

**Client: Indaver (NI) Ltd**

# **Review of Local Authority Residual Waste Procurements**

29 September 2020

FINAL



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Author	AJ				
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## 1. EXECUTIVE SUMMARY

1. For the purposes of the report, the arc 21 partnership is regarded as a “larger” Local Authority. Across the UK 87% of larger Local Authorities have procured a long term Residual Waste solution and a further 7% secured a solution only for it to be subsequently terminated. That arc21 has yet to secure a long term Residual Waste solution is therefore highly unusual.
2. It is much more common for smaller Local Authorities in the UK not to have a long term Residual Waste solution – 39% do not. A significant majority of these are located in the devolved regions where, just as in Northern Ireland, the relative lack of third party EfW capacity means that the opportunities for a smaller Local Authority to successfully secure a Residual Waste solution are limited.
3. In terms of selecting a long term Residual Waste solution, the performance and track record of the sector means that Tolvik does not believe that for future procurements any credible bidder would propose either a standalone Mechanical Biological Treatment facility nor Advanced Conversion Technology.
4. With recent events challenging the resilience of RDF exports and given a long term landfill solution is inconsistent with policy, it is difficult not to conclude that the only deliverable technology option for a future Local Authority procurement is likely to be a conventional moving grate Energy from Waste.

## 2. BACKGROUND AND APPROACH

### Background

5. Tolvik Consulting Ltd. (“Tolvik”) is a specialist provider of independent market analysis and commercial advisory services to the waste and bioenergy sectors. Further details of its work can be found at [www.tolvik.com](http://www.tolvik.com).
6. Tolvik has been engaged by Indaver (NI) Ltd, the lead party in the Becon Consortium, which is the final remaining bidder in the arc21 Residual Waste procurement, to prepare an independent review of Local Authority Residual Waste procurements across the UK.

### Definitions

7. In this report, and consistent with Tolvik’s published analysis, Residual Waste is defined as non-hazardous, solid, combustible mixed waste which remains after recycling.
8. Local Authority Collected Municipal Waste (“LACMW”) refers to the tonnages of waste collected or accepted by or on behalf Local Authorities in the UK.

### Data Sources and Analysis

9. Data sources are as identified within the text and by reference to the Appendix.

## 3. LOCAL AUTHORITY PROCUREMENT STATUS

10. Arc21 commenced its procurement for a long term Residual Waste solution in 2008. The procurement was launched at a time when, driven by the EU Landfill Directive, many local authorities in the UK (either individually or as part of “partnerships” of local authorities) were looking to secure solutions for their Residual Waste other than landfill. In this context “partnerships” is a descriptive term used for to groupings of local authorities working together in a procurement process – it is not meant to be used in any legal context.
11. For a variety of reasons, the arc21 procurement has been significantly delayed and remains the only procurement from this period which has yet to have either resulted in the construction of a new Residual Waste treatment facility or termination of the procurement.
12. In 2018/19, the 6 local authorities which comprise arc21 generated 590kt of LACMW of which 290kt was Residual LACMW which was either landfilled or sent for energy recovery.
13. Tolvik assesses there to be currently 131 Local Authorities or Local Authority partnerships in the UK; given the descriptive term used there is some subjectivity in this assessment. Of these

- there are 52 “larger” Local Authorities or Local Authority partnerships in the UK which generated more than 200ktpa of LACMW (Appendix 1) in 2018/19.
14. Of these “larger” Local Authorities or Local Authority partnerships, 45 (87%) are currently in a long term Residual LACMW contract based on the construction and operation of Residual Waste treatment infrastructure.
  15. The remaining seven (13%) Local Authorities or Local Authority partnerships have no such long term contract. Of these, four procured a long term solution but the contract has subsequently been terminated – Lancashire & Blackpool and Derby/Derbyshire (technology failure) and Hertfordshire and Norfolk (failure to achieve planning).
  16. This leaves three “larger” Local Authorities or Local Authority partnerships which have yet to conclude the procurement of a long term Residual Waste solution – arc21, Northamptonshire and Leicestershire. Both Leicestershire and Northamptonshire saw their procurements collapsed at a very early stage when the UK Government withdrew their Private Finance Initiative (“PFI”) credits in 2011.
  17. The fact that a Local Authority partnership of the scale of arc21 has yet to secure a long term Residual Waste solution is therefore highly unusual.

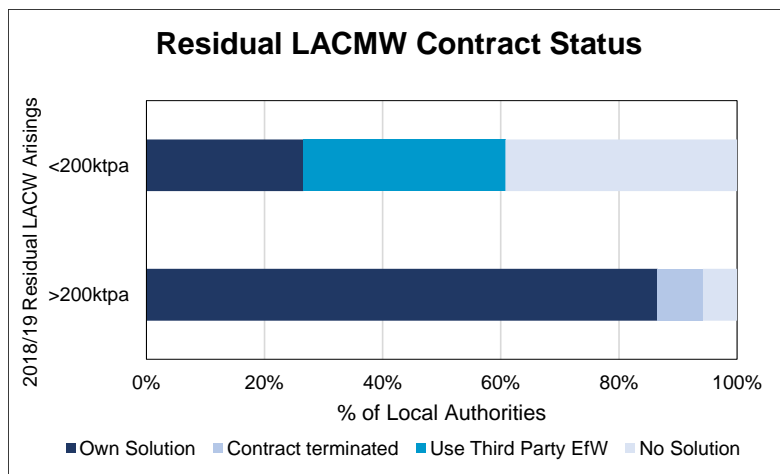


Figure 1: Residual LACMW Contract Status Source: Tolvik research

18. The remaining “smaller” 79 Local Authorities or Local Authority partnerships generated less than 200ktpa of LACW in 2018/19. This includes the six Local Authorities in Northern Ireland outside the arc21 procurement.
19. As Figure 1 shows, these “smaller” Local Authorities or Local Authority partnerships have been much less likely to procure their own long term Residual Waste solution. Tolvik’s analysis suggests that only 21 (27%) of such authorities have procured such a solution. This is significantly less than the 87% for the larger Local Authorities.
20. The primary reason for this likely to be economies of scale – smaller facilities are more expensive on a per tonne basis than larger ones. In the period 2005-2010 significant research was conducted and advice provided to support Local Authorities with their long term procurements. This include a DEFRA report specifically looking at the economies of scale (1) as shown in Figure 2.

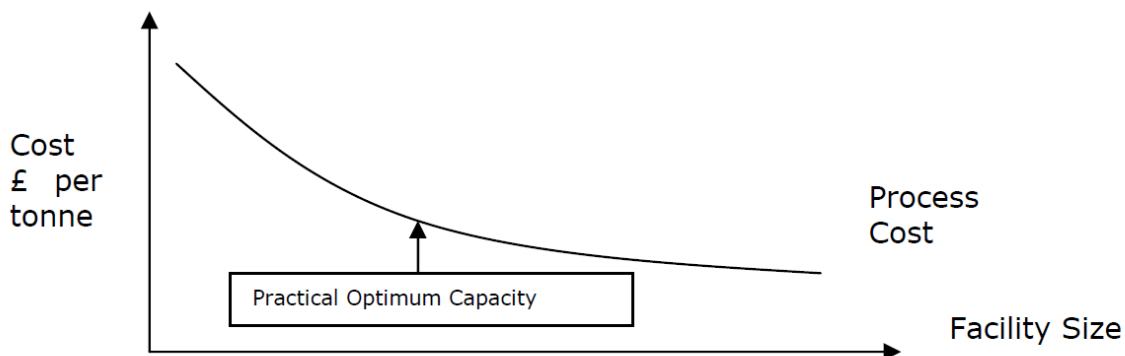


Figure 2: Economies of scale for waste facilities Source: DEFRA

- 21. As a result 58 (73%) of “smaller” Local Authorities have not procured a long term Residual Waste treatment solution of their own.
- 22. However, as Figure 1 also shows, 27 (34%) of these smaller Local Authorities have since been able to potentially achieve economies of scale by procuring a Residual LACMW solution based on access to an existing proximate third party Energy from Waste (“EfW”) facility (which includes those using Advanced Conversion Technology (“ACT”)). This figure continues to rise as the number of operational EfWs in the UK increases.

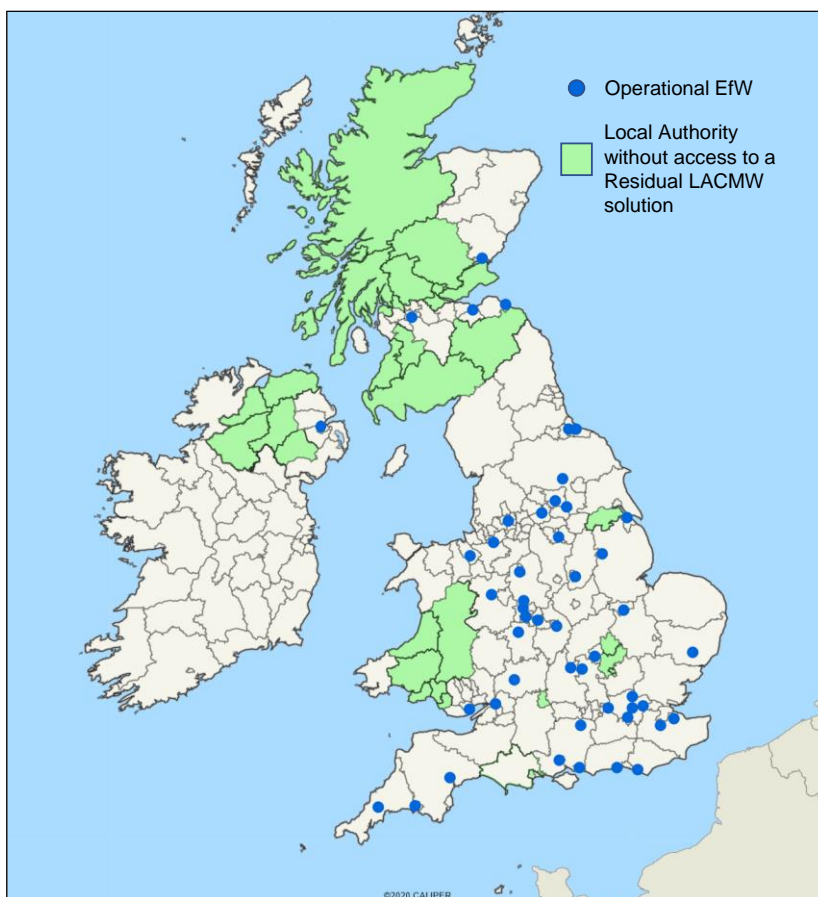


Figure 3: “Smaller” Local Authorities without long term solution – June 2020

- 23. Notwithstanding the above, Tolvik estimates that 31 (39%) of the “smaller” Local Authorities currently do not have access to a Residual Waste solution other than landfill or RDF export. Just six of these Local Authorities are in England - the remaining 25 are located in Wales,

Scotland and Northern Ireland where, as Figure 3 shows, there are a limited number of proximate third party EfWs which they are potentially able to access.

24. Based on evidence from across the UK, it therefore seems reasonable to conclude that by partnership working and so delivering scale, Local Authorities in the arc21 partnership are more likely to be able to successfully secure a long term Residual LACMW solution.
25. Evidence from across the UK would also suggest that, in a Northern Ireland market in which there is currently only one thermal waste treatment solution, the limited available options are likely to materially reduce the chances of any smaller Local Authority being able to successfully secure a Residual LACMW solution.

#### 4. RESIDUAL LACMW TREATMENT SOLUTIONS

26. The Becon Consortium has selected a particular Residual LACMW treatment solution for arc21. It is understood that the solution was driven by arc21's requirement to require pre-treatment prior to thermal treatment.
27. From an analysis of the Residual LACMW market in the UK, there are effectively [5] main solutions for the treatment/disposal of Residual LACMW:
  - a. **Conventional Moving Grate EfW** – either with or without pre-treatment – such as the solution proposed by the Becon Consortium for arc21;
  - b. **Standalone Mechanical Biological Treatment (“MBT”)** – i.e. where the MBT solution is not directly linked to the treatment solution for the Refuse Derived Fuel (“RDF”) generated as a key output;
  - c. **Advanced Conversion Technology (“ACT”)** – i.e. gasification;
  - d. **RDF Export** – preparation of an RDF through mechanical treatment alone for export to continental Europe;
  - e. **Landfill.**
28. These options are discussed in further detail in the following sections.

##### Alternative to conventional EfW: MBT

29. In 2017 Tolvik prepared a report “*Mechanical Biological Treatment - 15 years of UK Experience*” (2). The report identified 3.33Mtpa of MBT capacity which at the time was operational or in construction. With the cessation of operations at Greater Manchester's four MBT facilities, Essex, Avonmouth and Leicestershire, the MBT capacity which is now operational or in construction has since reduced to 2.37Mtpa.
30. Renewi was the largest MBT operator – with facilities at ELWA (2), Cumbria (2), BDR (1), Dumfries & Galloway (1) and Wakefield (1). Renewi has since handed back the Dumfries & Galloway contract to the Local Authority and has repeatedly made “onerous contract” provisions against most of the other contracts. In the latest financial year, they made a loss of £2.8m on a turnover of just under £200m. It therefore seems highly unlikely that they will invest in any further UK MBT capacity.
31. There remains one MBT facility in commissioning in the UK – Orsted's Renaissance MBT in Cheshire. Tolvik notes that Orsted have faced significant problems with their facility and it is still not fully operational four years after construction started.
32. Based on the performance and track record of the sector, Tolvik does not believe that for future Residual LACMW procurements any credible bidder would propose the development of a new standalone MBT solution.

##### Alternative to conventional EfW: ACT

33. Ten commercial-scale ACTs have been constructed in the UK for the processing of Residual Waste in the form of RDF. Four are understood to have been “taken over” and one, Sinfin Road Derby, mothballed – almost certainly permanently.

34. The popularity of ACT for the treatment of Residual Waste in the UK was primarily driven by the subsidy support available for the power generated – initially under the Renewables Obligation and more latterly under Contracts for Difference. This subsidy support was not and is not available for conventional moving grate EfW.

Financial Close	ACT	ACT Technology	Status: Aug-20
	Milton Keynes	Energos	Taken Over in 2018. 47% availability in 2019
	Glasgow	Energos	Taken Over in 2018. 55% availability in 2019
	Hoddesdon	Biomass Power	Taken Over in January 2020
	Belfast	Biomass Power	Taken Over in March 2020
May-15	Levensat	Outotec	Hot commissioning
Dec-15	Surrey	Outotec	Hot commissioning
Jan-16	Hull	Outotec	Hot commissioning
Nov-18	Hooton Park	Kobelco	In Construction
Feb-20	Drakelow	Not known	In Construction
Sep-14	Derby	Energos	Contract Terminated – Facility Mothballed.

Figure 4: Residual Waste Fuelled ACTs Source: Tolvik Analysis

35. Of the remaining five ACTs, as shown in Figure 4, three are currently in hot commissioning and have been in construction for at least 4½ years. A conventional EfW typically takes 3 – 3½ years to construct.
36. According to “UK Energy from Waste Statistics – 2019” (3) in 2019 seven ACT facilities which started construction before 2017 accepted Residual Waste and on average they processed just 27% of their expected capacity.
37. The overall performance of the ACT sector has been very poor. As a consequence, credible developers are generally moving away from ACT.
- Viridor** have been quoted (4) as saying it had “authorisation” for three more EfWs but any new facilities would not use ACT after issues Viridor had developing its EfW plant in Glasgow (where it invested an additional £118m) (5) This has been reinforced by Viridor and Grundon’s decision to seek to amend their planning permission for Ford in West Sussex from ACT to EfW;
  - BH Energy Gap had secured planning consent for an ACT in Doncaster **BH EnergyGap**. They have since source a variation to the consent stating that ACT was now “undeliverable” on the basis that “the failure of a number of contractors delivering [gasification] projects, investor confidence in the technology collapsed and it has proven to be not possible to finance a similar facility at Sandall Stones Road.”
  - Tolvik has identified a number of other locations where the developer has changed or is looking to change an unimplemented planning consent from ACT to conventional EfW – including in Walsall, West Brom, Carlisle, Corby, Wiltshire and Scotland.
38. With the overall poor track record and lack of subsidy support for new ACT facilities, Tolvik believes that if a bidder were to propose the development of a new ACT solution in response to a Local Authority procurement, a suitably advised Local Authority would be reluctant to enter a contract for a solution.

### Alternative Solutions: RDF Export

39. RDF Exports from Northern Ireland have been relatively steady over the last 5 years – as shown in Figure 5. RDF exports from Northern Ireland to date have been primarily to Sweden, Denmark and the Republic of Ireland.

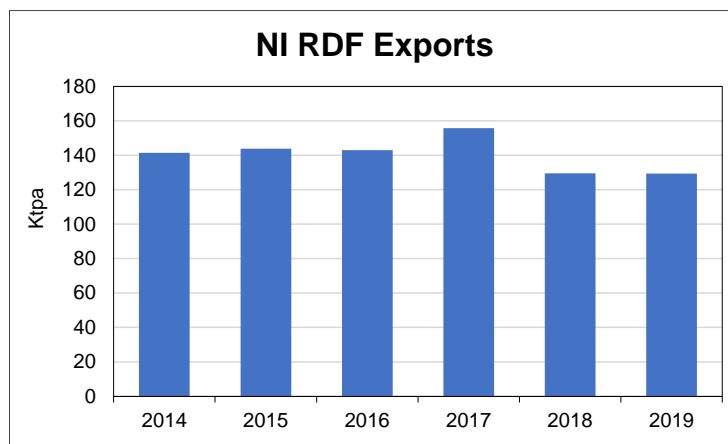


Figure 5: RDF Exports from NI Source: NIEA

40. However there are increasingly apparent risks associated with a long term Residual LACMW solution based on the production of RDF for export:
- a. **Tax uncertainty in recipient countries** - in response to wider environmental issues, in April 2020 the Swedish Government introduced a SEK75/t tax on all waste combusted in Sweden – rising to SEK125/t in 2022. Meanwhile the Netherlands introduced a €32/t tax on RDF imports. These taxes forced several Local Authorities, including Essex, to have to switch at short notice from RDF export to landfill.
  - b. **Capacity uncertainty in recipient countries** - in Denmark it has been agreed to reduce EfW capacity by 30% by 2030 so as to remove Danish EfW's reliance on imports. There is an expectation that capacity in the Netherlands may also reduce as the new tax impacts on RDF imports.
  - c. **Brexit related risks** – there remain a range of Brexit related uncertainties with the potential to impact on RDF exports. These include potential volatility in the £/€ exchange rates and uncertainty around port delays and transport costs.
  - d. **Supply chain complexity** – export of RDF involves a number of elements, and as a result even a modest disruption to the supply chain (eg COVID-19, port strikes, unexpected EfW unavailability such as that seen at AEB in Amsterdam in 2019) has the potential to have a significant impact on the effectiveness of the solution.
  - e. **Reputational risk** - the ability for a Local Authority to have certainty with respect to the final destination of their waste is much less than delivery direct to local facilities.
41. The effect of these uncertainties are best highlighted by the volatility of RDF export market in England which has been more exposed to export market developments than that in Northern Ireland. After rising steeply, RDF exports have been in decline since 2017. This decline has accelerated rapidly since the beginning of 2020 by the combined impact of the new tax in Netherlands and the effects of COVID-19.



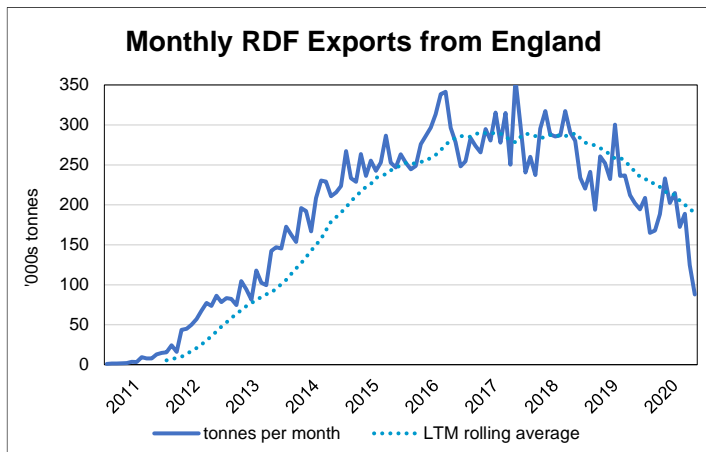


Figure 6: RDF Exports from England Source: EA

- 42. In 2015 Tolvik suggested in its report (“*RDF Exports: Here for Good*”) (6) that in the short term RDF exports from the UK would rise, they were then likely to fall.
- 43. This view, reinforced by recent events, reflected an expectation that whilst there would always be a valuable role in the short to medium term for RDF exports in helping the market to balance local and national Residual Waste supply and treatment capacity, but in the longer term domestic UK solutions are likely to be more resilient. The market appears to be increasingly coming to a similar view.

**Alternative Solutions: Landfill**

- 44. The use of landfill as the primary solution for Residual LACW is not compliant with the EU Landfill Directive, the updated targets in the EU Circular Economy package and the recommendations of the Committee for Clime Change for Northern Ireland. This is therefore not a realistic primary solution for any future Residual LACMW procurement.

**APPENDIX 1 – UK LOCAL AUTHORITIES/PARTNERSHIPS - RESIDUAL LACMW CONTRACT STATUS**

Local Authority/Waste Partnership	2018-19	Expiry	Facility
Greater Manchester WDA (MBC)	1,119,081	2034	Runcorn EfW
W2R	950,123	2039	Four Ashes EfW
North London Waste Authority	818,285	Public	Edmonton EfW
Project Integra	803,234	2030	Chineham/Portsmouth/Marchwood EfW
Essex and Southend	798,582	In Receivership	Courtauld Road MBT
Merseyside and Halton	778,824	2044	Wilton 11
Kent County Council	711,459	2030	Allington EfW
West London Waste Authority	652,528	2041	Sevenside EfW
Lancashire & Blackpool	638,759	Short Term	Long term contract terminated
arc21	589,710	Short Term	
Nottingham City/Nottinghamshire	574,735	2030	Eastcroft EfW (+others)
Surrey County Council	526,567	2024	Ecopark ACT
Hertfordshire County Council	515,968	Short Term	Long term contract terminated
Derby/Derbyshire	501,473	Short Term	Long term contract terminated
Birmingham City Council	490,601	2024	Tyseley EfW
West of England	485,353	2030	Avonmouth EfW
Project Green	453,261	2041	Trident Park EfW
Clyde Valley	443,781	2044	Dunbar EfW
East London Waste Authority	443,625	2027	Jenkins Lane/Frog Island MBT
West Sussex County Council	435,442	2035	Brookhurst Wood MBT
North Yorkshire & York	422,378	2043	Allerton Park EfW
Norfolk County Council	401,855	Short Term	Long term contract terminated
Hereford & Worcester	391,785	2023	Hartlebury EfW
South London Waste Partnership	388,443	2043	Beddington Lane EfW
Western Riverside Waste Authority	385,628	2032	Riverside EfW
Suffolk County Council	382,155	2039	Great Blakenham EfW
Barnsley, Doncaster, Rotherham	380,356	2037	Manvers MBT + Ferrybridge EfW
Devon County Council	372,804	2044	Devonport EfW, Exeter EfW
East Sussex and Brighton	367,875	2040	Newhaven EfW
Northamptonshire County Council	364,083	Short Term	
Lincolnshire County Council	359,911	2036	North Hykeham
Tees Valley	340,468	2025	Tees Valley EfW
Glasgow City	327,781	2041	Glasgow ACT
Leicestershire County Council	326,257	Short Term	
Cambridgeshire County Council	322,947	2033	Waterbeach MBT
Leeds City Council MBC	317,286	2037	Leeds EfW
North East Scotland	311,580	Public	Ness EfW
Gloucestershire County Council	304,292	2041	Javelin Park EfW
South Tyne & Wear	300,944	2036	Tees Valley EfW
Oxfordshire County Council	298,538	2042	Ardley EfW
North Wales	290,501	2044	Parc Adfer EfW
Cornwall	267,368	2040	Cornwall EfW
Cumbria County Council	265,611	2032	Hespin Wood/Sowerby Woods MBT
Buckinghamshire County Council	264,674	2040	Greatmoor EfW
Coventry and Solihull	260,987	Public	Coventry EfW
Somerset County Council	258,881	2030	Avonmouth EfW
County Durham	250,230	2025	Tees Valley EfW
Edinburgh and Midlothian	240,781	2044	Millerhill EfW
Greenwich & Lewisham	237,180	2024	SELCHP EfW
Wiltshire	230,101	Feb-35	Northacre MBT
Bradford City MDC (MBC)	227,350	2029	Ferrybridge EfW
Tomorrows Valley	225,658	2041	Trident Park EfW

## APPENDIX 2 – STANDALONE MBT FACILITIES IN THE UK

Local Authority	Facility Name	Capacity (ktpa)	Status Sep-17	Status Aug-20
Poole	Canford	125	Operational	Operational
Newcastle	Byker	120	Operational	Operational
Leicester City	Bursom	150	Operational	Operational
Dumfries & Galloway	Dumfries	65	Operational	Operational
Western Isles	Creed Park	15	Operational	Operational
ELWA	Frog Island	180	Operational	Operational
ELWA	Jenkins Lane	180	Operational	Operational
Darlington	Aycliffe Quarry	50	Operational	Operational
Cambridgeshire	Waterbeach	200	Operational	Operational
Leicestershire	Cotesbach	50	Operational	Ceased Operations
West of England	Avonmouth	200	Operational	Ceased Operations
Cumbria	Hespin Wood	75	Operational	Operational
Cumbria	Sowerby Wood	75	Operational	Operational
Greater Manchester	Bredbury Pk	92	Operational	Ceased Operations
Greater Manchester	Longley Lane	110	Operational	Ceased Operations
Greater Manchester	Cobden St	73	Operational	Ceased Operations
Greater Manchester	Reliance St	65	Operational	Ceased Operations
Southwark	Old Kent Road	87	Operational	Operational
Wiltshire	Northacre	90	Operational	Operational
BDR	Manvers	286	Operational	Operational
Wrexham	Wrexham	75	Operational	Operational
Wakefield	South Kirkby	145	Operational	Operational
West Sussex	Brookhurst Wood	327	Operational	Operational
Essex	Courtauld Road	377	Construction	Ceased Operations
Cheshire	Renescience	120	Construction	Construction
Neath Port Talbot	Crymlyn Barrows	170	Ceased Operations	Ceased Operations
Merseyside	Huyton	80	Ceased Operations	Ceased Operations
Rotherham	Rotherham	100	Ceased Operations	Ceased Operations
Gateshead	Derwenthaugh	320	Ceased Operations	Ceased Operations
Lancashire	Leyland	175	Ceased Operations	Ceased Operations
Lancashire	Thornton	175	Ceased Operations	Ceased Operations

Operational	2,835	2,245
Construction	497	120
Ceased Operations	1,020	1,987
<b>Total</b>	<b>4,352</b>	<b>4,352</b>

## APPENDIX 3 – REFERENCES

- (1) [http://sciencesearch.defra.gov.uk/Document.aspx?Document=WR0707\\_6845\\_FRP.pdf](http://sciencesearch.defra.gov.uk/Document.aspx?Document=WR0707_6845_FRP.pdf)
- (2) <https://www.tolvik.com/published-reports/view/mechanical-biological-treatment-15-years-of-uk-experience/>
- (3) <https://www.tolvik.com/published-reports/view/uk-energy-from-waste-statistics-2019/>
- (4) <https://www.endswasteandbioenergy.com/article/1676045/no-new-gasification-facilities-expanding-viridor>
- (5) <https://www.pennon-group.co.uk/system/files/uploads/financialdocs/citi-uk-utilities-conference-2019.pdf>
- (6) <https://www.tolvik.com/published-reports/view/rdf-exports-here-for-good/>