utilisation

For those EfWs in the UK which were operational throughout 2015, average inputs expressed as a percentage of their permitted capacity = 89.0% (2014: 88.2%).

| Country            | Source   | Utilisation |
|--------------------|--|-------------|
| Sweden (2014)      | Avfall Sverige: Svensk Avfallshantering 2015                           | 92.6%       |
| Denmark (2014)     | BEATE Benchmarking af affaldssektoren 2015 (data fra 2014) Forbrænding | 91.3%       |
| Germany (2014)     | ITAD: Jahresbericht 2014   | 94.6%       |
| Netherlands (2014) | Afvalverwerking in Nederlands, gegevens 2014                           | 94.9%       |
| UK (2015)          |  | 89.0%       |

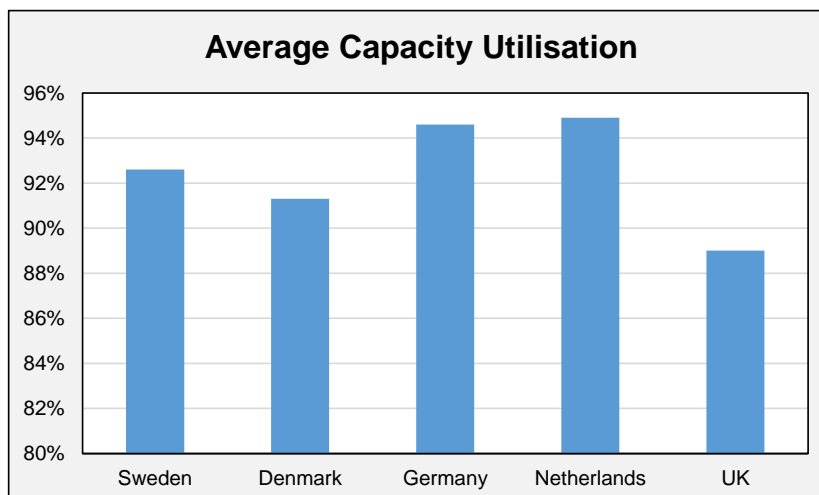


Figure 14: European Benchmarks – Capacity Utilisation

Given the different data sources, some caution is needed in drawing comparisons from Figure 14, as variations in the definitions of permitted capacity and in the CV of input wastes will also impact on the ability of an EfW to maximise its permitted capacity. Figure 14 does confirm that, notwithstanding the EfW over-capacity in Europe, RDF imports (largely from the UK) have helped to ensure a capacity utilisation in Europe of greater than 90%.

### 4.3. Ash and Metals Outputs

| Operator                                | Tonnes Recorded (ktpa) | Average % for Reported EfWs |       |
|---|------------------------|-----------------------------|-------|
|   | 2015                   | 2015                        | 2014  |
| Incinerator Bottom Ash (“IBA”)          | 1,664                  | 20.3%                       | 20.6% |
| Air Pollution Control Residues (“APCr”) | 282                    | 3.5%                        | 3.6%  |
| Metals Recovery                         | 108                    | 1.3%                        | 1.7%  |

Table 15: 2015 Outputs (Sample: 27 EfWs)

#### 4.3.1. Incinerator Bottom Ash (“IBA”)

In 2015 IBA accounted on average for 20.3% (2014: 20.6%) of all waste inputs. IBA outputs expressed as a percentage of waste inputs generally fell within a close range – with the reported exceptions being Allington (which uses fluidised bed technology) and Lancing (which is largely recycled wood fired but accepts some RDF and so is included in this report).

A number of EfW operators recycle their IBA or have plans to do so. Other than in Wales this does not currently “count” towards recycling targets.

If it is assumed that in 2014/5 85% of all EfW inputs in the UK were of waste from Households (Table 5) and assuming that 90% of IBA can be recycled, there is the potential for the UK to recycle 8.48Mt x 85% x 20.3% x 90% = 1.32Mt of IBA.

With 26.8Mt of waste from Households, if IBA recycling were to be included in the definition of recycling in 2015 this would have been the equivalent of a recycling rate of c. **4.9%**. It is noted that the Suez report “*at this rate....exploring England’s recycling challenges*” estimated a figure of 4% for England based on 2013/14 data.

#### 4.3.2. Air Pollution Control Residues (“APCr”)

In 2015, across those facilities for which data is available, APCr represented 3.5% of input waste tonnages (2014: 3.6%). Excluding Allington (see above), the figure for 2015 would have been 3.0%.

It is estimated that, in 2015, around one third of APCr was recycled and the remainder otherwise treated.

A similar analysis to IBA suggests that at this rate 8.48Mt x 85% x 3.6 x 33% = 0.08Mt of APCr generated by waste from Households was recycled – the equivalent to a recycling rate in 2015 of c. **0.2%**

#### 4.3.3. Metals

The December 2015 EC proposals for a Circular Economy confirmed that metals extracted from EfW would be regarded as eligible and “count” towards recycling.

Again assuming 85% of inputs to UK EfWs in 2015 were waste from Households and with an average 1.3% recovery rate, this represents **0.3%** contribution towards recycling rates.

#### 4.3.4. Total Recycling

The potential contribution from EfW to the overall recycling rate of waste from Households, based on

2015 inputs, could, with a revised definition, total **5.4%**.

#### 4.3.5. European Benchmarks

| Country            | Source   | IBA   | APCr | Metals |
|--------------------|--|-------|------|--------|
| Sweden (2014)      | Avfall Sverige: Svensk Avfallshantering 2015; Tolvik database          | 16.7% | 4.4% |        |
| Denmark (2014)     | BEATE Benchmarking af affaldssektoren 2015 (data fra 2014) Forbrænding | 17.0% | 3.0% |        |
| Germany (2014)     | ITAD: Jahresbericht 2014   | 27.0% |      | 2.4%   |
| Netherlands (2014) | Afvalverwerking in Nederlands, gegevens 2014                           | 22.0% | 2.5% | 1.8%   |
| UK (2015)          |  | 20.3% | 3.5% | 1.3%   |

Figure 16: European Benchmarks – Ash and Metal Outputs

#### 4.4. Consumable Use

Data on the use of a range of consumables – lime (or other alkaline reagents), urea and carbon are increasingly being included in EfW Operators’ annual returns. The most prevalent reporting in 2015 related to lime use (Figure 17) and a more detailed analysis of consumable use will be included in subsequent reports.

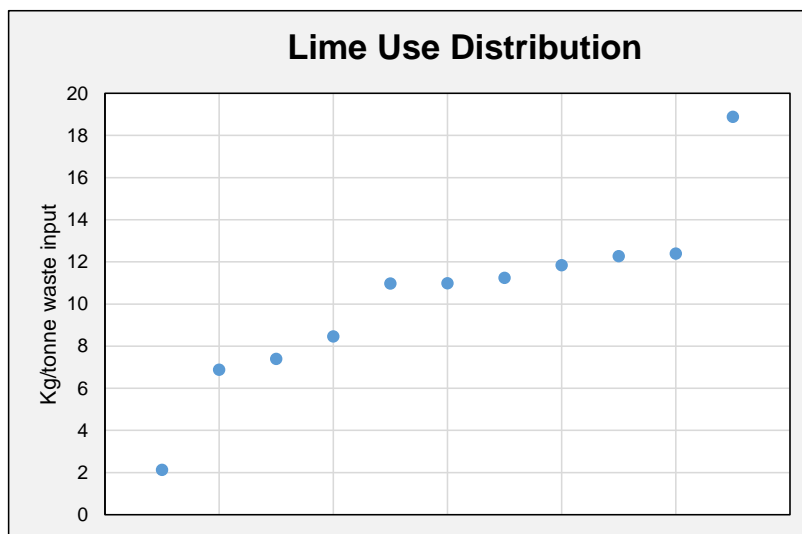


Figure 17: Lime Use (Sample = 11) Source: Annual Reports

#### 4.5. Operational Risk Assessment Scores

All permitted facilities have an Operational Risk Assessment (“OPRA”) score provided by the appropriate regulatory authority. OPRA scores for 2015 have, as at the date of this report, yet to be released.

## 5. COMMERCIAL

### 5.1. Gate Fees

The “WRAP Gate Fee Report” relate largely to Household Waste and the 2016 report calculates a median gate fee of **£86/t** – unaltered from 2015. That there has been no material change is not unsurprising – with only 7 out of the 59 respondents entering into a new contract in the past year. Most contracts are subject to annual indexation.

| Type of Facility | Sample Size |      | Gate Fee (£/ per tonne) |      |             |             |
|------------------|-------------|------|-------------------------|------|-------------|-------------|
|                  |             |      | Median                  |      | Range       |             |
|                  | 2016        | 2015 | 2016                    | 2015 | 2016        | 2015        |
| All facilities   | 59          | 52   | £86                     | £86  | £22 to £131 | £36 to £132 |
| Pre - 2000       | 24          | 27   | £58                     | £73  | £22 to £90  | £36 to £110 |
| Post - 2000      | 35          | 25   | £95                     | £99  | £65 to £131 | £65 to £132 |

Table 18: Local Authority EfW Gate Fees Source: WRAP Gate Fees Report 2015/16

WRAP note that the movement in the sub-set median gate fees, particularly for pre-2000 facilities – was a function of a changed sample rather than any change in market conditions.

The only other source of EfW gate fee income in the public domain was Letsrecycle.com which reported a gate fee range as shown in Figure 19 with a modest upward trend. The midpoint of this range for 2015 was **£83/t**.

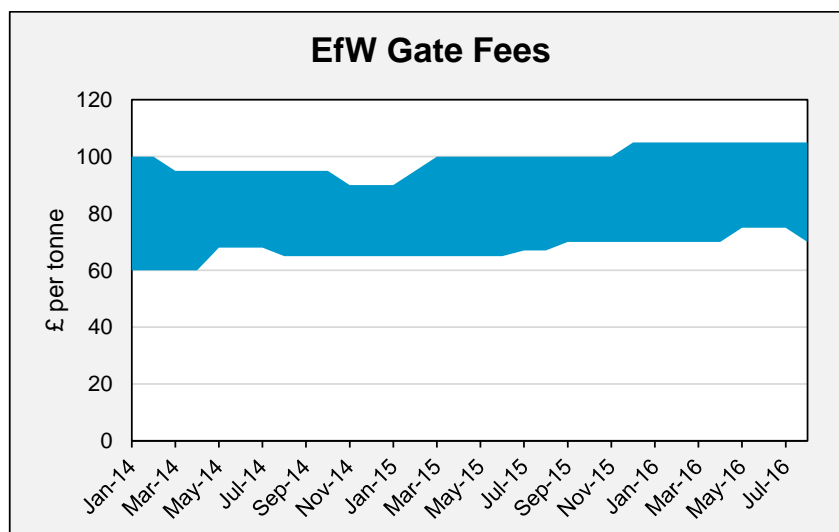


Figure 19: EfW Gate Fees Source: Letsrecycle.com

The level of transfer pricing at a number of EfWs means that any gate fee data in statutory accounts is generally of limited value.

Tolvik is keen to explore with EfW operators how gate fee data may be gathered confidentially and aggregated into an overview of the market. This is something which, for example, is undertaken by Profu, Tolvik’s partners in Sweden on an annual basis and is regarded as valuable information.

### 5.2. Electricity Sales

Figure 20 shows the monthly day ahead wholesale electricity price with an assumed payment for LECs (until they were abolished) based on an average 50% renewable content to EfW inputs. In 2015 the average monthly figure of £42.30/MWh was down by 6% on 2014.

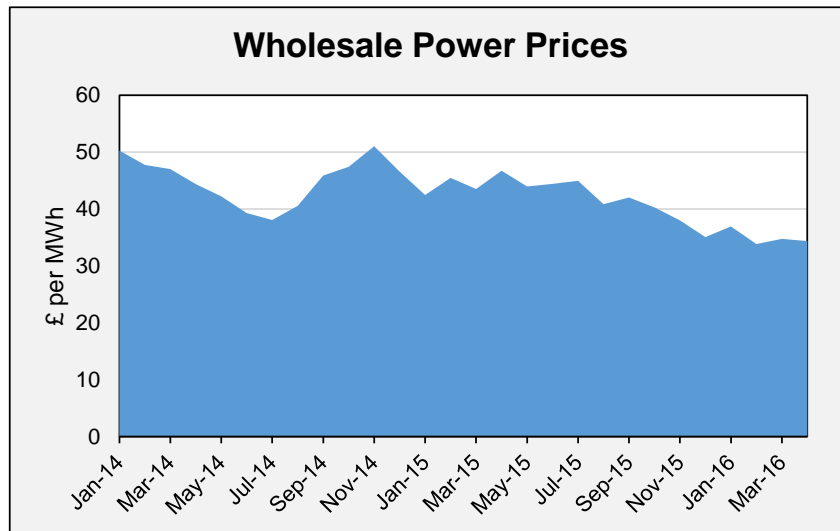


Figure 20: Wholesale Electricity Prices (inc. LEC) Source: Ofgem

Clearly the value of energy sales from an EfW will be dependent on its power purchase agreements (“PPA”) – and it would be reasonable to expect that most EfWs with long term PPAs would have secured a premium to the values shown in Figure 20. For example Tolvik is aware of one EfW whose average power income in 2015 was £57.50/MWh.

## 6. FUTURE MARKET DEVELOPMENTS

### 6.1. Certain UK Capacity

Based on EfWs which were operational, in construction or where finance was in place as at 31 August 2016, and assuming inputs remain at the 2015 and no plants are decommissioned, it is estimated that the “certain” capacity at UK EfWs by 2020 will be 14.90Mt. With an assumed capacity utilisation at the 2015 level of 89% projected inputs are **13.25Mt**.

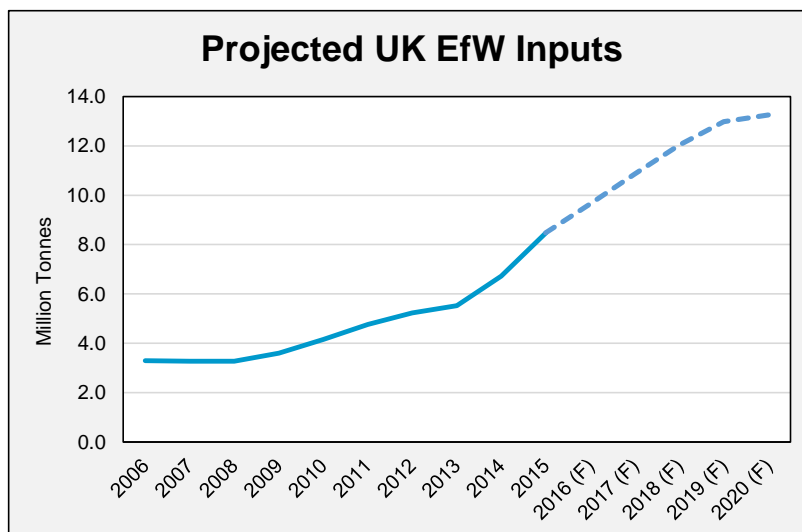


Figure 21: Projected UK EfW Inputs

It is projected that 1.20Mt of the 14.90Mt (i.e. 8%) will be Advanced Conversion Technology (“ACT”). With the cessation of the Air Products’ Tees Valley project earlier in 2016, this figure is lower than previous projections.

### 6.2. Additional EfW Capacity

The deadline for the availability of subsidies under Renewables Obligation means that all ACT projects seeking funding under this scheme are already in construction.

Full construction has been announced on two EfW projects (Energy Works, Hull and K3CHP) which were awarded Contracts for Difference (“CfD”) but the remaining 3 projects (two ACT projects and one Combined Heat and Power (“CHP”) project) are still understood to be in development. Any further ACT projects seeking CfD support will be required to bid in subsequent CfD rounds and will not be eligible for support until 2021. As a result of this, the rate of future development of ACT capacity, at least in the short to medium term, is likely to slow.

Recent improvements in the Residual Waste market (both in terms of tonnages post Brexit and gate fees) have led to a renewed interest in larger scale projects utilising conventional EfW technology. In July 2016 SSE announced that construction of the c.560ktpa Ferrybridge FM2 project would begin and in the same month financing was completed on the 550ktpa K3CHP (Kemsley) facility.

Based on information in the public domain and under confidentiality, Tolvik has identified 8 projects with a total capacity of 2.85Mt which are in active development and could commence construction by the end of 2017.

## APPENDIX 1

## EfWs Operational in 2015

| Name           | Location          | Local Authority                   | Operator        | First Ops Date | Lines | Permitted Capacity kt | 2015 Input kt |
|----------------|-------------------|-----------------------------------|-----------------|----------------|-------|-----------------------|---------------|
| Riverside      | Belvedere         | Western Riverside Waste Authority | Cory            | 2011           | 3     | 700,000               | 700,138       |
| Tyseley        | Birmingham        | Birmingham City Council           | Veolia          | 1996           | 2     | 400,000               | 355,440       |
| Coventry       | Coventry          | Coventry City Council             | Public Sector   | 1975           | 3     | 315,000               | 273,728       |
| Dudley         | Dudley            | Dudley MBC                        | MES             | 1998           | 2     | 105,000               | 90,882        |
| Newhaven       | Newhaven          | East Sussex County Council        | Veolia          | 2011           | 2     | 242,000               | 238,565       |
| Bolton         | Bolton            | Greater Manchester WDA (MBC)      | Viridor         | 1971           | 1     | 127,100               | 91,279        |
| Chineham       | Basingstoke       | Hampshire County Council          | Veolia          | 2003           | 1     | 102,000               | 94,894        |
| Allington      | Allington         | Kent County Council               | FCC             | 2008           | 3     | 500,000               | 509,375       |
| Kirklees       | Huddersfield      | Kirklees MBC                      | Suez            | 2002           | 1     | 150,000               | 123,636       |
| SELCHP         | Lewisham          | Lewisham LB                       | Veolia          | 1994           | 2     | 488,000               | 457,119       |
| NewLincs       | Stallingborough   | North East Lincolnshire Council   | Groupe Tiru     | 2004           | 1     | 56,000                | 54,824        |
| London EcoPark | Edmonton          | North London Waste Authority      | Public Sector   | 1975           | 5     | 675,000               | 541,354       |
| Eastcroft      | Eastcroft         | Nottingham City Council           | FCC             | 1973           | 2     | 260,000               | 180,978       |
| Portsmouth     | Portsmouth        | Portsmouth City Council           | Veolia          | 2005           | 2     | 210,000               | 197,464       |
| Sheffield      | Sheffield         | Sheffield City Council            | Veolia          | 2006           | 1     | 225,000               | 231,516       |
| Gremista       | Shetlands         | Shetland Islands                  | Public Sector   | 1999           | 1     | 26,000                | 23,054        |
| Baldovie       | Dundee            | Dundee                            | Public Sector   | 2000           | 1     | 150,000               | 93,269        |
| Lakeside       | Colnbrook, Slough | Slough Borough Council            | Viridor         | 2010           | 2     | 400,000               | 432,138       |
| Marchwood      | Southampton       | Southampton City Council          | Veolia          | 2004           | 2     | 210,000               | 196,676       |
| Hanford        | Stoke             | Stoke-on-Trent City Council       | MES             | 1997           | 2     | 210,000               | 180,079       |
| Tees Valley    | Haverton Hill     | Stockton-on-Tees Borough Council  | Suez            | 1998/2012/2014 | 5     | 756,000               | 574,732       |
| Lancing        | Lancing           | West Sussex County Council        | Enviropower Ltd | 2011           | 1     | 60,350                | 60,011        |
| Wolverhampton  | Wolverhampton     | Wolverhampton MBC                 | MES             | 1998           | 2     | 110,000               | 104,164       |
| Isle of Wight  | Isle of Wight     | Isle of Wight Council             | Ameycespa       | 2009           | 1     | 38,000                | 16,983        |
| Avonmouth      | Avonmouth         | Bristol City Council              | New Earth       | 2013           | 2     | 120,000               | 73,263        |
| Marsh Barton   | Exeter            | Devon County Council              | Viridor         | 2014           | 1     | 60,000                | 54,123        |
| Runcom         | Runcorn           | Halton Borough Council            | Viridor         | 2014/15        | 4     | 850,000               | 638,340       |
| North Hykeham  | North Hykeham     | Lincolnshire County Council       | FCC             | 2013           | 1     | 170,000               | 164,444       |
| Four Ashes     | Cannock           | Staffordshire County Council      | Veolia          | 2013           | 2     | 300,000               | 335,418       |
| Trident Park   | Cardiff           | Cardiff                           | Viridor         | 2014           | 2     | 350,000               | 287,529       |
| Ardley         | Ardley            | Oxfordshire County Council        | Viridor         | 2014           | 2     | 300,000               | 304,841       |
| Peterborough   | Fengate           | Peterborough City Council         | Viridor         | 2015           | 1     | 85,000                | 24,276        |
| South Devon    | Plymouth          | Plymouth City Council             | MVV             | 2015           | 1     | 265,000               | 74,996        |
| Shropshire     | Battlefield       | Shropshire                        | Veolia          | 2015           | 1     | 102,000               | 78,750        |
| Suffolk        | Great Blakenham   | Suffolk County Council            | Suez            | 2014           | 2     | 269,000               | 251,969       |
| Ferrybridge    | Ferrybridge       | Wakefield City MDC                | MFE             | 2015           | 2     | 675,000               | 350,959       |
| Leeds PFI      | Cross Green       | Leeds City Council MBC            | Veolia          | 2015           | 1     | 179,580               | 16,331        |

## Other Certain EfW Capacity as at Aug-16

| Name               | Location           | Local Authority                  | Operator        | Permitted Capacity kt |
|--------------------|--------------------|----------------------------------|-----------------|-----------------------|
| Cornwall           | St Dennis          | Cornwall                         | Suez            | 240                   |
| Polmadie           | Glasgow            | Glasgow City                     | Viridor         | 150                   |
| SLWP               | Beddington Lane    | Croydon LB                       | Viridor         | 275                   |
| Wilton 11          | Middlesborough     | Stockton-on-Tees Borough Council | Suez            | 400                   |
| Sevenside          | Sevenside          | Bristol City Council             | Suez            | 350                   |
| Worcestershire PF  | Kidderminster      | Worcestershire County Council    | Mercia          | 200                   |
| Eco Park           | Shepperton         | Surrey County Council            | Suez            | 55                    |
| Milton Keynes      | Milton Keynes      | Milton Keynes Council            | Ameycespa       | 90                    |
| Gloucestershire PF | Javelin Park, Glos | Gloucestershire County Council   | Urbaser/Balfour | 190                   |
| Sinfin Road        | Derby              | Derby City Council               | Shanks          | 190                   |
| Allerton           | Knaresborough      | North Yorkshire County Council   | Ameycespa       | 320                   |
| WTI Kemsley        | Kemsley            | Kent County Council              | WTI             | 550                   |
| Oxwellmains        | Dunbar             | East Lothian                     | Viridor         | 300                   |
| Energy Works       | Hull               | Kingston-upon-Hull City Council  | Spencer         | 227                   |
| MultiFuel 2        | Ferrybridge        | Wakefield City MDC               | MFE             | 570                   |
| Rattys Lane        | Hoddesdon          | Hertfordshire County Council     | Bouyges         | 90                    |
| Levensat           | Fauldhouse         | West Lothian                     | Levensat        | 180                   |
| Bombardier         | Belfast            | Belfast City                     | RiverRidge      | 120                   |
|                    |                    |                                  | Total           | <b>4497</b>           |

---

**APPENDIX 2 – GLOSSARY**

|                |  |
|----------------|--|
| ACT            | Advanced Conversion Technology (i.e. gasification/pyrolysis)   |
| APCr           | Air Pollution Control residues   |
| C&I Waste      | Commercial and Industrial Waste  |
| CfD            | Contract for Difference  |
| CHP            | Combined Heat and Power  |
| CV             | Calorific Value  |
| DUKES          | Digest of UK Energy Statistics   |
| EA             | Environment Agency   |
| EfW            | Energy from Waste  |
| IBA            | Incinerator Bottom Ash   |
| LACW           | Local Authority Collected Waste  |
| OPRA           | Operational Risk Assessment  |
| RDF            | Refuse Derived Fuel  |
| Residual Waste | Solid, non hazardous, combustible waste which remains after recycling either treated (in the form of an RDF or SRF) or untreated (as “black bag” waste). |
| SRF            | Solid Recovered Fuel   |



*This report has been prepared by Tolvik Consulting Ltd on an independent basis using our knowledge of the current UK waste market and with reference inter alia to various published reports and studies and to our own in-house analysis. This knowledge has been built up over time and in the context of our prior work in the waste industry.*

*This report has been prepared by Tolvik Consulting Ltd with all reasonable skill, care and diligence as applicable. We do not warrant the accuracy of information provided. Whilst we have taken reasonable precautions to check the accuracy of information contained herein, the advice contained within the report is generic and we would strongly recommend that any assumptions be verified on a project specific basis. Tolvik Consulting Ltd shall not be responsible for the consequences (whether direct or indirect) of any such decisions.*

*Copyright in this document is reserved to ourselves.*