

# UK Energy from Waste Statistics – 2022



May 2023

**INTRODUCTION**

As in previous years, Tolvik’s 2022 report on the UK Energy from Waste (“EfW”) sector brings together data, sourced primarily from the Annual Performance Reports (“APR”) submitted by operators to their respective regulator, into a single, readily accessible document.

The focus of this report remains upon facilities in the UK designed for the combustion of Residual Waste. Residual Waste is defined as non-hazardous, solid, combustible mixed waste which remains after recycling activities. This definition is a little broader than that for Municipal Waste but primarily includes wastes falling within European Waste Catalogue (“EWC”) 19 12 10, 19 12 12 and 20 03 01. The report continues to exclude EfW facilities in Jersey and the Isle of Man.

As last year, the report also provides a high level summary of the tonnage of Residual Waste, generally in the form of Solid Recovered Fuel (“SRF”), sent to co-incineration facilities in the UK.

In recent years the number of operational EfWs in the UK has risen, and at the same time APR reporting requirements have, understandably, become more detailed. The consequence is that the volume of data has increased significantly. We have therefore decided that whilst the published report will continue to be available free of charge via [www.tolvik.com](http://www.tolvik.com), its focus will be upon the performance of the EfW “fleet” as a whole rather than analysing the range of performances of individual EfWs or operators.

If asset / operator specific or longer term trend data is required then Tolvik would be willing to provide bespoke analysis for a modest fee commensurate with the time spent. If this is of interest please contact us at [info@tolvik.com](mailto:info@tolvik.com) and we can provide a fee proposal.

We continue to be very grateful to the co-operation from all concerned in releasing information on a timely basis and their assistance in filling any gaps in the information which arise. We also thank those who have provided feedback on prior issues of the report.

Please note, where applicable, prior year data has been updated to reflect the latest available information and that data tables may not add up to the total due to rounding. Third parties are entitled to freely use the contents of the report, subject to appropriately acknowledging its source.

*Front Cover Image: Baldovie EfW CHP Facility Courtesy: MVV*

**1. KEY METRICS FOR 2022**

<b>Residual Waste Processed</b>	<b>↑</b> 2.6%	<b>Power Exported to Grid</b>	<b>↑</b> 9.1%	<b>Average Availability</b>	<b>↓</b> 0.9%
<b>No. of fully Operational EfWs</b>	<b>57</b>	<b>Total Heat Exported</b>	<b>↓</b> (4.1)%	<b>Net Fossil CO<sub>2</sub> per tonne Input</b>	<b>↓</b> (5.2)%

*Figure 1: Comparison of 2022 vs 2021*

2022 saw the lowest year on year increase in EfW inputs since Tolvik’s annual EfW statistics report was first published in 2014. This was in large part a function of the commissioning profile of new EfWs, although 2022 also saw the lowest average EfW availability since 2015. It is noted that a significant number of APRs made reference to the adverse impact of gas canisters in Residual Waste on EfW reliability.

Turbine reliability continues to improve, helping to contribute to a significant increase in power exports.

Analysis of expanded data on Net Calorific Value (“NCV”) would appear to further support the analysis in last year’s report that the average NCV of unprocessed Residual Waste is around 5% higher than in 2017.

## 2. CAPACITY AND WASTE INPUTS

The EfWs falling within the scope of this report are listed in Appendix 1.

As at December 2022 there were 57 fully operational EfWs in the UK (i.e. those which prepared an APR for 2022) with a further three EfWs which accepted waste during the year as part of commissioning. 14 EfWs were under construction at the end of the year. Three facilities (Sinfin Road ACT, Hoddesdon ACT and Newport), have been categorised as “mothballed / decommissioned” and excluded from further analysis.

The Total Permit Capacity of those EfWs which were fully operational at the end of 2022 was 17.52Mtpa. With an additional 0.74Mtpa of capacity at EfWs which also accepted Residual Waste and 4.98Mtpa at EfWs in construction the “certain” Total Permit Capacity as at the end of 2022 was 23.24Mtpa – an increase of 7.2% over the previous year.

According to data provided, in 2022 a total of 15.32Mt of waste was combusted in UK EfWs, an increase of 2.6% when compared with the revised 2021 total. This is the smallest annual percentage increase in inputs since 2008. For EfWs fully operational throughout 2022, inputs were the equivalent to 88.0% of the Permit Capacity (2021: 89.0%).

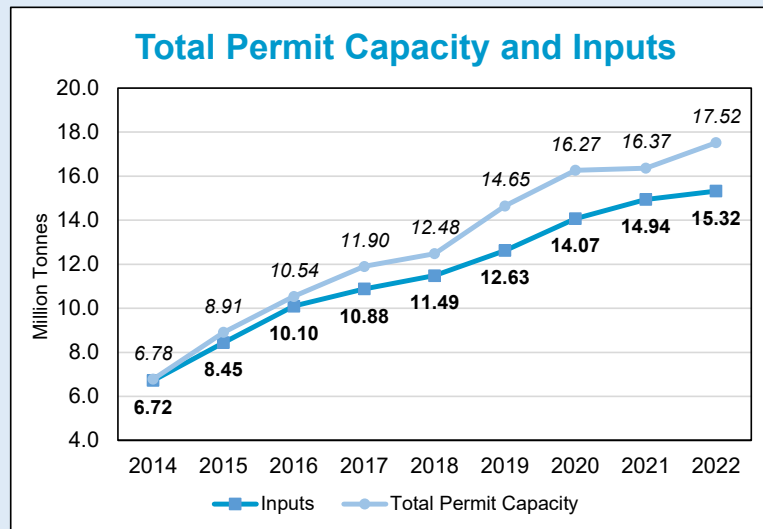


Figure 2: Total Permit Capacity and EfW Inputs in 2014-2022 Source: APR

Mtpa	Permit Capacity		Total Inputs	
	Fully Operational	Total (incl. in construction)	Tonnage	Annual Increase
2018	12.48	16.88	11.49	5.6%
2019	14.65	18.41	12.63	9.9%
2020	16.27	20.37	14.07	11.4%
2021 (r)	16.37	21.67	14.94	6.2%
<b>2022</b>	<b>17.52</b>	<b>23.24</b>	<b>15.32</b>	<b>2.6%</b>

Figure 3: Total Permit Capacity (as at December 2022) and EfW Inputs Source: Tolvik analysis

As at December 2022 the capacity-weighted average age of the 60 UK EfWs which accepted waste in 2022 was 11.1 years (2021: 10.7 years).



### EfW Inputs by Waste Source and Code

Based on a detailed review of APRs for 2022 and Wastedataflow<sup>(1)</sup> for 2021/22, it is estimated that in 2022 76.3% (2021: 77.0%) of all EfW inputs were derived from Residual Local Authority Collected Waste (“LACW”) with the remainder being Commercial and Industrial Waste (“C&I”).

In 2022, 38kt (2021: 38kt) of Clinical Waste was reported by operators as being processed by EfWs.

### Net Calorific Value of Residual Waste

In 2022, for the first time the majority of facilities (36) provided NCV data within their APR. In a few cases the data was clearly incorrect (being an order of magnitude wrong) and so has been excluded from analysis.

Considering only those EfWs primarily accepting untreated waste under 20 03 xx codes, the weighted average NCV for all inputs was 9.78MJ/kg (2021: 9.62MJ/kg). These facilities in total accepting 79.4% LACW and 20.6% C&I Waste.

A detailed analysis by Tolvik of data relating to the NCV of Residual Waste (from a variety of sources, some of which were under confidentiality) suggested that the average NCV for Residual LACW in 2017 was 8.87MJ/kg and for Residual C&I Waste it was 11.01MJ/kg.

The 2021 report estimated that, on a like-for-like basis, **average NCVs were 4.3% higher in 2021 than 2017**, but as this was the first such year in which there was a variance to 2017 data it was not statistically significant. In 2022, using the 2017 data as the basis for calculation the expected weighted average NCV of Residual Waste inputs would have been 9.31MJ/kg. On a like-for-like basis, this infers that **average NCVs were 5.0% higher in 2022 than 2017** – i.e. broadly in line with last year’s analysis, so suggesting a modest increase of around 5% in average NCVs over the last 5 years.

## 3. ENERGY

It is estimated that the total power exported by EfWs in the UK in 2022 was 9,428GWh – approximately 3.2% of total net UK power generation of 293,746GWh<sup>(2)</sup>.

	Est. Gross Power Generation GWh <sub>e</sub>	Power Export GWh <sub>e</sub>	Parasitic Load (excl. power import)	Parasitic Load (incl. power import)	Average Export kWh/tonne input	Net Heat Export GWh <sub>th</sub>
2018	7,150	6,230	12.9%	13.9%	542	1,112
2019	7,769	6,703	13.7%	16.2%	531	1,384
2020	9,002	7,769	13.7%	15.5%	553	1,651
2021	10,060	8,643	14.1%	16.2%	591	1,845
<b>2022</b>	<b>10,861</b>	<b>9,428</b>	<b>13.2%</b>	<b>14.3%</b>	<b>620</b>	<b>1,770</b>

Figure 4: 2022 Power Generation Source: Tolvik analysis

The average power exported per tonne of waste inputs was 620kWh – the highest reported figure. This was in part due to improved turbine availability during the year (see page 4), but it is also likely to have been influenced by the modest rise in Residual Waste NCV as discussed in Section 2.

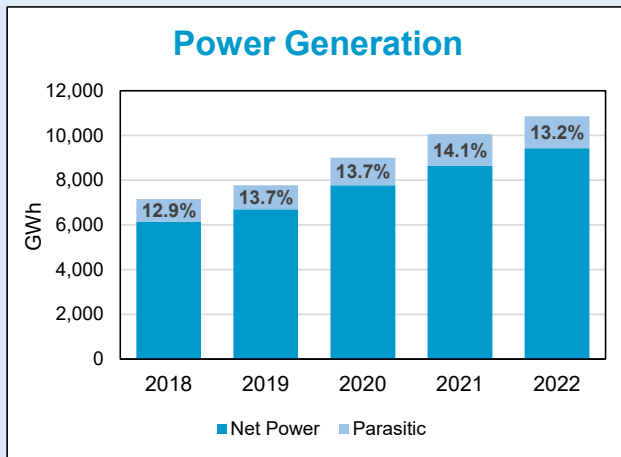


Figure 5: Power Generation from EfW

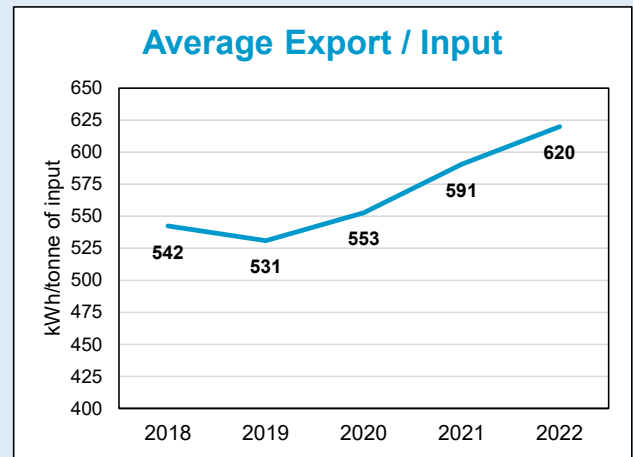


Figure 6: Average Power Export per tonne of input

### Beneficial Heat Use

In 2022, 1,770GWh<sub>th</sub> (2021: 1,845GWh<sub>th</sub>) of heat was exported for beneficial use alongside power. Across all EfWs this was the equivalent of 115kWh<sub>th</sub>/tonne of inputs (2021: 123kWh<sub>th</sub>/tonne).

EfW	Est. Export GWh <sub>th</sub>				
	2018	2019	2020	2021	2022
Runcorn	408	405	480	616	502
Eastcroft	332	420	405	390	361
Wilton 11	100	303	373	332	289
Kemsley	-	-	123	235	344
Sheffield	112	111	95	98	91
Devonport	59	48	54	54	52
Gremista	40	40	50	42	49
SELCHP	38	39	40	44	39
Leeds	8	2	14	16	25
Coventry	11	13	8	12	13
NewLincs	3	3	7	3	4
Other	-	-	2	2	-
<b>Total</b>	<b>1,112</b>	<b>1,384</b>	<b>1,651</b>	<b>1,845</b>	<b>1,770</b>

Figure 7: Reported Heat Exports from EfWs Source: APR

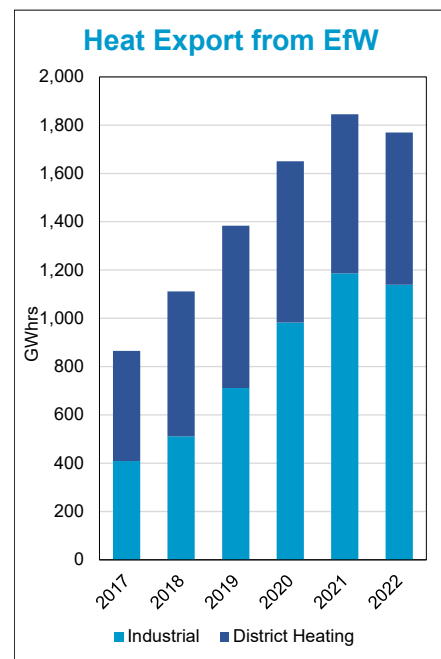


Figure 8: Heat Exports by Demand Source: APR

## 4. OPERATIONS

For those EfWs which were operational for the whole of 2022, the weighted average availability based on waste combustion hours was 87.7% (2021: 88.6%). The simple average turbine availability was identical at 87.7% (2021: 84.0%) – the first time turbine availability has been at least as great as waste combustion availability. This enhanced turbine availability helped contribute to the higher average net power export.

For the six reporting ACT facilities, the average availability during 2022 was 58.3% (2021: 48.5%) with a high of 81.6%. Excluding these ACT facilities, the weighted average availability for waste combustion at “conventional” EfWs during the year was 89.4% (2021: 90.6%).

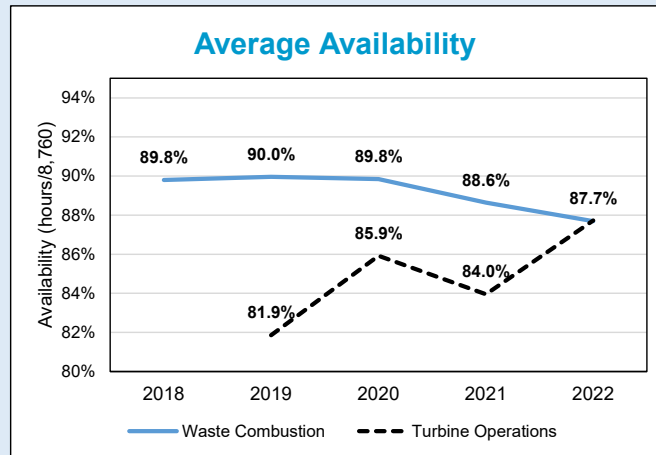


Figure 9: Average EfW availability - Hours Source: Tolvik analysis

	Availability - Hours		% of Input Tonnage		
	Waste Combustion – Weighted Average	Turbine Operations – Simple Average	Incinerator Bottom Ash (“IBA”)	Air Pollution Control Residue (“APCR”)	Metals Recovery (if reported)
2018	89.8%		19.9%	3.3%	1.9%
2019	90.0%	81.9%	19.4%	3.3%	1.9%
2020	89.8%	85.9%	19.8%	3.1%	1.9%
2021	88.6%	84.0%	19.8%	3.2%	1.7%
<b>2022</b>	<b>87.7%</b>	<b>87.7%</b>	<b>19.3%</b>	<b>3.0%</b>	<b>1.6%</b>

Figure 10: Operational Data Source: APR

Figure 10 also shows ash generation and metals recovery per tonne of waste input declining modestly.

### Consumable Use

The analysis in this section is calibrated to “Specific Usage” i.e. usage per tonne of waste input.

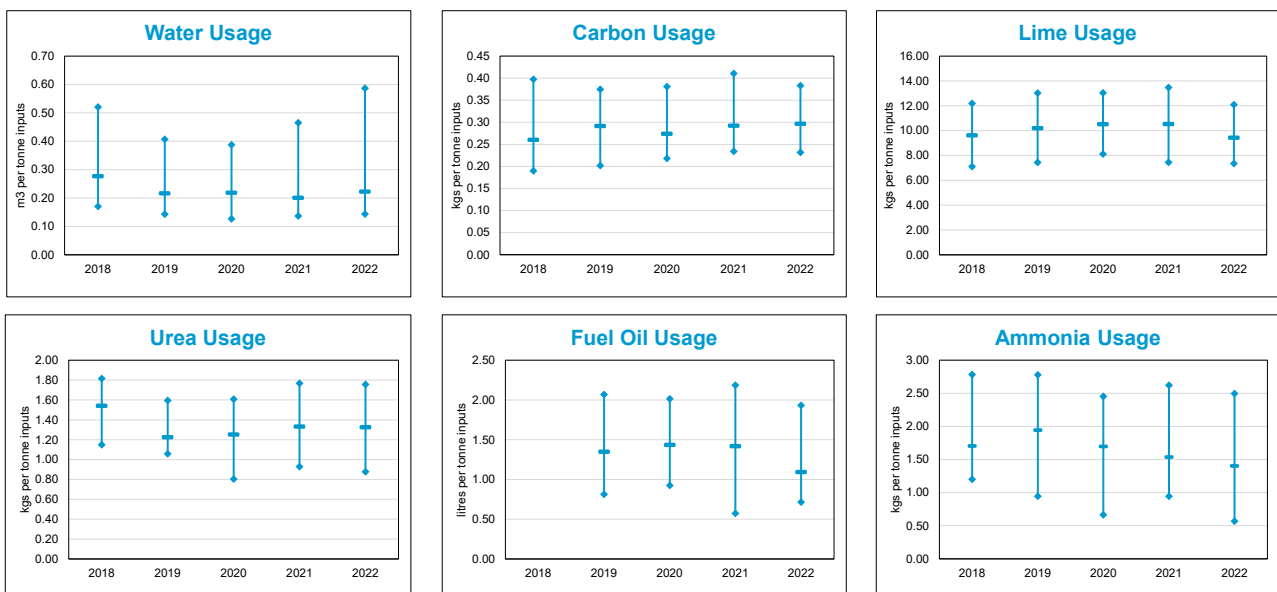


Figure 11: Trends in Consumable Usage (where reported) Source: APR

Note the trend in reduction in the last few years in fuel oil usage and ammonia usage; both perhaps reflecting the significant increase in the cost of these commodities.

**R1 Energy Efficiency Status**

As at April 2023, based on EA data and information in the APR, 35 fully operational EfWs with a total headline capacity of c. 13.5Mtpa were accredited as R1 (“recovery”) operations.

Those EfWs in 2022 which did not have R1 status were classified as “disposal” operations.

**Carbon Intensity of EfW (per tonne)**

In 2022 the standard APR format in England was expanded to include data reporting with respect to carbon emissions. Of the 47 fully operational EfWs in England, 41 provided returns on carbon emissions.

The key new elements of data relate to total CO<sub>2</sub> emissions per tonne, N<sub>2</sub>O emissions per tonne and biogenic/qualifying CO<sub>2</sub> emissions.

As Figure 12 shows, the weighted average reported CO<sub>2</sub> emissions per tonne has fallen over the last 5 years. In some cases this is because previous Pollution Inventory (“PI”) returns from EfW operators had been estimates. Whilst the quality of data continues to improve, 2022 returns included one EfW reporting total emissions of 0.30tCO<sub>2</sub> per tonne of Residual Waste input and another 1.44tCO<sub>2</sub> per tonne.

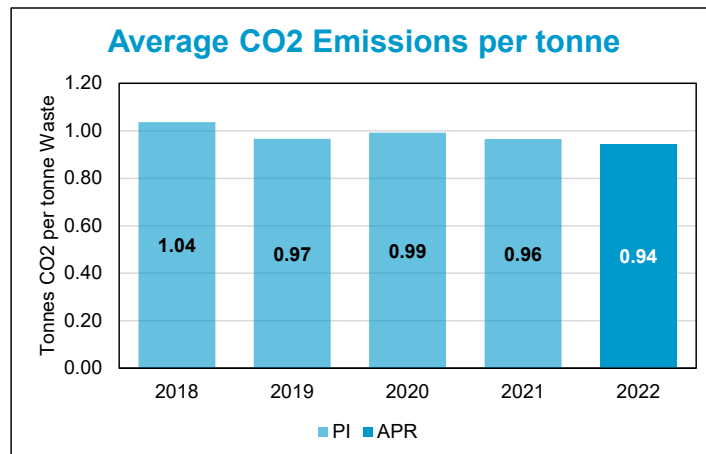


Figure 12: Trends in CO<sub>2</sub> emissions per tonne

In 2022 the average estimated biogenic content of CO<sub>2</sub> emitted from UK EfWs was 52.5% with a range across all facilities of 26.4% to 70.8%. The corresponding 47.5% fossil content was broadly similar to the estimates Tolvik used in past editions of this report.

In 2022 the average reported N<sub>2</sub>O emissions per tonne were significantly lower than the average reported in previous years in the PI. This could be due to a greater number of facilities reporting in the APR (the number of returns in the PI was relatively low – and potentially those with higher emissions tended to report). However the reported data varies so further validation of data from future returns may be beneficial.

Excluding any benefits from avoiding landfill, it is estimated that in 2022, on average across the UK fleet, net carbon emissions were 0.308tCO<sub>2</sub>e per tonne of waste.

The figures for 2021 have been updated with the latest available PI data and overall in 2022 across the UK EfW fleet net carbon emissions per tonne were down 5.2% on the revised estimated emissions of 0.324tCO<sub>2</sub>e per tonne of waste for 2021.

	Per tonne of Input Waste	Unit	Data Source	2020	2021 (revised)	2022
	Average CO <sub>2</sub> emitted	tCO <sub>2</sub>	2020/21 PI <sup>(3)</sup> , 2022 APR	0.992	0.965	0.942
	% Fossil		2020/21 Estimate, 2022 APR	47.9%	47.9%	47.5%
Emissions	Fossil CO <sub>2</sub> emitted	tCO <sub>2</sub>		0.475	0.463	0.448
	N <sub>2</sub> O emitted	tCO <sub>2</sub> e	2020/21 PI <sup>(3)</sup> , 2022 APR	0.037	0.028	0.014
	Fuel import	tCO <sub>2</sub> e	APR and UK GHG Conversion Factor	0.007	0.006	0.006
	<b>Total Fossil Emissions</b>	<b>tCO<sub>2</sub>e</b>		<b>0.519</b>	<b>0.497</b>	<b>0.468</b>

EfW Outputs	Total Power Export	MWh	Figure 4	0.553	0.591	0.620
	Imported Power	MWh	APR	(0.007)	(0.006)	(0.005)
	Net Power Export	MWh		0.546	0.584	0.615
	Heat Export	MWh	Figure 7 text	0.117	0.124	0.115
	Recycling Benefit	t	Figure 10	0.019	0.017	0.016
Substitution Benefits	Net Power Export	tCO <sub>2</sub> e	Converted using UK Government GHG Conversion Factors for company reporting for the applicable year <sup>(4)</sup>	(0.127)	(0.124)	(0.119)
	Heat Export	tCO <sub>2</sub> e		(0.020)	(0.026)	(0.020)
	Recycling Benefit	tCO <sub>2</sub> e		(0.039)	(0.022)	(0.021)
	<b>Total Benefits</b>	<b>tCO<sub>2</sub>e</b>		<b>(0.186)</b>	<b>(0.173)</b>	<b>(0.160)</b>

<b>Impact (Net Emissions)</b>	<b>tCO<sub>2</sub>e</b>		<b>0.333</b>	<b>0.324</b>	<b>0.308</b>
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Figure 13: Estimated Carbon Emissions per tonne of waste input

## 5. COMPLIANCE

Compliance in the EfW sector is a combination of operator self-monitoring, reporting to and monitoring by the relevant regulator. Operators advise that measurement uncertainty, limits of detection for small samples and impact of background pollutant levels can all affect the analysis, but the protocols used by the sector should be such that reported results are effectively a worst case.

Across all continuously monitored emissions to air, on average in 2022 emissions were modestly higher at 29.3% of the Emission Limit Value (“ELV”) (2021: 28.4%). Meanwhile, for periodically sampled emissions, on average emissions were 9.4% of ELV (2021: 8.6%).

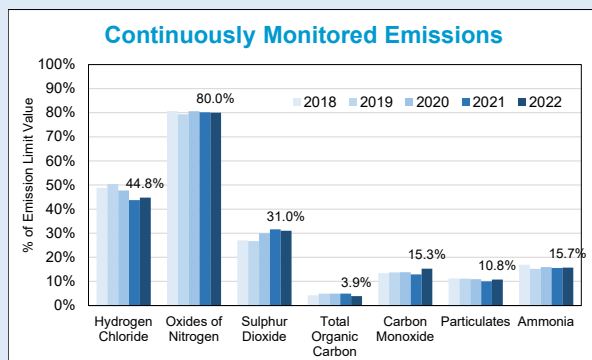


Figure 14: Continuously Monitored to Air Source: APR

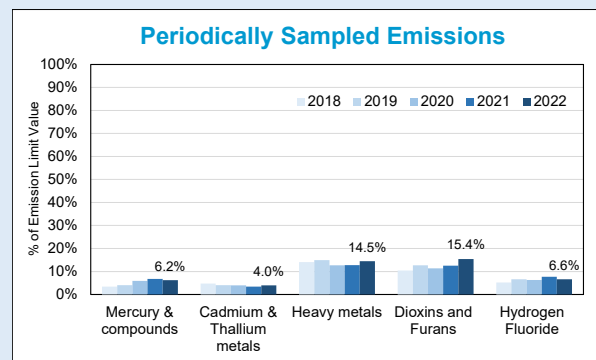


Figure 15: Periodically Sampled to Air Source: APR



**Abnormal Operations**

Abnormal Operations	Unit	Year	Total	Number of EfWs Reporting	Per EfW
Abnormal Hours	Hours	2020	168	48	3.5
		2021	120	52	2.3
		<b>2022</b>	<b>168</b>	<b>48</b>	<b>3.5</b>
Abnormal Events	Instances	2020	72	48	1.5
		2021	101	51	2.0
		<b>2022</b>	<b>95</b>	<b>54</b>	<b>1.8</b>
Permit Breaches	Instances	2020	148	47	3.1
		2021	139	50	2.8
		<b>2022</b>	<b>222</b>	<b>55</b>	<b>4.0</b>

Figure 16: Abnormal Operations Source: APR

In 2022 nine different EfWs reported more than 10 permit breaches and together accounted for 66% of all breaches. Three EfWs, whose operator went into administration during the year, accounted for 27% of all permit breaches.

**6. CAPACITY DEVELOPMENT**

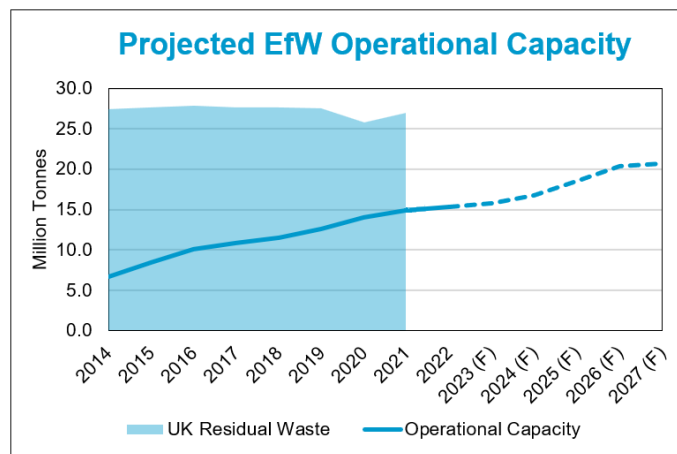


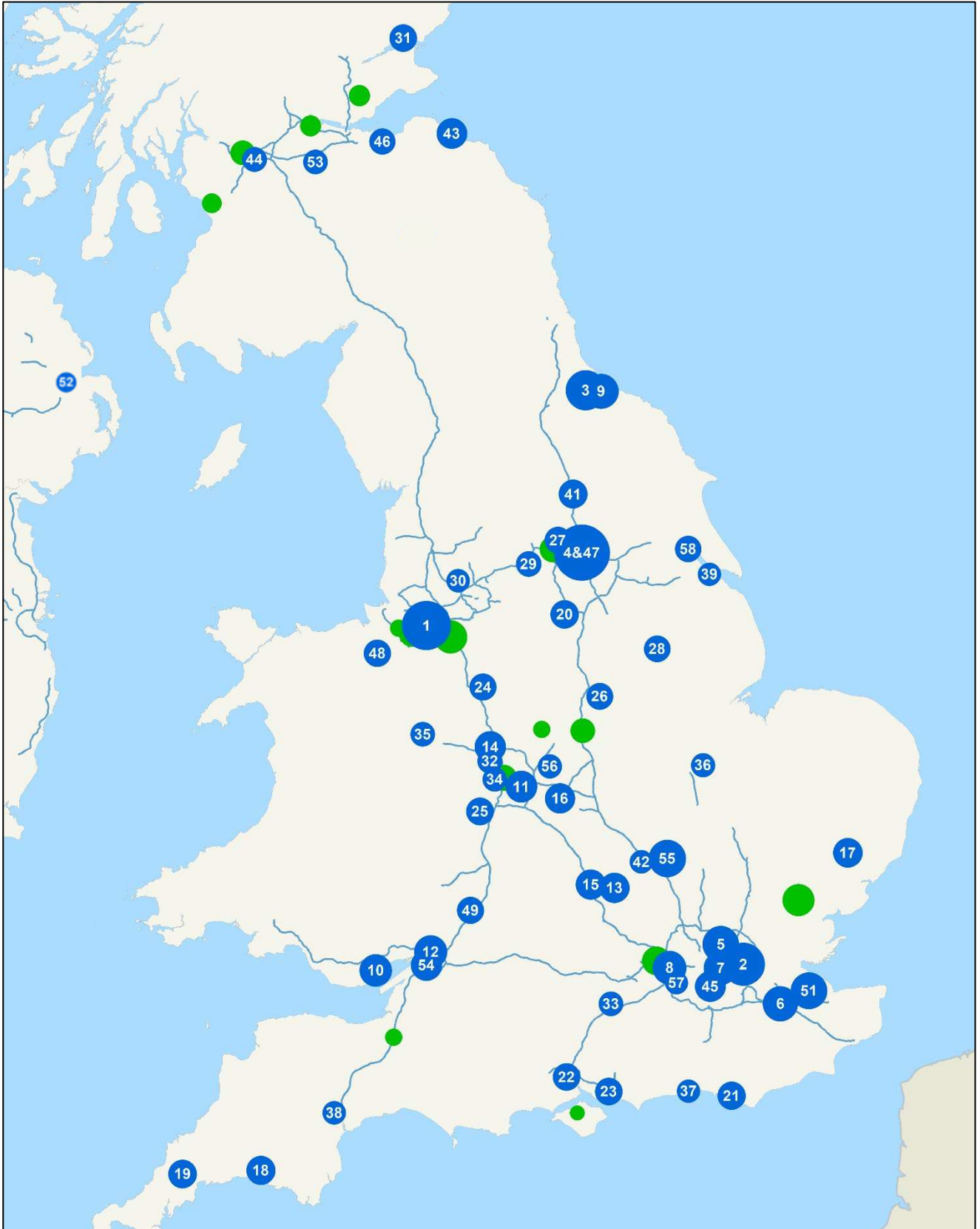
Figure 17: Projected EfW Operational Capacity and Residual Waste Source: APR

Based on EfWs which were operational and in construction as at December 2022, Section 2 identifies the Total Permit Capacity of 23.24Mtpa. Permit Capacity is not suitable for projecting future EfW capacity – as EfWs generally do not operate at this level.

“Operational Capacity” is a more appropriate measure. It is estimated that, based on the level of inputs in 2022 of 88% as discussed in Section 2, by 2027 the UK Operational Capacity will be **20.7Mtpa**.

Figure 17 also shows historic Residual Waste tonnages in the UK.

**APPENDIX 1: ENERGY FROM WASTE FACILITIES INCLUDED IN THE REPORT**



Key: Location of EfW facilities (ID Numbers refer to page 10, Blue = Operational, Green = In Construction / Commissioning)

**Operational EfWs** (i.e. those providing an APR for 2022)

(P) denotes Public Sector

	Permitted Name	Known As	Location	2022 Operator	Permit Capacity (ktpa)	Processed (ktpa)	
						2021	2022
1	Runcorn EfW Facility	Runcorn	Halton	Viridor	1,100	957	930
2	Riverside Resource Recovery Facility	Riverside	Bexley	Cory	850	782	789
3	Tees Valley - EfW Facility	Tees Valley	Stockton-on-Tees	Suez	756	675	675
4	Ferrybridge Multifuel 1	Ferrybridge FM1	Wakefield	enfinium	725	656	621
47	Ferrybridge Multifuel 2	Ferrybridge FM2	Wakefield	enfinium	725	669	633
51	Kemsley Park EfW	Kemsley	Kent	enfinium	657	527	542
5	Edmonton EcoPark	Edmonton	Enfield	LondonEnergy (P)	620	516	489
55	Rookery South ERF	Rookery South	C Bedfordshire	Encyclis	585	170	477
6	Allington Waste Management Facility	Allington	Kent	FCC	560	472	464
9	Wilton 11 EfW	Wilton 11	Middlesborough	Suez	500	459	356
8	Lakeside EfW	Lakeside	Slough	Lakeside	468	382	425
12	Severnside Energy Recovery Centre	Severnside	S.Gloucestershire	Suez	467	402	383
7	SELCHP ERF	SELCHP	Lewisham	Veolia	464	434	428
11	Tyseley ERF	Tyseley	Birmingham	Veolia	441	375	376
10	Cardiff Energy Recovery Facility	Trident Park	Cardiff	Viridor	425	378	360
54	Severn Road RRC	Avonmouth	Bristol	Viridor	377	285	364
45	Beddington Energy Recovery Facility	Beddington Lane	Croydon	Viridor	347	320	334
13	Greatmoor EfW	Greatmoor	Buckinghamshire	FCC	345	303	297
14	Staffordshire ERF	Four Ashes	Staffordshire	Veolia	340	339	340
15	Ardley EfW Facility	Ardley	Oxfordshire	Viridor	326	334	309
43	Dunbar Energy Recovery Facility	Dunbar	East Lothian	Viridor	325	307	314
41	Allerton Waste Recovery Park	Allerton Park	North Yorkshire	Thalia	320	287	284
16	CSWDC Waste to Energy Plant	Coventry	Coventry	CSWDC (P)	315	295	298
58	Hull Energy Works	Energy Works ACT	Hull	BIG	315	35	52
17	SUEZ Suffolk - EfW Facility	Great Blakenham	Suffolk	Suez	295	292	283
18	Devonport EfW CHP Facility	Devonport	Plymouth	MVV	265	243	260
20	Sheffield ERF	Sheffield	Sheffield	Veolia	245	228	224
21	Newhaven ERF	Newhaven	East Sussex	Veolia	242	229	229
19	Cornwall Energy Recovery Centre	Cornwall	Cornwall	Suez	240	242	240
25	EnviRecover EfW Facility	Hartlebury	Worcestershire	Severn	230	216	213
22	Integra South West ERF	Marchwood	Southampton	Veolia	220	210	200
23	Integra South East ERF	Portsmouth	Portsmouth	Veolia	220	200	206
24	Stoke EfW Facility	Hanford	Stoke-on-Trent	MESE/Cobalt	210	185	194
26	Eastcroft EfW Facility	Eastcroft	Nottingham	FCC	200	186	182
48	Parc Adfer ERF	Parc Adfer	Deeside	enfinium	200	192	198
28	Lincolnshire EfW Facility	North Hykeham	Lincolnshire	FCC	190	171	172
46	Millerhill Recycling and ERC	Millerhill	Edinburgh	FCC	190	161	157
49	Javelin Park ERF	Javelin Park	Gloucestershire	Urbaser	190	191	189
27	Leeds Recycling and ERF	Leeds	Leeds	Veolia	190	181	187
31	Baldovie Waste To Energy Plant	Baldovie	Dundee	MVV	175	161	182
44	Glasgow RREC	Glasgow ACT	Glasgow	Viridor	154	99	132
29	Kirklees EfW Facility	Kirklees	Huddersfield	Suez	150	134	120
52	Full Circle Generation EfW	Belfast ACT	Belfast	FCG	144	49	99
56	Baddesley EfW	Baddesley	Warwickshire	Kantor	130	71	74
32	Wolverhampton EfW Facility	Wolverhampton	Wolverhampton	MESE/Cobalt	118	112	110
33	Integra North ERF	Chineham	Hampshire	Veolia	110	105	97
30	Bolton ERF	Bolton	Gtr Manchester	Suez	107	42	65
34	Dudley EfW Facility	Dudley	Dudley	MESE/Urbaser	105	97	93
35	Battlefield EfW Facility	Battlefield	Shropshire	Veolia	102	99	94
53	Levensat Renewable Energy	Levensat ACT	West Lothian	Levensat	97	50	55
42	Milton Keynes Waste Recovery Park	Milton Keynes ACT	Milton Keynes	Amey	94	56	56
36	Peterborough EfW Facility	Peterborough	Peterborough	Viridor	85	81	91
37	Enviropower Ltd, Lancing	Lancing	West Sussex	Enviropower	75	67	53
38	Exeter ERF	Exeter	Devon	Paprec/Viridor	60	60	60
39	Integrated Waste Management Facility	NewLincs	NE Lincolnshire	Paprec	56	51	51
57	Charlton Lane Eco Park	Eco Park ACT	Surrey	Suez	55	0	27
40	Energy Recovery Plant	Gremista	Shetland Islands	SHEAP (P)	26	19	23
	Other EfWs					100	167
			<b>Totals</b>		<b>17,522</b>	<b>14,941</b>	<b>15,323</b>

**EfWs In Construction / Commissioning**

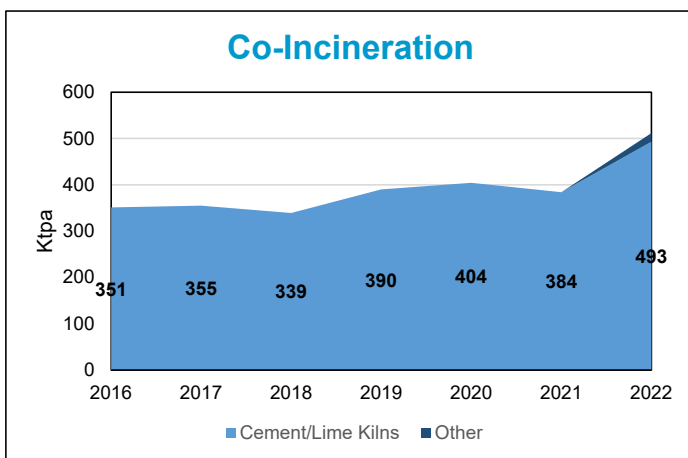
	Permitted Name	Known As	Location	Developer	Financial Close	Capacity (ktpa)
C12	Isle of Wight EfW	Isle of Wight	Isle of Wight	Thalia	Q2 2017	30
C15	Hooton Park Sustainable Energy	Hooton Park ACT	Merseyside	BWSC/Cogen	Q4 2018	266
C16	Bridgwater Resource Recovery	Bridgwater	Somerset	Equitix/Iona	Q4 2018	123
C17	Earls Gate Energy Centre	Earls Gate	Falkirk	Brockwell/Encyclis	Q4 2018	236
C19	Lostock Sustainable Energy Plant	Lostock	Cheshire West	FCC/CIP	Q1 2019	600
C20	NESS EfW Facility	NESS	Aberdeenshire	Indaver/Acconia	Q3 2019	150
C21	Newhurst ERF	Newhurst	Leicestershire	Biffa/Encyclis	Q1 2020	350
C22	Drakelow Energy Generation Facility	Drakelow ACT	Derbyshire	Vital Energi	Q1 2020	170
C24	Protos Refuse Derived Fuel Plant	Protos	Cheshire West	Biffa/Encyclis	Q4 2020	410
C25	Slough Multifuel	Slough	Slough	SSE/CIP	Q4 2020	480
C26	Skelton Grange EfW	Skelton Grange	Leeds	enfinium	Q4 2021	435
C27	Oldhall Energy Recovery Facility	Oldhall	North Ayrshire	Octopus	Q4 2021	186
C28	Kelvin Energy Recovery Facility	Kelvin Way	West Bromwich	enfinium	Q4 2021	400
C29	Westfield Energy Recovery	Westfield	Fife	Viridor/Equitix	Q4 2021	250
C30	Edmonton EcoPark (Replacement)	Edmonton	Enfield	NLWA (P)	Q4 2021	
C31	Rivenhall IWMF	Rivenhall	Essex	Indaver	Q2 2022	595
C32	South Clyde Energy Centre EfW	South Clyde	Glasgow	Fortum	Q3 2022	385
C33	Riverside Energy Park	Riverside 2	Bexley	Cory	Q4 2022	650
<b>Total</b>						<b>5,716</b>

Note that no additional EfW capacity reached financial close in Q1 2023.

**Mothballed / Decommissioned EfW**

	Permitted Name	Known As	Location	Last Operator	Date	Processed (ktpa)	
						2021	2022
M1	Sinfin IWTC	Sinfin Road ACT	Derby	Renewi	Aug-19	0	0
M2	Hoddesdon EfW Plant	Hoddesdon ACT	Hertfordshire	BIG	Jan-22	36	0
M3	No permit	Newport	Newport	Vogen/Aviva	Apr-23	0	0
<b>Total</b>						<b>37</b>	<b>0</b>

**Residual Waste Co-Incinerated in the UK**



In 2022, 10 cement and lime kilns (out of 11 operational facilities in the UK) accepted a total of 493kt of SRF under EWC code 19 10 12. This was a 28% increase on the tonnage in the previous year reflecting investment activity at several kilns. The total tonnages of other wastes co-incinerated at these facilities were broadly in line with previous years.

In addition, in 2022 two facilities, originally consented for the processing of biomass, accepted 18kt of Refuse Derived Fuel (“RDF”).

## APPENDIX 2: DATA SOURCES

APR have either been provided by operators or released under the Freedom of Information Act.

- EA [Contains public sector information licensed under the Open Government Licence v3.0](#)
- NIEA [Contains public sector information licensed under the Open Government Licence v3.0](#)
- NRW [Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights reserved.](#)
- SEPA [Contains SEPA data © Scottish Environmental Protection Agency and database right 2022. All rights reserved.](#)
  
- (1) <http://www.wastedataflow.org/> Q100 for four quarters Apr 2021 – Mar 2022
- (2) Digest of UK Energy Statistics (“DUKES”) 2022 Table 5.5  
<https://www.gov.uk/government/statistics/digest-of-uk-energy-statistics-dukes-2022>
- (3) 2021 Pollution Inventory Dataset  
<https://environment.data.gov.uk/portalstg/home/item.html?id=7ddf166a9b41444ebdca1baec1eede38>
- (4) <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020>

## APPENDIX 3: GLOSSARY

ACT	Advanced Conversion Technology
APCr	Air Pollution Control residue
APR	Annual Performance Reports
C&I	Commercial and Industrial Waste
EA	Environment Agency
EW(s)	Energy from Waste (facilities)
ELV	Emission Limit Value
EWC	European Waste Catalogue
IBA	Incinerator Bottom Ash
Kt (pa)	‘000s tonnes (per annum)
LACW	Local Authority Collected Waste
Mt (pa)	Million tonnes (per annum)
NCV	Net Calorific Value
NIEA	Northern Ireland Environment Agency
NRW	Natural Resources Wales
PI	Pollution Inventory
RDF	Refuse Derived Fuel
Residual Waste	Solid, non-hazardous, combustible waste which remains after recycling either treated (in the form of RDF or SRF) or untreated (as “black bag” waste).
SEPA	Scottish Environmental Protection Agency
SRF	Solid Recovered Fuel





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CONSULTING



MARKET ANALYSIS



DUE DILIGENCE

Tolvik Consulting Ltd is a privately-owned specialist provider of independent market analysis, commercial due diligence and advisory services across the waste and biomass sectors.

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*This report has been written 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.*

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