



Waste market report

UK clinical waste incineration capacity

2019 A UK Market Review

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Contributors

During the period of generating this report there are a few individuals that have been questioned repeatedly and who have kindly reviewed this report whilst offering commentary, opinion and importantly raising a number of important questions. I hope that the number of contributors increases to assist in generating a clear picture to support the industry and our customers.

A sincere thank you to:

Stuart Brittle	SMDSA
Rebecca Hodkinson	Reva Environmental Ltd
Paul Butler	CVS UK Ltd
Paul Jackson	NRC

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A Review of UK Clinical Waste Incineration Capacity



1. Introduction

The purpose of this report is to critically review the current market for clinical waste incineration capacity in the UK. The review presents and discusses data from a number of sources, including Defra, Environment Agency, ERIC and the public register to build a picture of the current landscape.

This is a working document; we invite industry colleagues to comment and contribute on the issues raised herein. The objectives of this paper are threefold: to forge greater industry collaboration by encouraging open discussion on the challenges we face; to identify the steps required to overcome these challenges; to identify future opportunities.

2. Market Overview

Following a turbulent ten months for the UK's clinical waste industry, there is currently a significant focus on issues surrounding incineration capacity and the potential for monopolistic behaviour, the impact assessment of new regulatory guidance and quite simply, trying to understand the clinical waste market.

Pressures in the industry have seen regulations overlooked or bypassed for expediency where in any most cases and for most companies in the sector, there would be severe consequences. One such example is the inappropriate use of walking floor trailers to transport and unload infectious waste.

The context of this scrutiny is an apparent physical lack of incineration capacity, an increase in charges, and also the potential misuse of RPS 222, which allows clinical waste to be accepted at municipal incinerators under certain criterion. For a short period there was perhaps a shortage of capacity in alternative treatment (AT) while the industry rebounded from the loss of 21,000 tonnes of capacity as Healthcare Environmental ceased operating. The question is, have these closures created disparity in capacity regionally i.e. North vs South England?

RPS 222 has enabled the NHS and the EA to overcome the immediate issue of a major provider overstretching itself. However, we have evidence that some organisations are already utilising RPS 222 without meeting the necessary conditions, a situation that urgently begs the question of how is this important regulatory position statement to be policed?

As well as looking into RPS 222, this document sets out the range of issues faced across the industry and the impact of these on the customer/producer. It aims to identify the key improvements required and the patterns of behaviour that need attention, in order that the industry can develop a collaborative approach to its problems and, indeed, its opportunities.

We focus on the healthcare sector in general, rather than Acute hospital activity, including smaller producers such as GPs, Pharmacies, Private Healthcare, Veterinary practices and Care Homes.

Our findings are based on data and document reviews, whilst also taking into account commentary from members of the Sanitary Medical Disposal Services Association (SMDSA), without expressing any favour to a particular sector operator or healthcare waste producer.

A key finding of this work is the unreliability and inconsistency of the data available. Our concern is that, because credible data is so difficult to access, some of the comparisons we have made may be flawed in their detail. We thus wholeheartedly welcome positive collaboration with any organisation who can provide a view based around data that may be superior.

3. Incineration capacity

Is there enough capacity? This is not a surprising question considering the wide and varied opinions on the matter. These opinions have altered over time and have been clearly expressed in a number of SMDSA meetings in the past year.

Clinical and Hazardous waste incinerators (EA 2016)



Notwithstanding publicly maintained views from the Environment Agency that there is no issue with incineration capacity, the available data demonstrates quite a different picture.

It must be stated, however, that there is not a great deal of accurate data in circulation for public consumption, and in many cases the data is out of date. This issue will be examined in more detail later in this document.

Reviewing a list of all known permitted facilities, as stated as operational by the Environment Agency in their 2016 data set for incineration, an understanding of the permitted capacity for medical waste disposal becomes apparent (Fig.1). This also enables the assessment of disposal share for the incinerator operators (Fig.2).

We know that questions have been raised with regard to permitted vs operational capacity, and therefore some adjustment needs to be made, albeit generalised across treatment type. In the absence of actual data for each facility, assumptions are applied to the current permitted capacities (Fig.3).

It is obvious at this stage that should operators be willing to share specific information regarding each facility, the output from this assessment will change and become a more accurate representation of the current state of capacity.

Fig.1. Clinical and co-incineration of hazardous waste facilities and associated permitted capacity (tonnes)

Permit Number	Date Permitted	Operator	Site Name	Permitted Capacity
WP3935SM	09/12/2005	Cambridge University Hospital NHS Foundation Trust	Incinerator, Addenbrooke's Hospital, Cambridge	4,500
GP3236AX	12/12/2005	Plymouth Hospitals NHS Trust	Derriford Hospital, Derriford	4,270
YP3934SM	02/12/2005	Peake (GB) Ltd	Pengover, Cornwall	5,241
EP3530XY	08/01/2008	SRCL Ltd	Ipswich EFW Facility	8,500
ZP3730XJ	16/12/2005	SRCL Ltd	Clinical Waste Incinerator, Bolton	6,000
ZP3230XC	16/12/2005	SRCL Ltd	Clinical Waste Incinerator, Oldham	7,884
YP3033BE	01/08/2005	London Waste Ltd	Edmonton EFW, Edmonton	75,000
LP3037UU	16/12/2005	SRCL Ltd	Hillingdon Hospital Clinical Waste Incinerator, London	8,000
BT2866IG	01/12/2003	Grundon Waste Management Ltd	Colnbrook Incinerator, Slough	10,000
HP3230XA	13/12/2005	SRCL Ltd	Ashford Clinical Waste Incinerator, Ashford, Kent	8,500
JP3133XP	13/12/2005	SRCL Ltd	Sidcup EFW Facility, Queen Mary's Hospital, Sidcup	8,000
VP3136ZD	09/12/2005	Sita Healthcare Limited	Alexandra Hospital, Redditch	10,000
PP3530XX	15/12/2005	SRCL Ltd	Bournemouth EFW facility, Royal Bournemouth Hospital, Bournemouth	8,000
VP3130EF	22/12/2014	SRCL Limited	Avonmouth Clinical Waste Incinerator	6,570
AP3039SD	22/11/2005	DEFRA	Veterinary Laboratories Agency, Surrey	5,200
CP3930XL	09/12/2005	SRCL Ltd	Knostrop Treatment Works, Leeds	17,000
BS5193IE	13/12/2005	Veolia ES Cleanaway (UK) Limited	Ellesmere Port, Wirral	100,000
UP3034CN	13/01/2014	Augean Plc	East Kent Waste Recovery Facility, Sandwich	13,140
ZP3438CF	24/04/2013	Fine Environmental Services	Fine Environmental Services Seal Sands facility	48,000
FP3935KL	17/07/2009	Tradebe Fawley Limited	Fawley High Temperature Incinerator, Hythe, Southampton	45,000
BS4316IV	08/09/2004	Robinson Brothers	West Bromwich	6,880
BJ9878IQ	30/06/2003	JBR Recovery Limited	West Bromwich Silver Refinery	0
KP3937DU	15/12/2005	Packcare Ltd	Avonmouth Drum Incinerator, Avonmouth, Bristol	9,000

There are some notable issues with Fig.1;

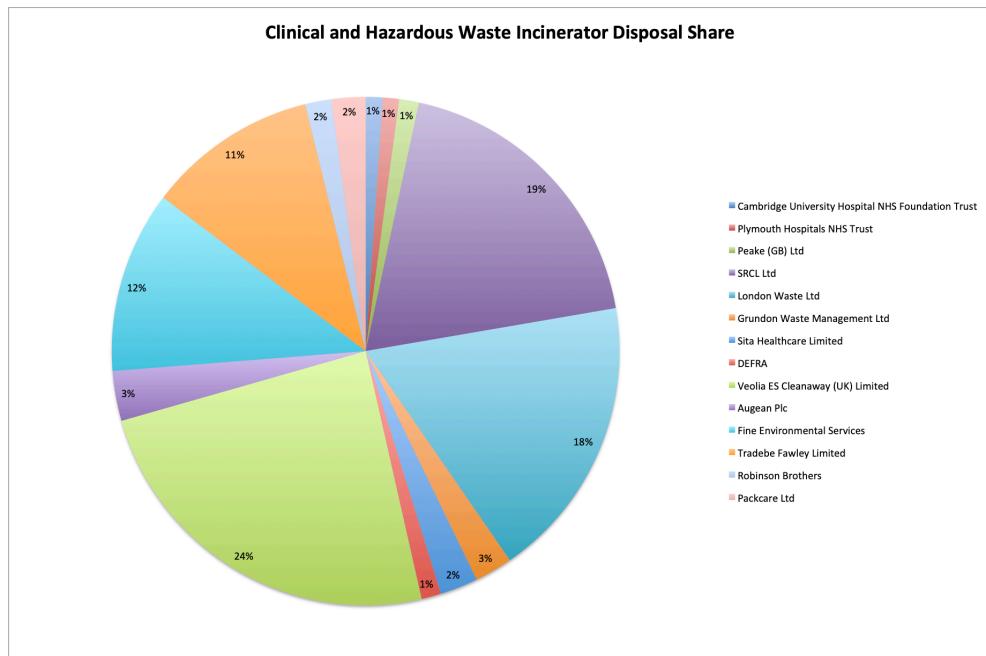
- a. Facilities have changes hands since 2016 and may now be known by different names
- b. The above list is missing certain facilities that are permitted and regulated Local Authorities such as Clinipower regulated by Bristol City Council
- c. There are also a number of facilities which the EA appear to have omitted such as the Tyseley facility owned and operated by Veolia UK
- d. Some of the facilities listed are not open to third party delivery of waste as the operator utilises the facility for its own activity e.g. Robinson Brothers and Fine Environmental Services

Perhaps the most noticeable issue with the data issued by the Environment Agency is the fact that the values stated as permitted capacity do not reflect the true disposal capacity for Healthcare waste at each facility.

Ellesmere Port, for example, has a permitted capacity of 100,000 tonnes with only 4000 tonnes associated with healthcare waste. The Fawley facility operated by Tradebe has a

total capacity of 45,000 however only 4000 tonnes available for healthcare waste. Lastly the Grundon facility in Slough has a listed total capacity of 10,000 tonnes for clinical waste disposal although it can only physically process 5000-5500 tonnes per year.

Fig.2. Disposal share (EA 2016)

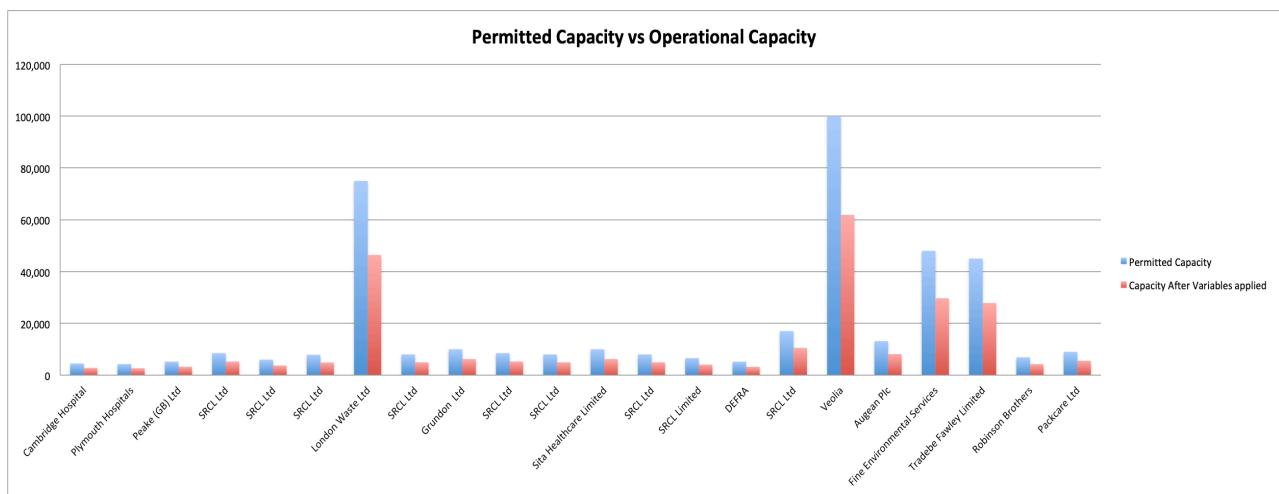


For the facilities identified as being able to incinerate ‘clinical’ waste, the permitted capacities are displayed in Fig.3. This figure also shows the decrease in operational capacity once the application of assumption variables (Appendix 4) has been applied.

Fig.3. Assumptions variables impact on Operational Capacity (tonnes)

Site Name	Post code	Permitted Capacity	Capacity After Variables applied
Cambridge University Hospital NHS Foundation Trust	CB2 2QQ	4,500	2,784
Plymouth Hospitals NHS Trust	PL6 8DH	4,270	2,641
Peake (GB) Ltd	PL14 3NQ	5,241	3,242
SRCL Ltd	IP4 5PG	8,500	5,258
SRCL Ltd	BL4 0JR	6,000	3,711
SRCL Ltd	OL1 2JH	7,884	4,877
London Waste Ltd	N18 3AG	75,000	46,392
SRCL Ltd	UB8 3NN	8,000	4,948
Grundon Waste Management Ltd	SL3 0EG	10,000	6,186
SRCL Ltd	TN24 0LZ	8,500	5,258
SRCL Ltd	DA14 6LT	8,000	4,948
Sita Healthcare Limited	B98 7UB	10,000	6,186
SRCL Ltd	BH7 7DW	8,000	4,948
SRCL Limited	BS11 9BP	6,570	4,064
DEFRA	KT15 3NB	5,200	3,216
SRCL Ltd	LS9 0PJ	17,000	10,515
Veolia ES Cleanaway (UK) Limited	CH65 4EQ	100,000	61,856
Augean Plc	CT13 9ND	13,140	8,128
Fine Environmental Services	TS2 1UB	48,000	29,691
Tradebe Fawley Limited	SO45 3ZA	45,000	27,835
Robinson Brothers	B70 0AH	6,880	4,256
Packcare Ltd	B70 9BS	9,000	5,567
		414,685	256,507

Fig.3. Graphical representation



Taking the full list of facilities as presented in the 2016 Environment Agency data we are able to generate an idea of the operational capacity regardless of the waste types processed. But this still does not reflect the true disposal capacity for healthcare waste. As such data has been gathered from a number of sources including permits available via the EA public register and from various disposal operators to generate an alternative and perhaps more reasonable view (Fig. 4).

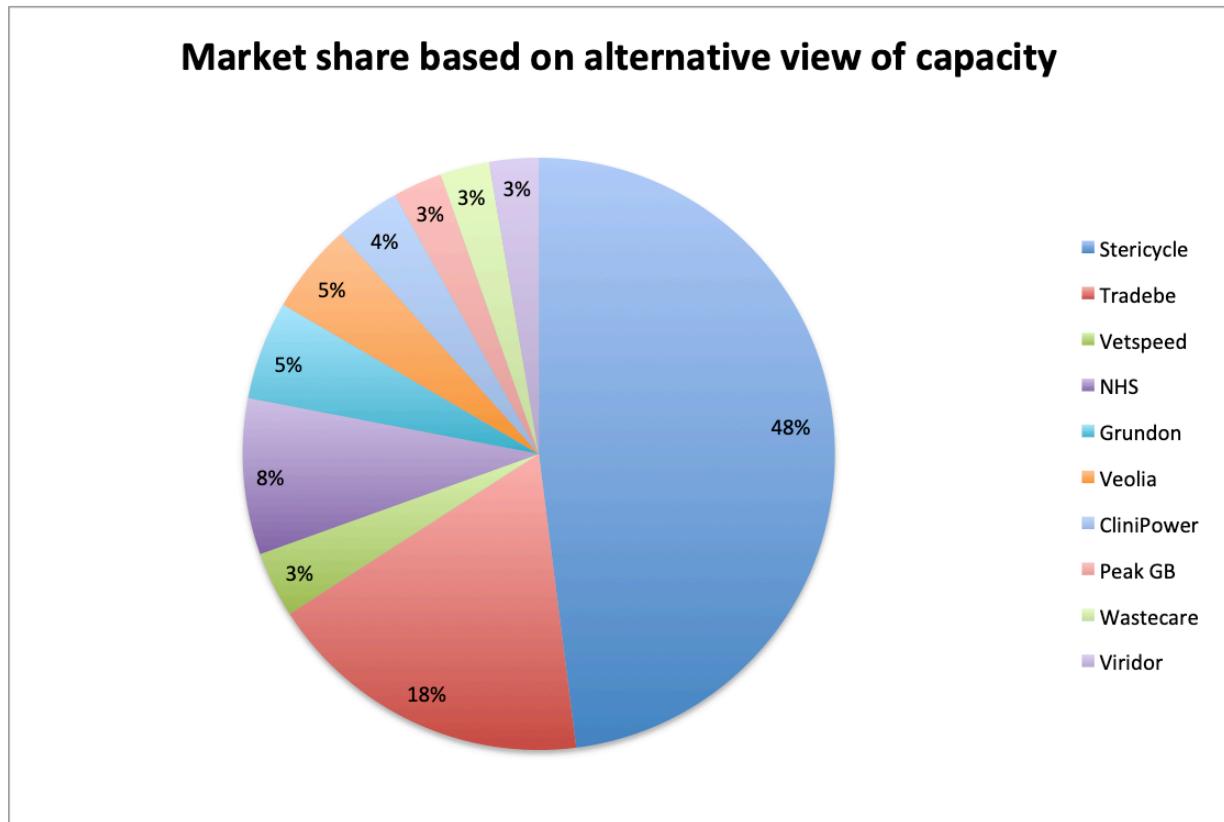
Fig.4. Alternative view of Capacity (tonnes)

Operator	Location	Healthcare Incineration Capacity	Capacity After Variables Applied
Stericycle	Ashford	5000	3093
Stericycle	Sidcup	5000	3093
Stericycle	Bournemouth	5000	3093
Stericycle	Ipswich	5000	3093
Stericycle	Hillingdon	5500	3402
Stericycle	Nottingham	4000	2474
Stericycle	Bolton	4000	2474
Stericycle	Oldham	5000	3093
Stericycle	Leeds	10000	6186
Stericycle	Avonmouth	5000	3093
Tradebe	Enfield	4000	2474
Tradebe	Redditch	5500	3402
Tradebe	Salford	5500	3402
Tradebe	Wrexham	5000	3093
Vetspeed	Cambridge	4000	2474
NHS	Addenbrookes	4500	2784
NHS	Newcross	3000	1856
NHS	Wythenshawe	2000	1237
Grundon	Slough	6000	3711
Veolia	Tisley	5500	3402
CliniPower	Avonmouth	4000	2474
Peak GB	Lisguard	3000	1856
Wastecare	Sandwich	3000	1856
Viridor	Derriford	3000	1856
		111500	68969

The landscape has now changed dramatically to show that after the assumption variables are applied there is a significantly lower capacity available for healthcare from a total permitted capacity of 414,685 tonnes to 68,969 tonnes. These findings simple create more

questions as to the true capacity available for healthcare waste, as the data itself is not accurate and without the input of the operators perhaps we may never truly know the position.

Based on the alternative view of capacity the market share now takes on a whole new picture when compared with Fig.2 as demonstrated below.



We must also be mindful that there are other factors that will directly impact on any given facilities ability to process waste. Before waste goes through the incineration process it is received and stored. The storage of healthcare waste is typically through the use of large bins (770L – 1100L containers) taking up a significant amount of space. Therefore a facility can have a large permitted capacity however this may dwarf the actual amount that can be stored at any one time. This then opens up the question of why permits are issued to some facilities based on tonnage when volume of waste is the actual key factor in operational activity.

Currently the above is having a direct impact on servicing contractors that do not have incineration facilities as they are finding it harder to find outlets for the disposal of incineration waste. As this becomes more of an issue, certain contractors have to store larger amounts of waste, which would normally flow easily to the incinerators, thus causing operational issues at their own alternative treatment plants or transfer stations. As the volume of waste builds up contractors are faced with an issues, which could result in them having to stop collecting waste from their clients, as they physically cannot move at their facilities until they get capacity for incineration. It's either this scenario or face extremely high prices to, some rising from a steady £690p/t to over £1200p/t



4. Data sources and deficiencies

As the assumption variables are applied, comparison needs to be drawn from the reported quantities of medical waste disposed of. Again, the data available for this aspect comes from two sources; Environment Agency (EA) 2016 and Estates Return Information Collection (ERIC) data returns from the NHS 16/17 and 17/18. Comparison between the two sources identifies a wide gap in the numbers, and therefore questions arise as to their accuracy and how this could be improved in future

In order to quantify the incineration capacity needed and compare it with incineration capacity available in the UK, a number of data sources have been used.

4.1 Data Sources

- Defra – data collected from 2010 to 2014.

This shows the total waste sent to final treatment, split by method of treatment and EWC-STAT waste material, 2010-14, England

- Environment Agency – data from 2016 and 2017.

This data comes in two forms. 2016 is detailed excel files covering region-by-region and also consolidated for England. This gives details of incineration inputs and capacities.

Data for 2017 comes in the form of a summary document utilising charts to demonstrate the general picture. There is no specific data relating to Healthcare although there is mention of clinical waste. There is some trend information but the granular detail is missing.

- ERIC – data from 2016/2017 and 2017/2018.

The Estates Return Information Collection (ERIC) contains information relating to the costs of providing, maintaining and servicing the NHS estate, used in the delivery of secondary care and ambulance services. It provides essential information relating to the safety, quality, running costs and activity related to NHS estates and also supports work to improve efficiency. Specifically related to this report are details of waste tonnages disposed by waste type. The data is given at site and Trust level including PFI.

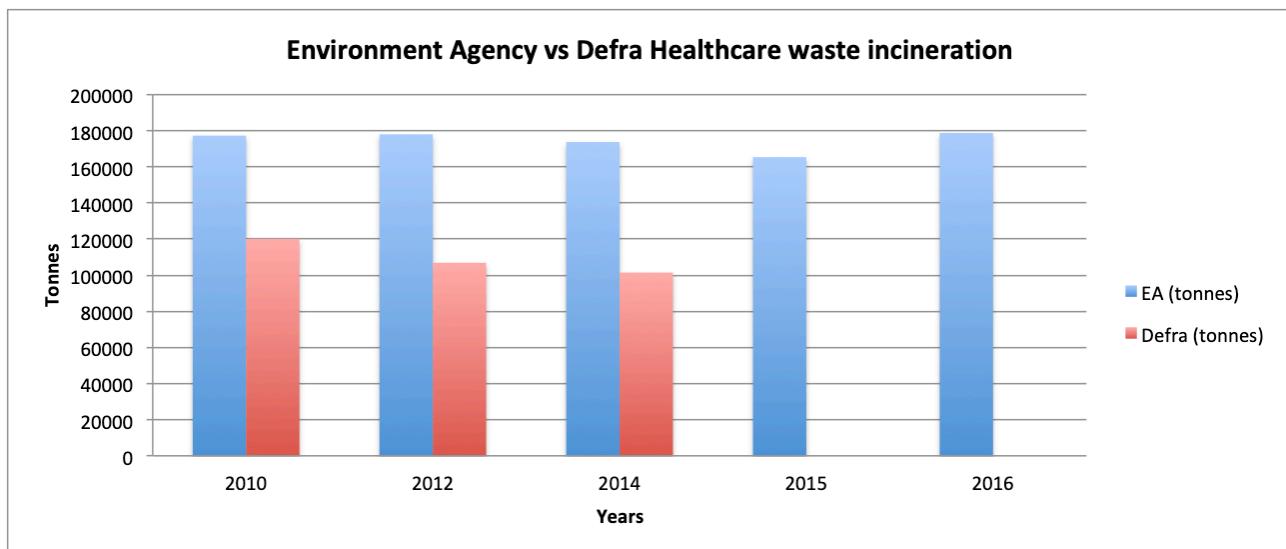
- Public Register – details of capacities defined in disposal permits issued by the Environment Agency, SEPA, NIEA and NRW.

4.2 Environment Agency and Defra Data

The available granular data from the EA relates to 2016 across the UK and considers waste returns from disposal operators receiving waste from all producers, both public and private sector. The hazardous waste data files do provide annualised information per EWC code from 2000 to 2016. Data post 2016 is only available in summary format from the EA and DEFRA. DEFRA did however issue UK Statistics on Waste in October 2018 which covered the years 2010, 2012 and 2014.

Comparison of the available data shows there is a difference in the tonnages reported. It is not clear why there is a difference as the notes from the data files does not give clear guidance on how the data is compiled and what items are included or omitted.

Fig. 5. Environment Agency vs Defra Healthcare waste incineration



The following statement within the data set should be noted when considering EA data:

“The Environment Agency is required to monitor registered hazardous waste movement. The data published here [the data set] is a summary of these movements. The same waste may be moved between multiple facilities and each separate movement is recorded. This double counting should be taken into account when using this data.”

The data available from EA also provides a full list of permitted facilities for ‘clinical’ incineration in 2016, whilst tracking tonnage disposed of from 2006 to 2016. The permitted capacity in the data provided considers the complete site capacity and not the specific capacity available for specific permitted waste types. Appendix 1 of this document provides an excerpt from the data file showing all facilities with incineration capability and the plant ‘type’.

As Appendix 1 shows, there is a great deal of capacity available. However, we must consider that for many permits there are specific waste types that can be treated at each facility, with limits placed on each waste type. Illustrating this, the table below shows the split of permitted waste. The table shows that there is likely to be a misconception between the total incineration capacities versus specific waste type throughput along with actual operational capacity.

Waste type	Limitation	Maximum throughput of total capacity	Tonnage Split
Waste from human and animal health care and/or related research	Waste subject and not subject to special requirements to prevent infection (Facility total capacity/throughput tonnes)		8000
Sharps	From treatment of humans and animals	30%	2400
Waste from physio/chemical treatments of waste	Waste from alternative treatment processes treating healthcare waste	5%	400
Waste from agriculture, food preparation and processing	Impounded/condemned foodstuffs, plant and animal tissue waste	10%	800
Waste packaging and absorbents	Discarded packaging and absorbents associated with permitted waste	10%	800
Waste medicines and chemicals	Chemicals, medicines, cytotoxic and cytostatic medicines	20%	1600
Confiscated/confidential material	Hazardous and non-hazardous substances seized by police and customs, uniforms and confidential papers	20%	1600
		95%	7600
	Total		
	Spare/undesignated capacity	5%	400

4.3 ERIC Data Returns

The ERIC data return is a mandatory collection of data for all NHS trusts, including Ambulance trusts. It comprises information relating to the costs of providing and maintaining the NHS Estate, including buildings, maintaining and equipping hospitals, provision of services such as laundry and food, and the costs and consumption of utilities.

ERIC returns do not extend to Primary Care (CCGs) or NHS England (Pharmacy) and therefore there is a large amount of waste volumes not captured.

These data sets are complicated, and in many cases inaccurate, due to the individual interpretation of the officers completing the returns. There is a lack of consistency between years with some entities reporting on waste in one year and yet in others declaring that it is 'not applicable'.

The numbers quoted suggest that there is perhaps variation in the understanding of, and the provision of, detailed data of the specific waste types being generated and moved off site. The definition under which the data has been collected is provided in Appendix 2.

If the data is to be taken as accurate, the NHS spent an additional £1.9m in 17/18, disposing less waste than it did in 16/17. Specifically looking at healthcare waste for incineration, it is notable that ERIC data shows a reduction of c.50% in tonnage, but only reducing spend by less than 10%. The average cost per tonne is also dramatically out as the values are not a weighted average produced by ERIC. The rate per tonne reported in ERIC swings from >£5000 to <£140 and in some cases costs attributed to incineration have zero volume recorded.

	England 16/17	
	Cost; Volume	Average Cost per tonne
Landfill disposal cost (£ millions)	£13,200,000.00	
Landfill disposal volume (Tonnes)	88600	£148.98
Incineration disposal cost (£ millions)	£28,000,000.00	
Incineration disposal volume (thousand Tonnes)	148400	£188.68
Waste recycling cost (£ millions)	£13,800,000.00	
Waste recycling volume (thousand Tonnes)	137400	£100.44
Other recovery cost	£28,000,000.00	
Other recovery volume (thousand Tonnes)	216500	£129.33
Total Spend	<u>£83,000,000.00</u>	
Total Tonnes	<u>590900</u>	
	England 17/18	
	Cost; Volume	Average Cost per tonne
Landfill disposal cost (£ millions)	£11,700,000.00	
Landfill disposal volume (Tonnes)	58200	£201.03
Incineration disposal cost (£ millions)	£25,600,000.00	
Incineration disposal volume (thousand Tonnes)	74700	£342.70
Waste recycling cost (£ millions)	£13,200,000.00	
Waste recycling volume (thousand Tonnes)	107800	£122.45
Other recovery cost	£34,400,000.00	
Other recovery volume (thousand Tonnes)	183500	£187.47
Total Spend	<u>£84,900,000.00</u>	
Total Tonnes	<u>424200</u>	

Based on the data provided it is not effective to compare the data from the Environment Agency or Defra related to Healthcare against ERIC data, as the former considers all healthcare waste and the latter is specific to location type and to the NHS. However, if the NHS is the largest producer of Healthcare waste, the question does arise of what proportion of the EA and Defra data is apportioned to other public sector and private sector activity? 2016 data would suggest that this figure stands at 30,000 tonnes, however the accuracy of the ERIC data means that this is not likely to be the case.

Should Fig. 4 be anywhere near accurate questions must certainly be raised regarding the reported volumes of waste disposed of through incineration, as there would appear to be a significant gap in the capacity. Again, for 2016 the EA report 178,818 tonnes of healthcare waste disposed during 2016, while ERIC data reports 148,818 tonnes. This would indicate that the shortfall would have been 109,849 and 79,849 tonnes respectively.

5. Disposal supply chain and sourcing

Incinerator operators have been faced with some difficult circumstances in the past year, both from a regulatory perspective with consideration to forthcoming EPR changes that will affect us all, and also having to support waste producers in providing sufficient capacity for disposal.

The issue of whether or not there is sufficient incineration capacity available becomes more urgent as prices go up. From an economic standpoint - simple supply and demand theory - prices would only have gone up as dramatically as they have if there was insufficient capacity to support the demand. If there is in fact sufficient capacity in the system, as the EA has stated, then the question does arise of why prices have increased so much.

For some operators, additional charges are now being applied for items such as standing time, exceeding the allotted time booked for decanting waste, bin cleansing costs and additional administrative costs previously not applied.

With all this additional revenue and associated profit are the operators now going to be able to invest heavily in the aging infrastructure where they have not for many, many years?

As a result of the demise of a major player within the market, a certain amount of capacity for disposal has been removed - but this only impacted alternative treatment for a short period, for which there is still ample capacity in this area.

Available evidence across collection companies and the alternative treatment operators indicate that prices are not affected other than by what could be perceived as normal inflation increases. So why has incineration been so dramatically affected?

One reason could be the way in which procurement activities have operated in the past few years. Lean pricing has driven competition in the market, itself forced by the procurement models adopted by some entities. An alternative, as suggested at recent SMDSA meetings, is that capacity is being held back to support NHS contingency plans where the operators are able to command premium rates. Should any other entity wish to increase the offer then one would presume this would be accepted by the operator.

Again, as a result of the demise of certain companies, the buyers of the service are becoming more concerned about the long-term availability of the service and are monitoring contracts more closely, with some implementing penalties for service failure. This has effectively made operators look at the models deployed in an attempt to spread the known risks of service failure across the contract portfolios.

Under this increased scrutiny and tighter contract management by the NHS, it is evident that there is growing push-back to not accept any responsibility for poor service and, in some cases, a complete disregard for contract performance measures. In some cases it has been noted that contractors openly state that their revenue comes before the client.

There appears to be a developing struggle between contracted entities (collection companies and operators) and waste producers to ensure control. In these cases, even if the service levels are agreed, the operational delivery is simply not there. Contractors are known to adjust service levels to demonstrate that they have a different interpretation of in order to demonstrate that the performance levels are high as opposed to revealing the truth and improving.

It is understandable from the operators' perspective that management of service levels and comes at a cost, but what seems to be forgotten is that the producer is also incurring administrative costs in managing the contract to get the operator to deliver service . Where service failures increase, the producer is forced to put more resource into the system to cope. Conversely, it appears that the contractors refuse to match this resource to prevent the failures from occurring in the first place.

With the implications of EPR 5.07 becoming clearer, it should be apparent to both operator and producer that what is needed is a balanced relationship. Unfortunately, there are many cases where this fails, resulting in higher costs for the producer.

Using the example of offensive waste, there are a number of producers that are making a blanket change from potentially infectious (orange bag) waste to the offensive waste stream. This change, without full assessment, leads the contractor/operator to assess the waste themselves. This could result in the operator refusing to process the 'offensive' waste and reclassify it to a higher risk level. This reclassification means the producer is now required to pay higher rates for disposal through a different treatment/disposal route. Getting out of this cycle has proven difficult for many producers.

So how are collection companies dealing with the increased prices? The only alternative available to manage the growing and uncertain costs of disposal here in the UK is to look towards Trans Frontier Shipments (TFS). Current pricing shows that it is potentially cheaper to use the TFS route than to dispose of waste here in the UK. The figures being quoted are in fact cheaper than UK disposal rates, even when factoring in transportation and administration costs. These TFS routes still remain a higher cost than today's contracted rates, although not as high as disposal rates offered by incinerator operators. There is also the moral consideration of whether we should be exporting clinical waste anyway.

It was absolutely a requirement of the NHS to employ contingency contract arrangements at the loss of the major provider in 2018.

There is evidence that the contractor for contingency contract arrangements is influencing the market adversely - at the tax payer's cost. It has been suggested that where contingency arrangements are deployed the contingency operators are securing fixed tonnage input parcels with incinerator operators to meet their obligation. We believe that they are overpaying in order to obtain this capacity, as they can pass it on to the NHS. This practice has in effect exacerbated the supply/demand problem, as the operators are likely to have taken more tonnage than they need. In order for the contingency operator to meet their contractual obligations to supply the incinerator, this excess capacity is being

sold at a premium - thereby affecting both public and private sector adversely. This is profiteering from an NHS contract, brought about to overcome a short-term emergency requirement.

6. Impact on small-scale collections

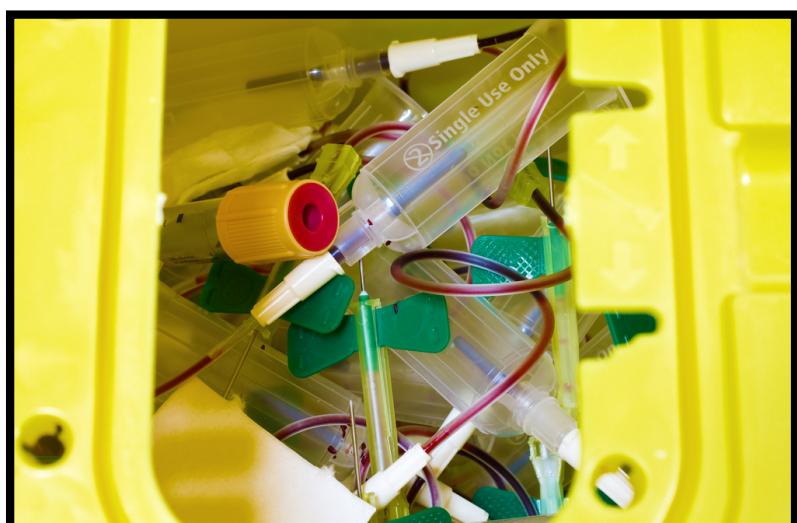
Against the backdrop of this wider disposal capacity squeeze and increased NHS contract stewardship, there is still a lack of understanding by entities such as GPs, pharmacies and dental practices as to what is and is not provided for under the commissioned contracts regarding waste disposal. For example, pharmacy staff are not clear whether the NHS pays for the disposal of sharps containers or waste generated through enhanced services. This leads to a high volume of waste not being segregated appropriately and, at the very basic level, the NHS paying twice for the same waste to be disposed of.

NHS England is not responsible for the collection of sharps returned by patients as this is a local authority matter. Equally, sharps generated through enhanced services is also not the responsibility of NHS England, as payment for the disposal of this waste is captured within the service fees paid to the pharmacy. This means it is up to the pharmacy to make its own arrangements for disposal. In cases where pharmacies place this waste type in the NHS waste stream, it is disposed of at a cost to the NHS, while the pharmacy keeps the fee paid to deal with this waste.

It is not surprising then that procurement strategies are changing. More detailed data is being utilised to determine the specifications under which services are procured, whilst assessing actual vs billed quantities.

The NHS is moving in a more positive direction in an attempt to get better value for money and to ensure that controls are in place to ensure invoices are paid promptly for services which can be verified as true and accurate, whilst working in a much more collaborative way with the waste management sector. These positive steps support the hard work done by sustainability managers and champions across the healthcare sector.

What the NHS and private sector producers now need is more transparency and collaboration from the supply chain with a contracting framework based on best value not profit maximisation.



7. Regulatory Drivers

The Environment Agency has been consulting on proposed changes to EPR 5.07 Clinical Waste (January 2011) with the aim of delivering ‘improvements in the design and operation of permitted facilities in the healthcare waste sector and ensuring that, where relevant, appropriate measures are applied consistently’.

It is clear that there is an emphasis within the proposed EPR 5.07 guidance document that healthcare waste producers must engage fully to provide all the information that is required for pre-acceptance. By this, the guidance refers to the audit not being completed wholly over the phone or using online tools. A physical presence is required at the premises, be it an appropriately trained member of site staff or an external auditor.

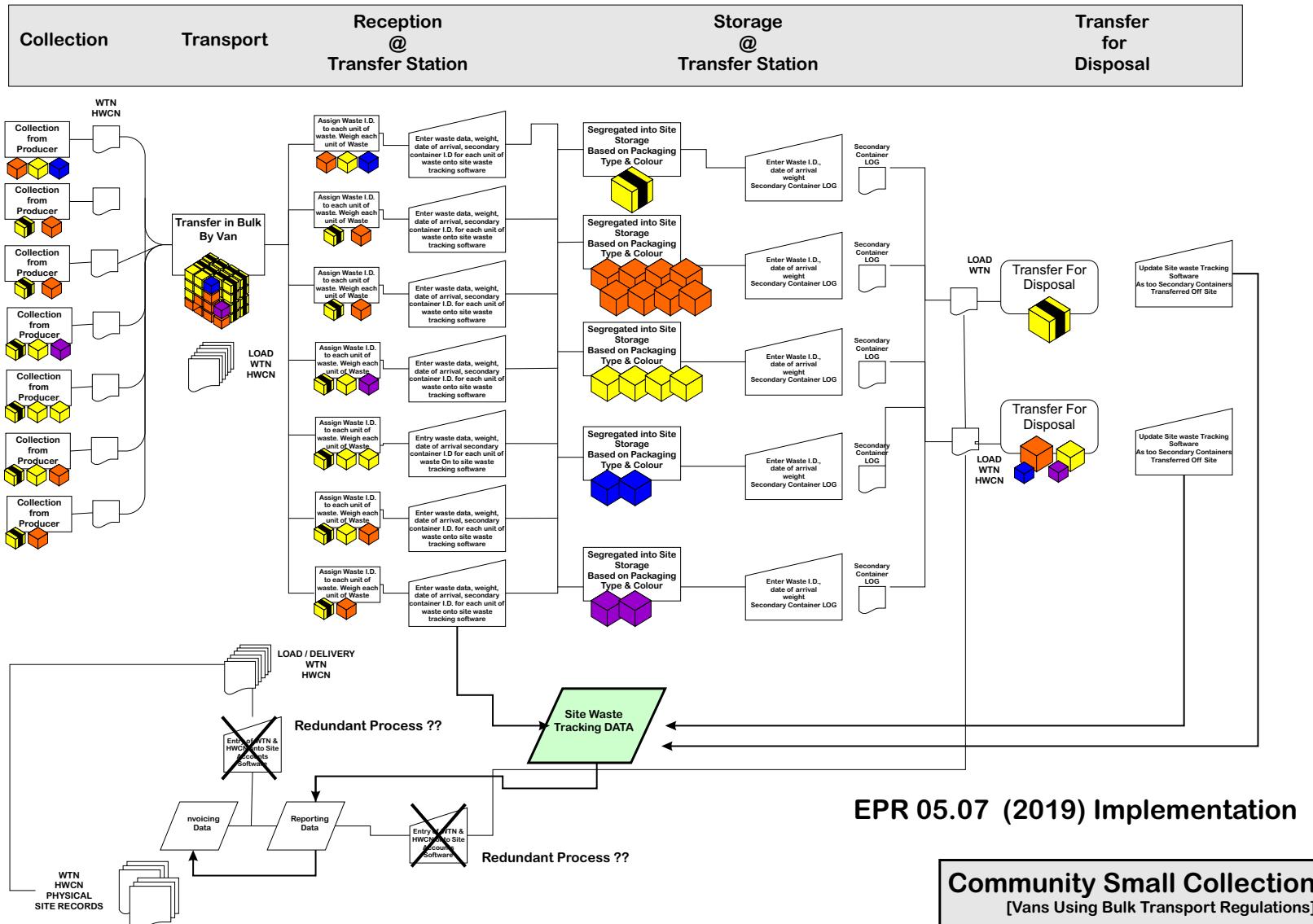
What is interesting is the significant emphasis being noted by the waste disposal industry regarding waste tracking, which must be implemented as a computerised system by the permit holder and must include a pre-booking feature to ensure that there is sufficient storage and process capacity at the designated facility.

The requirements for waste tracking as set out in the proposed EPR 5.07 are in fact no different to those within the January 2011 version, although listed differently for convenience. In many cases some of these criteria have already been implemented. However there appears to be a more rigorous requirement to reject waste, which does not conform to either the tracking requirements or that of the pre-acceptance and to be able to track individual items through to final disposal.

The full implications of waste tracking should not be underestimated with respect to data management and the systems that will be required to manage this, although it seems difficult for the industry to respond to the regulators with an alternative. Equally, questions should be asked of the Environment Agency in terms of how and if they are going to enforce this traceability. The EA has already been seeking innovative solutions, however it is not clear how far reaching these solutions are and how they are to be deployed. Should we be considering this from a risk-based approach and then against the likely cost of implementation?

The image below (Fig.6) gives a representation of the implication of tracking (supplied courtesy of Paul Butler, CVS UK Ltd).

Fig. 6



Perhaps the significant change comes where the proposed EPR 5.07 stipulates the maximum storage time of relevant waste on site (following collection from the producer). However, there is no direct measure to address waste which could be in perpetual transportation from one storage facility to the next, where issues in disposal capacity are noted.

Maximum on-site storage duration prior to treatment (EA Consultation draft May 2019)

Waste Type	Maximum on-site storage
Infectious clinical waste (contaminated with chemicals)	Up to 7 days
Infectious waste (not contaminated with chemicals)	Up to 7 days
Offensive or non-infectious waste	Up to 7 days
Anatomical waste (refrigerated)	Up to 7 days
Anatomical waste (not refrigerated)	Up to 24 hours (72 hours if over a weekend)
Cytotoxic and Cytostatic drugs	Up to 6 months
Other medicines or drugs	Up to 6 months
Dental amalgam	Up to 6 months
Other chemicals or other wastes	Up to 6 months

The storage time does appear to be very low and commentary across the industry suggests that 14 days may be more appropriate for the more common healthcare waste types collected.

Also, is there accurate data for the volume of the material that is being stored? Permits are based on tonnage, but many interim bulking operations using internal and modular storage do not weigh the material at collection (source) or on return to their transfer stations. In reality, many facilities do not know their actual tonnage in storage or how long it has been on site. They only get tonnage data from the final disposal point. As such the integration of transparent traceability systems and accurate tonnage data between disposal operators and waste logistic contractors need to be considered.

Within this proposed guidance, it is abundantly clear that operators are going to have to invest more in management systems, training of staff and implementing new processes to ensure that acceptance of waste is managed effectively, whilst also doing so in infrastructure to store waste ‘internally’ and communicate regarding contingencies.

Contingency plans must be communicated to customers where waste can no longer be accepted at the facility due to planned and unplanned maintenance or for matters related to the appropriate management of the authorised permits. This means that transparency around operating capacity must be in place, and this can only be considered an improvement for the industry.

There are many questions that need to be answered during the consultation period for EPR 5.07 such as:

What evidence is there to support the requirement to store contained clinical waste internally (in a building) following the collection from the producer as opposed to using the existing methods of lockable UN approved wheeled containment?

If the suggested storage duration is suggested in order to prevent the reoccurrence of issues such as those faced by Healthcare Environmental, how will the EA enforce this when the same waste types are currently and routinely stored for over 4 weeks currently with no risk to the environment or human health?

8. Impacts – current and future

In many respects, the changes resulting from the proposed EPR 5.07 can only be viewed as positive and as more granular data is generated by the industry. This will ultimately result in poor practices being eradicated, and that the current negative perception of the industry will be replaced with something more akin to a trusted and secure reputation.

The EPR change and the disposal capacity issue will inevitably continue to impact the price of disposal for the customer. Although they are separate issues, the fact that waste ‘collection’ and ‘disposal’ operators will need to invest in coming years will see the costs passed on to the customer.

Should the shortage in disposal capacity continue and the demand increase, it is likely that these costs too will increase further if no new capacity is identified.

The current capacity issue should not be underestimated. Where certain facilities ceased operating for any given reason, agreements were in place to move waste between operators on a reciprocal basis. This resilience collaboration between the incinerator operators has ceased in many cases with some operators opting to reserve capacity for more lucrative opportunities such as those through the NHS contingency plan.

The long game suggests that, following a period of adjustment, new procurement strategies and better relationship/partnerships combined with enhanced technology, will see better value and improved service for the waste producer. The point at which this happens depends solely on how much progress is made across the industry operators and their appetite for change.

Conversely, there could be a negative impact as disposal companies decide to push planned maintenance to later dates to avoid backlog of waste to meet the requirements of their permits and those set in EPR 5.07. This could result in longer shutdown periods later down the line. Ultimately this would lead to the same net effect as currently faced.

We must also consider that the EA itself struggles with resource and has a significant mountain to climb in training staff to maintain and monitor compliance against the proposed EPR5.07. The proposed implementation dates, particularly short term, could result in the industry investing to meet the requirements with what could be perceived as a lack of impetus to enforce from the EA.

Should we now be considering incentives to build new disposal facilities using new technologies, supported by the Environment Agency, through the deployment of additional resource?

9. Call for action

From the research contained in this paper and our experience of the UK clinical waste market there are some immediate actions that could be taken to make instant improvements to the current system.

9.1. Improvement of current system

- Should clinical waste treatment for the NHS be treated as a national strategic issue and be overseen by a regulatory body such as Ofcom to manage the way the market operates? This would apply, as most of the UK tonnage is public.
- Should decisions be made without full market consideration eg RPS 222?
- Should government make some assets public again in order to protect available treatment capacity for NHS? The commercial market can operate under the current system and will find its level. Alternatively, the government could build in more tonnage into the system - which would correct the market dynamics.
- How will EPR 5.07 be achieved? Although some reasonable and practical guidance is being made available with reasonable limits perhaps, but is it practically achievable with the existing, aging infrastructure and lack of resources for the EA.
- How do we rectify a dysfunctional system to create a best in class industry

Further work needs to be done to bring the actual incineration capacity up to date as opposed to using 2016 figures from the EA. What facilities were left out of the list?

It is well known that the incineration assets out there are aging and not aging well, but what is being done to address this situation?

9.2. Immediate Request by Anenta

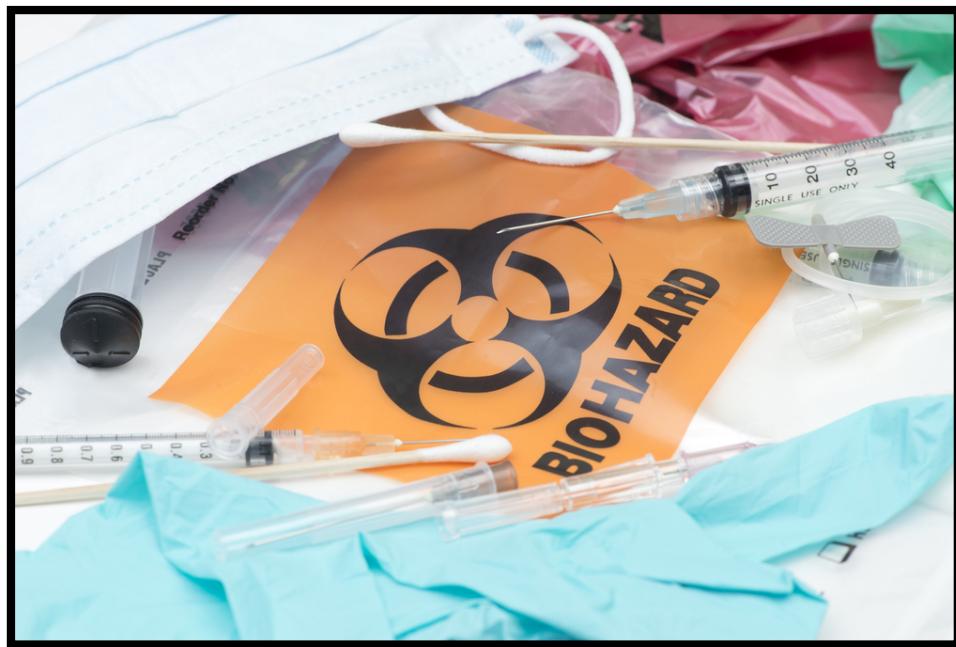
A new market supply and demand report needs to be completed immediately, requiring all parties to provide transparent and accurate data, to fully understand the true market position. This includes no double counting of tonnage, clarity over permitted and actual tonnes incinerated, and investigation into the reason recent incineration prices have moved significantly. All this should be done at the same time for the results to be meaningful.

10. Summary

The report has highlighted a number of areas for improvement, perhaps the most urgent question is that incineration assets are aging and deteriorating, and to date there has been little discussion into what is being done to address the situation.

The UK waste industry is heavily siloed, with companies and governing bodies working in isolation, rather than together. In order for the UK waste industry to overcome the issues it currently faces with its clinical waste incineration capacity, we need more collaboration between invested parties.

It is important to reiterate that this report is a working document and we invite and encourage further discussion and submissions to further develop this report.



i. Reference sources

Environment agency data

<https://www.gov.uk/government/publications/waste-management-for-england-2016>

<https://www.gov.uk/government/publications/waste-management-data-for-england>

Defra report

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/710124/Digest_of_Waste_and_Resource_Statistics_2018.pdf

ERIC data

<https://digital.nhs.uk/data-and-information/publications/statistical/estates-returns-information-collection/summary-page-and-dataset-for-eric-2017-18>

<https://digital.nhs.uk/data-and-information/publications/statistical/estates-returns-information-collection/estates-return-information-collection-2016-17>

ii. Appendices

Appendix 1

Incineration facilities that accepted waste in England during 2016: permitted capacity. Data extracted from <https://www.gov.uk/government/publications/waste-management-for-england-2016>

This list only includes incineration facilities that accept waste from off-site sources. It does not include facilities that burn waste from their own in house processes.

Original Permit Number	Operator Name	Type	Permitted Capacity (tonnage)
PP3235LP	EPR Thetford Ltd	Animal By-Products	450,000
UP3232SX	EPR Glanford Ltd	Animal By-Products	270,000
BP3635LA	EPR Eye Ltd	Animal By-Products	160,000
CP3230BE	Secanim	Animal By-Products	100,000
NP3338SZ	Ancillary Components Ltd Cambridge	Animal By-Products	438,000
WP3935SM	University Hospital NHS Foundation Trust	Clinical	4,500
GP3236AX	Plymouth Hospitals NHS Trust	Clinical	4,270
YP3934SM	Peake (GB) Ltd	Clinical	5,241
EP3530XY	SRCL Ltd	Clinical	8,500
ZP3730XJ	SRCL Ltd	Clinical	6,000
ZP3230XC	SRCL Ltd	Clinical	7,884
YP3033BE	London Waste Ltd	Clinical	75,000
LP3037UU	SRCL Ltd	Clinical	8,000
BT2866IG	Grundon Waste Management Ltd	Clinical	10,000
HP3230XA	SRCL Ltd	Clinical	8,500
JP3133XP	SRCL Ltd	Clinical	8,000
VP3136ZD	Sita Healthcare Limited	Clinical	10,000
PP3530XX	SRCL Ltd	Clinical	8,000
VP3130EF	SRCL Limited	Clinical	6,570
AP3039SD	DEFRA	Clinical	5,200
CP3930XL	SRCL Ltd	Clinical	17,000
BL7272IB	Castle Cement Limited	Co-Incineration of hazardous waste	175,428
BL3269IH	Steetley Dolomite Limited	Co-Incineration of hazardous waste	40,000

BM0486IT	Castle Cement Limited	Co-Incineration of hazardous waste	460,943
BL1029IP	Cemex UK Cement Ltd	Co-Incineration of hazardous waste	87,600
XP3532DP	Tarmac Cement and Lime Ltd	Co-Incineration of non hazardous waste	82,500
BP3731VJ	Hope Construction Materials Limited	Co-Incineration of non hazardous waste	105,000
BP3736HA	Dalkia Bio Energy Ltd	Co-incineration of non hazardous waste	125,000
BL7248IH	Cemex UK Cement Ltd	Co-Incineration of non hazardous waste	289,080
BJ9509IC	Lafarge Cement UK	Co-Incineration of non hazardous waste	120,000
CP3031SX	Slough Heat and Power Ltd Veolia ES	Co-Incineration of non hazardous waste	547,500
BS5193IE	Cleanaway (UK) Limited	Hazardous	100,000
UP3034CN	Augean Plc	Hazardous	13,140
ZP3438CF	Fine Environmental Services	Hazardous	48,000
FP3935KL	Tradebe Fawley Limited	Hazardous	45,000
BS4316IV	Robinson Brothers	Hazardous	6,880
BJ9878IQ	JBR Recovery Limited	Hazardous	0
KP3937DU	Packcare Ltd	Hazardous	9,000
EP3034SN	WasteNotts (Reclamation) Ltd	Municipal and/or Industrial & Commercial	260,000
HP3538CR	Cyclerval (UK) Ltd	Municipal and/or Industrial & Commercial	60,000
WP3833FT	MVV Environment Devonport Ltd	Municipal and/or Industrial & Commercial	265,000
WP3438HZ	SITA Suffolk Ltd	Municipal and/or Industrial & Commercial	269,000
BS3042IM	Viridor Waste (Greater Manchester) Ltd	Municipal and/or Industrial & Commercial	127,100
RP3638CG	Viridor	Municipal and/or Industrial & Commercial	850,000
YP3033BE	London Waste Ltd	Municipal and/or Industrial & Commercial	675,000
BT7116IW	Lakeside Energy From Waste Limited	Municipal and/or Industrial & Commercial	400,000
BK0825IU	Riverside Resource Recovery Limited	Municipal and/or Industrial & Commercial	785,000

NP3738SY	South East London Combined Heat and Power Limited	Municipal and/or Industrial & Commercial	488,000
BR4551IC	Kent Enviropower Ltd	Municipal and/or Industrial & Commercial	560,000
TP3536CL	MVV Environment Ridham Limited	Municipal and/or Industrial & Commercial	181,800
NP3638ZS	Viridor Peterborough Ltd	Municipal and/or Industrial & Commercial	85,000
FP3739FS	FCC Lincolnshire Ltd	Municipal and/or Industrial & Commercial	170,000
BT4249IB	Newlincs Development Ltd	Municipal and/or Industrial & Commercial	56,000
VP3034SG	SITA Tees Valley Limited	Municipal and/or Industrial & Commercial	756,000
XP3436WB	Suez Ltd	Municipal and/or Industrial & Commercial	500,000
XP3239GF	Veolia ES Shropshire Ltd	Municipal and/or Industrial & Commercial	102,000
BV8067IL	Veolia ES South Downs Ltd	Municipal and/or Industrial & Commercial	242,000
BJ7093IY	Veolia ES Hampshire Ltd	Municipal and/or Industrial & Commercial	210,000
BJ7107IJ	Veolia ES Hampshire Ltd	Municipal and/or Industrial & Commercial	210,000
XP3030XX	Enviropower Limited	Municipal and/or Industrial & Commercial	60,350
GP3739VR	Innovative Environmental Solutions (UK) Ltd	Municipal and/or Industrial & Commercial	180,000
AP3435SD	MES Environmental Limited	Municipal and/or Industrial & Commercial	105,000
AP3835SM	MES Environmental Limited	Municipal and/or Industrial & Commercial	118,000
QP3234SX	MES Environmental Limited	Municipal and/or Industrial & Commercial	210,000
NP3739PD	The Coventry & Solihull Waste Disposal Company Ltd	Municipal and/or Industrial & Commercial	315,000
HP3431HK	Veolia ES Staffordshire Limited	Municipal and/or Industrial & Commercial	340,000
WP3239SJ	Veolia ES Birmingham Ltd	Municipal and/or Industrial & Commercial	400,000
JP3535CE	Avonmouth Bio Power Energy Ltd	Municipal and/or Industrial & Commercial	120,000
HP3937FM	SITA UK Ltd	Municipal and/or Industrial & Commercial	6,000

BJ7786IV	Veolia ES Hampshire Ltd	Municipal and/or Industrial & Commercial	102,000
FP3134GU	Viridor Limited	Municipal and/or Industrial & Commercial	300,000
UP3734HT	Waste Recycling Limited	Municipal and/or Industrial & Commercial	300,000
BJ6178IX	SITA (Kirklees) Limited	Municipal and/or Industrial & Commercial	150,000
GP3334CX	Veolia ES Leeds Ltd	Municipal and/or Industrial & Commercial	179,580
LP3131TA	E.ON Climate and Renewables UK Biomass Limited	Municipal and/or Industrial & Commercial	250,000
BM4082IY	Veolia ES Sheffield Limited	Municipal and/or Industrial & Commercial	225,000
SP3239FU	Ferrybridge MFE Limited	Municipal and/or Industrial & Commercial	675,000
HP3238ZC	MWH Thermal Ltd	Municipal and/or Industrial & Commercial	72,000
BS5541IN	United Utilities Water Ltd	Sewage Sludge	100,000
ZP3833BK	Thames Water Utilities Ltd	Sewage Sludge	90,500
UP3737PQ	Thames Water Utilities Ltd	Sewage Sludge	53,500
TOTAL			15,469,566

Appendix 2

ERIC S08 Waste Definitions 2017-2018

S08. Waste

Ref	Field	Unit	Definition
S08_01	Landfill		The cost of disposing of landfill waste. See Appendix G-Waste for further information. The cost should include the cost of any off site disposal including transport and disposal together with the cost of on-site destruction. The cost should not include on-site local collection and handling costs.
S08_02	Landfill	Tonnes	The amount of waste disposed by landfill, this will be the weight as documented through invoices, receipts and consignment notes and should relate/reconcile to the invoiced amount. See Appendix G-Waste for further information.
S08_03	Incineration	t	The cost of disposing of waste by incineration without energy recovery. See Appendix G-Waste for further information. The cost should include the cost of any off site disposal including transport and disposal together with the cost of on-site destruction. The cost should not include on-site local collection and handling costs.
S08_04	Incineration	Tonnes	The amount of waste disposed by incineration without energy recovery; this will be the weight as documented through invoices, receipts and consignment notes and should relate/reconcile to the invoiced amount. See Appendix G-Waste for further information.
S08_05	Waste	t	The cost of disposing of waste by turning it into a new substance or product, including composting if it meets quality protocols. See Appendix G-Waste for further information. The cost should include the cost of any off site disposal including transport and disposal together with the cost of on-site destruction. The cost should not include on-site local collection and handling costs.
S08_06	Waste	Tonnes	The amount of waste disposed by turning it into a new substance or product, including composting if it meets quality protocols; this will be the weight as documented through invoices, receipts and consignment notes and should relate/reconcile to the invoiced amount. See Appendix G-Waste for further information.
S08_07	Other	t	The cost of disposing of waste through other forms of recovery includes anaerobic digestion, incineration with energy recovery, gasification and pyrolysis which produce energy (fuels, heat and power) and materials from waste, and some backfilling. See Appendix G-Waste for further information. The cost should include the cost involved in any off site disposal including transport and disposal together with the cost of on-site destruction. The cost should not include on-site local collection and handling costs.
S08_08	Other recovery	Tonnes	The amount of waste disposed of by other forms of recovery includes anaerobic digestion, incineration with energy recovery, gasification and pyrolysis which produce energy (fuels, heat and power) and materials from waste, and some backfilling. This will be the weight as documented through invoices, receipts and consignment notes and should relate/reconcile to the invoiced amount. See Appendix G-Waste for further information.

Completion Note:

To avoid confusion with regard to the appropriate reporting method for wastes sent for disposal under the 'D9' (Physico-chemical treatment resulting in final compounds or mixtures which are discarded by any of the operations numbered D1 to D12, e.g. evaporation, drying, calcination) code. Any waste sent to D9 facilities must not be reported as other recovery or waste recycling as these are both reserved for activities that achieve an 'R' code. Where a D9 facility uses a heat-based or similar treatment method prior to final disposal, the waste should be reported as incineration. The description of the plant should give sufficient information to make a rational decision on this. As stated in Appendix G-Waste of the ERIC data definitions, the weight sent from the NHS organisation is the weight that should be reported. Any reduction of weight by treatment by the waste operator should not be considered as this happened after the waste left the care of the organisation. Similarly any recovered products that are wastes from the treatment process should not be reported.

Appendix A provides a breakdown of the Estates and Facilities running costs. This should be used to list the trust annual revenue costs and identify income/costs recharged out to other organisations; this will give the true cost to the trust. Income/recharges out should be calculated using the apportionment rules as in previous years.

Appendix 3



Regulatory Position Statement 222

Incineration of specified healthcare wastes at a municipal waste incinerator without a permit variation

If you comply with the requirements below, we will allow the incineration of certain healthcare wastes at a municipal waste incinerator without a variation to your environmental permit.

The requirements

An environmental permit stipulates the types and quantities of wastes a facility is allowed to accept. Accepting waste types or quantities beyond that stipulated in a permit is a breach of permit conditions. However, while the NHS is operating under contingency measures, if you comply with the conditions and limitations in this Regulatory Position Statement (RPS), you can accept and incinerate certain healthcare wastes at a municipal waste incinerator without a variation to your environmental permit.

This RPS applies to operators of permitted municipal waste incinerators.

This RPS will be available from 1 April 2019 until 31 October 2019.

Conditions you must comply with:

This RPS only applies if all of the following conditions are met:

- The healthcare waste is limited to the following EWC classifications:
 - 18 01 03* - orange bagged/containerised infectious waste from human healthcare activities
 - 18 01 03* and 18 01 07 – yellow bagged/containerised infectious waste from human activities dual coded with non-hazardous chemicals
 - 18 02 02* - orange bagged/containerised infectious waste from animal healthcare activities
 - 18 02 02* and 18 02 05 - yellow bagged/containerised infectious waste from animal activities dual coded with non-hazardous chemicals
 - 18 01 04/20 01 99 – offensive hygiene wastes (human)
 - 18 02 03 – offensive waste (animal)
 - 18 01 09/18 02 08 – non-hazardous pharmaceutical waste

None of the above waste types shall include sharps waste.

- You can demonstrate that the producer of the waste has exhausted using all other appropriate permitted options available for its treatment or incineration.
- Prior written agreement has been received from the Environment Agency (local area office) for the temporary storage and incineration of the waste at the permitted municipal waste incinerator.

You must:

- Have and follow written procedures for the handling and management of the healthcare waste.
- Be able to identify all healthcare waste accepted at your site by date of arrival, original producer details, and type of waste, including EWC code.



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- Comply with the requirements for waste pre-acceptance, waste acceptance, handling and storage in sector guidance note SGN 5.07 'How to comply with your environmental permit, additional guidance, version 1.1', January 2011.
- Ensure that the burning of the additional waste types at the plant will not have an adverse impact on plant emissions or the residues it produces.
- Carry out at least one round of additional periodic monitoring of emissions whilst burning healthcare wastes covered by this RPS, for all periodically monitored pollutants as required by your permit, no later than one month after accepting healthcare wastes.
- After 2 weeks, and no later than 4 weeks after the date when healthcare waste is first incinerated in the plant, carry out a test of your Incinerator Bottom Ash (IBA) to confirm that there is no change to the composition of the IBA from that tested prior to the incineration of healthcare waste. Any changes in composition shall be notified to and discussed with the Environment Agency.
- Not charge any waste if there is a stoppage, disturbance or failure of the activated carbon abatement system, other than under abnormal operating conditions.
- Store healthcare waste at the facility for no longer than 24 hours prior to incineration except in exceptional circumstances (such as unplanned outages), which will be immediately notified to the Environment Agency.
- Submit quarterly hazardous waste consignee returns to the Environment Agency, if you are accepting hazardous waste under this RPS.
- Submit a monthly report to the Environment Agency local area office, detailing the amounts and types of waste burned under this RPS.
- Make sure your activities do not endanger human health or the environment.

In addition, for waste arriving from Scotland you must:

- Before you accept any waste, have received confirmation from the waste producer that they will provide you with the information required to be in a pre-acceptance audit within the following timescales:
 - For all acute and major hospital sites - before receipt of any waste.
 - For community NHS practices - by 31 July 2019.
 - For all remaining healthcare providers where NHS Scotland manages the waste contract (for example, GPs, dentists, care homes, pharmacy practices) - by 31 August 2019.
- Have completed an assessment of the pre-acceptance audit within two months of receipt and take any steps required in EPR 5.07.

You must not:

- Cause a risk to water, air, soil, plants or animals
- Cause a nuisance through noise or odours
- Adversely affect the countryside or places of special interest

Enforcement

An RPS means that the Environment Agency will not normally take enforcement action against you for not having a permit for the waste activity provided:

- Your activity meets the description set out in this RPS.
- You comply with the conditions set out in this RPS.
- Your activity does not (and is not likely to) cause environmental pollution or harm to human health.

This RPS will be withdrawn on 31 October 2019.

RPS 222 V1. Issued: March 2019

customer service line
03708 506 506

incident hotline
0800 80 70 60

floodline
0345 988 1188
0845 988 1188

Appendix 4

Assumption Variable Values

Variables	Value
Permitted Operating hours per year	8760
Days/y	365
Hrs p/day	24
Incin planned maintenance days	28
Incin unplanned maintenance days	31.4
System efficiency reduction on age	15%
Permitt over estimate	15%