

DUDLEY ENERGY FROM WASTE PLANT

PERMIT No AP3435SD

WASTE INCINERATION DIRECTIVE

ANNUAL REPORT

2008

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Annual performance report for MES Environmental Dudley EfW Plant – Permit No. AP3435SD – Year 2008

Introduction.

This report is produced under the Waste Incineration Directive's Article 12(2) which requires the operator of an incineration or co-incineration plant to produce an annual report to the Regulator on the functioning and monitoring of the plant and to make this available to the public. In accordance with the requirements of the Directive, the following information is therefore provided:

<i>Name of Company</i>	<i>M E S Environmental</i>
<i>Name of Plant</i>	<i>Dudley EfW Facility</i>
<i>Permit Number</i>	<i>AP3435SD</i>
<i>Address</i>	<i>Lister Road, Dudley DY2 8YT</i>
<i>Phone</i>	<i>01384 457321</i>
<i>Contact name</i>	<i>Mr. D Williams</i>
<i>Position</i>	<i>Operations Manager</i>
<i>Further information, description of waste types burned and origin.</i>	<i>Constructed in 1998 to burn in the region of 105,000 tonnes per annum of local domestic refuse and generate a nominal 7.4MW of electricity for the local community.</i>
<i>(If you would like to make any comment on this report or if you would like any further information or to arrange a visit to the plant please telephone Mr D Williams on the above number)</i>	

Table 1 – General information

The plant provides a sustainable method of waste disposal and recovery, predominantly for the area within the administrative boundary of Dudley Metropolitan Borough Council, with smaller quantities of waste accepted, where capacity and demand exists, from other local authorities within the general vicinity of the plant.

Household, commercial or industrial wastes, collected by the local authorities, comprise almost all of the wastes delivered to the plant, at around 99.87% of all deliveries. In 2008 85.25% was from within the Dudley area with a further 14.62% of wastes from other local authorities in the West Midlands. Only 0.13% of wastes was from private sector contracts.

Priority will always be given however to the delivery of local authority wastes, as required by the terms of contractual arrangements, to ensure that safe, reliable, consistent and sustainable disposal and recovery facilities are available at all times.

This also reduces reliance on and quantities of wastes delivered for disposal to landfill with little or no beneficial outcome. It also contributes significantly to the diversion of biodegradable municipal waste away from landfill consistent with the

European Union and Governments objectives under the terms of the EU Landfill Directive.

Non Technical Plant Description.

The installation comprises an energy from waste facility (EFW) processing a maximum of 105,000 tonnes per year of municipal and other specified wastes.

The plant contains two incineration lines with a combined design capacity to process up to 12 tonnes of waste per hour. Each line has separate waste feed systems, furnaces, boilers and flue gas treatment equipment but share a common electricity generation system.

Heat produced during the incineration process is converted to electrical energy by generating steam in high-pressure boilers and expanding the steam through a steam turbine. Air-cooled condensers re-circulate condensate back to the boilers..

By this means the plant, when operating at full load, will typically generate around 7.4 MW of electricity and, after satisfying its own power needs, exports approximately 6.5 MW of electricity to the local electricity network. This assists in contributing to the Government's target of providing 10% of electricity generation from renewable energy sources by the year 2010.

The combined effect of the plant's energy recovery process and the recycling activities of the local authorities in the area results in the recovery of value from around 80% of the municipal wastes produced in the area, either in the form of electricity production, recycling or composting.

This demonstrates that the two processes have a strong environmental synergy and work in common to treat waste as a resource to be put to beneficial use.

As recycling performance and capacity within the primary catchment area increases this provides further opportunity to divert additional materials away from landfill in conjunction neighbouring local authorities, who are more heavily reliant on landfill as their primary disposal route.

In 2008 13569 tonnes of mixed municipal wastes were imported from the Sandwell and Walsall areas, which would otherwise have been disposed of by landfill.

In terms of plant operation the incineration processes have been designed against the background of a detailed assessment of the prevailing environmental conditions at the site location and are based upon the Best Available Technology as detailed both in the original Authorisation application and the application for the Permit issued under the Pollution Prevention and Control (England and Wales) Regulations 2000. These include but are not limited to the following:-

- Well proven process plant developed specifically for incineration of municipal solid wastes,
- Efficient, comprehensive process control and monitoring systems to ensure optimum conditions for complete combustion of the wastes and to minimise emissions from the processes.
- Operations confined within buildings under slight negative pressure in order to contain and minimise emissions such as dust and odour.
- Qualified and experienced operating and maintenance personnel to implement procedures to ensure that the required high standards are maintained. Operating and Maintenance Procedures are established according to an

internationally recognised system of quality assurance.

- Multi-stage high efficiency flue gas cleaning systems comprising deNO_x Selective Non-Catalytic Reduction (SNCR) for the removal of oxides of nitrogen, activated carbon and lime semi-dry acid gas scrubbing for controlling acid gas, dioxins/furans and mercury emissions.
- Final stage flue gas abatement for particulate materials using fabric filtration.
- 47 metre chimney stacks for effective dispersion of the low emission concentrations
- Residues from the combustion process and from the flue gas cleaning system disposed of by approved means, maximising recycling wherever possible.
- Residues transported in appropriate vehicles, suitably enclosed and covered to ensure that no spillage occurs.
- Operation of the installation under an Environmental Management System, accredited to ISO14001 and a Quality Management System, accredited to ISO9001
- Waste water from the process is neutralised and recycled as far as is practicable to minimise the quantities released to sewers.
- Provision of bunds or double skinned vessels for storage of fuel and chemicals to prevent accidental and inappropriate discharge to the public sewers and watercourse.

The Plant is regulated under the terms of a Permit issued by the Environment Agency (reference AP3435SD) and which contains conditions to ensure that the requirements of the Waste Incineration Directive are incorporated and will be met.

A variation to the permit (Variation Number CP3136XQ) was issued in 2008 and which amended the periodic emission limit values for particulate matter, hydrogen chloride, carbon monoxide, sulphur dioxide and oxides of nitrogen. The values in each case as now the same as the corresponding ½ hourly of 10 minute averages from continuous emissions monitors.

Summary of plant operation:

The plant is designed to process a heterogeneous mix of municipal type wastes in two identical streams each burning up to 6 tonnes per hour.

Although this creates a technical capacity for around 105,000 tonnes per annum, in reality waste deliveries are typically less than the nominal capacity when taking into consideration periods of planned maintenance and are well within the permit limitations of 105,000 tonnes of mixed municipal waste including a maximum of 5,250 tonnes of separately collected fractions.

Separately collected fractions, if any, are generally wastes delivered by private sector customers with mixed municipal wastes predominantly comprising deliveries from local authorities. Total deliveries for 2008 are set out in Table 2 below.

Annual waste throughputs

Waste Types	EWC codes	Tonnes burnt	
<i>Mixed municipal wastes</i>	20.03.01	Stream 1	46855
		Stream 2	45859
		Total	92714
<i>Separately collected fractions</i>	15.01.06 <i>Packaging</i>	Total	120
	20.01.01 <i>Paper & card</i>		
	20.01.08 <i>Kitchen waste</i>		
	20.02.01 <i>Biodegradable</i>		
	20.03.02 <i>Market waste</i>		
20.03.03 <i>Street sweepings</i>			
<i>Total burnt – all types</i>			92834

Table 2 - Incinerated Wastes 2008

Plant operational hours in the year and reasons for any significant outages.

Each boiler is designed to operate continuously throughout the year, although regular routine preventative maintenance programmes are in place to ensure performance efficiency is maintained and to prevent the development of major problems resulting in significant plant outages.

Routine maintenance activities represent the principal reason for significant outages. Other stoppages tend to be short term shutdowns of individual streams, for one or two days, to deal with smaller scale issues such as tube leaks or minor repair works. Whilst these are generally relatively small jobs the time taken to complete is often extended whilst waiting for boilers to cool down before work can commence and then to bring back up to operating temperatures.

Routine planned maintenance in 2008 was a dual outage with both boilers offline simultaneously for part of the period to enable scheduled maintenance works to be carried on systems common to both boilers. Boiler 1 was off line for 14 days from 13th to 26th April with boiler 2 off for 21 days from the 6th to 26th.

The overall level of plant availability, in terms of operating hours, was consistent with expectations with boiler 1 and boiler 2 available for 8117 and 8130 hours respectively. This was equivalent individually to 92.41% and 92.55% of potential operating hours or 92.48% overall. This is consistent with similar levels of availability in 2007 of 93.04% overall.

Further details on plant performance are contained in Appendix 1

Residues produced.

There are two main sources of residues arising from the operation of the plant comprising:

- Bottom ash from the combustion process (including metals discharged within the ash: and
- Residues from the flue gas treatment system (Fly ash)

Burned out bottom ash residues are discharged from the lower end of each grate into a water filled ash discharger, where it is quenched and then ejected onto a conveyor system. Larger items are screened out and ferrous metals removed by magnetic separation.

Residues from the flue gas treatment process are discharged in an enclosed system into double skinned heavy duty bags prior to removal from site for treatment and disposal.

The residual material represents approximately 10% of the original refuse volume and around 23% of its weight with bottom ash discharged into the residues storage bunker.

The storage capacity for bottom ash residues and separated ferrous metals is sufficient to ensure 4 days storage. Collections for delivery to disposal or treatment sites are made on Mondays to Fridays and are scheduled to ensure sufficient storage capacity is maintained at all times.

Bottom ash is now widely used in the UK and Europe as a substitute for valuable primary aggregate materials in the construction of roads and embankments. Although bottom ash from the plant is not currently recycled MESE are currently actively investigating alternatives to landfill in conjunction with its local authority 'partners'

Table 3 shows the total quantities of the various residues produced in 2008.

Residue	Annual tonnage	Percentage of input waste	Disposal destination.
Bottom ash	16905	18.21%	Landfill
Fly ash	3125	3.37%	Reprocessing prior to landfill
Ferrous metals	1478	1.59%	Recycling

Table 3 - Residues produced & final destination

Electricity Production

All deliveries to the plant are weighed and, in conjunction with the quantities of electricity produced, details used to determine the calorific values (CV) of wastes delivered. This can vary seasonally and is dependent upon the types of wastes delivered but, typically, are in the order of 8.5 Mj/kg.

In 2008 the average calorific value of wastes delivered over the year was 8.729Mj/Kg representing an increase of 2% on values for 2007 and over 6% on 2006 when the average CV's were 8.55 and 8.19Mj/Kg respectively. This is most likely to be attributable to the expansion of local authority recycling schemes which are progressively removing greater quantities of material with low or zero CV wastes such as green waste, bottles and tins.

The combustion of municipal waste at the plant not only produced sufficient electrical power to supply the majority of the plant's own power but sufficient also to meet the power demands for around 10,000 households during the year.

This reduces the demand for electricity produced in a conventional fossil fuel power stations and the use of a renewable energy source not only saves the depletion of an irreplaceable natural resource but also reduces the associated CO₂ production and pollution from the mining operation and transportation of the fossil fuel.

The Sector Guidance note IPPC S5.06 contains a guide value of 5 to 8 MWe exported per 100,000 tonnes of waste. Typically at design performance the plant exports 6.5 MWe from processing around 95,000 tonnes which is equivalent to 6.8MWe per 100,000 tonnes and within the range of guide values.

Details of electrical power produced, used and exported from the plant is set out in Table 4 below together with details of smaller quantities of power imported during the times when the plant or part of the plant is shutdown for servicing.

Electrical power production (in MWhrs)			
1 MWh = 10,000 X 100 watt light bulbs powered for 1 hour			
Imported	Production	Site use	Exported
178	45,717	7,877	37,840

Table 4 - Electrical power production 2008

Plant emissions monitoring:

Emissions to air and water are continuously monitored in accordance with legal and regulatory requirements. Emissions to air are either combustion emissions from the stack or fugitive emissions from the storage of materials and chemicals on site.

Stack emissions (Particulates, Hydrogen Chloride, Sulphur Dioxide, Volatile Organic Carbons, Ammonia, Carbon Monoxide, Oxides of Nitrogen) are monitored and recorded continuously on site. Periodic (Bi annual) checks of these are also made by accredited external testing laboratories together with further quarterly or bi-annual checks as may be required by the permit of Dioxins, Mercury, Hydrogen Fluoride, Cadmium / Thallium and other metals.

Fugitive emissions monitoring, for substances having no specific emissions limit value specified in the permit, is part of the general maintenance regime carried out on site.

Table 5 below sets out the frequencies of monitoring for the various substances specified within the permit and in order to comply with the requirements of the Waste Incineration Directive. Further details of associated plant performance are also shown in Table 6 and Appendices 1 and 2.

Pollutants measured	Continuously	Periodically
<i>Particulates</i>	✓	✓
<i>Oxides of Nitrogen</i>	✓	✓
<i>Sulphur Dioxide</i>	✓	✓
<i>Carbon Monoxide</i>	✓	✓
<i>Ammonia</i>	✓	✓
<i>Total Organic Carbon</i>	✓	✓
<i>Hydrogen Chloride</i>	✓	✓
<i>Mercury</i>		✓

<i>Cadmium and Thallium</i>		✓
<i>Group III metals</i>		✓
<i>PCDD and PCDF</i>		✓
<i>Hydrogen Fluoride</i>		✓

Table 5 - Emissions monitoring frequencies

Emissions to water are monitored by equipment built into the on-site effluent treatment plant which aims to recycle 100% of water from site for reuse on site excluding sewerage. During any water emission to external sewer there is a water sample taken and the sample sent to external laboratory for analysis. In 2008 the cumulative volume of water discharged to sewer was 5045m³.

Any emissions which exceed the limits that are imposed upon the operation are reported to the Environment Agency without delay along with plans for the prevention of further occurrences.

Continuous Emissions Monitor`s (CEM`s) Operation

The CEM`s equipment operated satisfactorily throughout the year with minor breakdowns on individual sampling streams being responded to by CBISS the company contracted to service the equipment. At no time was the plant shut down due to CEM`s failure.

CEM`s equipment continuously measures and records information on emission limits for the substances set out in Table 5 above with 10 minute, ½ hourly and daily average values recorded as required and compared with corresponding emission limit values set out in the permit. Monthly reports are prepared for each substance although these only need to be submitted to the Environment Agency every 6 months.

A summary of CEM data for all continuously monitored substances is shown at Appendix 2 with a summary of results for substances which are only monitored periodically shown below in Table 6

Pollutant	ELV	Stream	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Cd/Th (mg/m ³)	0.05 mg/m ³	1	0.0014	0.0019	0.0030	0.0084
		2	0.0008	0.0014	0.0032	0.0231
		Overall Ave	0.0011	0.0017	0.0031	0.0158
Hg (mg/m ³)	0.05 mg/m ³	1	0.0025	0.0009	0.0014	0.0066
		2	0.0133	0.0022	0.0009	0.0073
		Overall Ave	0.0079	0.0016	0.0012	0.0070
Hf (mg/m ³)	2 mg/m ³	1	0.2	<0.2	<0.08	<0.05
		2	<0.2	<0.2	<0.10	<0.06
		Overall Ave	<0.2	<0.2	<0.09	<0.06
Group III Metals (mg/m ³)	0.5 mg/m ³	1	0.0745	0.2087	0.1577	0.2757
		2	0.0327	0.1345	0.1102	0.5377
		Overall Ave	0.0536	0.1716	0.1339	0.4067
Dioxins (ng/m ³)	0.1 ng/m ³	1	-	0.0168	-	0.2440
		2	-	0.0150	-	0.1941
		Overall Ave	-	0.0159	-	0.2190

Table 6 Emissions of periodically monitored pollutants

Summary of plant compliance:***Description of non-compliances and abnormal operations notified to the Environment Agency.***

Set against the total operational hours on each stream plant performance is of an extremely high level. The numbers of occasions where emission limit values have been exceeded are comparatively small and when expressed as a percentage of operating time within limits range from 0 to 0.04% depending upon the substance measured.

This is primarily based on the numbers of 10 minute or ½ hourly average readings taken by emissions monitoring instruments and, in reality, although each complete 10 minute or ½ hourly period has been considered in this evaluation the duration during which any limit was exceeded is usually for a much shorter length of time.

The permit also recognises that equipment can malfunction and allows, in certain circumstances, for the plant to remain in service under abnormal operating conditions with increased emission limit values. This allows for short term continuous emissions monitoring or purification equipment to be rectified.

Although the permit restricts the period of abnormal operating conditions above to a maximum of 4 hours on any one occasion, or no more than 60 hours of abnormal operation on each line per year, boilers are generally shutdown after the first ½ hour of abnormal operation. In 2008 there were 6 occasions of abnormal operation (see Table 9) comprising 4 on stream 1 and 2 on stream 2.

Table 7 below sets out the percentage of time that the plant was operating within its permitted limits for each continuously monitored parameter, both on individual and combined streams. No figures are included below for NH₃ as, whilst this is continuously measured and monitored, there is no limit specified for emissions within the permit.

It is also important to consider that in addition to the high levels of performance indicated in terms of operating times actual emission levels were also considerably lower than prescribed daily averages. Across all parameters actual emissions were, on average 86%% and 60% lower than 10 minute or ½ hourly and daily limits respectively.

Substance	Stream 1 (% operating time within limits)	Stream 2 (% operating time within limits)	Combined (% operating time within limits)
Hydrogen Chloride	99.98%	99.96%	99.97%
Sulphur Dioxide	100%	100%	100%
Oxides of Nitrogen	100%	100%	100%
Volatile Organic Carbon	100%	100%	100%
Particulates	99.99%	100%	99.99%
Carbon Monoxide	100%	100%	100%

Table 7 - Percentage of plant operating time within limits

A summary of all emissions anomalies for 2008 is given below

Unauthorised releases / Schedule 1's

Unauthorised releases relate to circumstances in which permitted emission limit values have been exceeded in situations not considered to comply with the exceptions provided for in abnormal operation.

Levels of unauthorised releases are tightly controlled and prompt remedial action is taken to address the situation with boilers closed down as soon as is practicable where necessary.

Unauthorised releases are notified to the Environment Agency without delay and confirmed in writing by use of 'Schedule 1' Notices. Schedule 1 notices shall also be sent to the Environment Agency should any accident occur which has caused or has the potential to cause pollution.

In 2008 there is currently only 1 occasion where a Schedule 1 incidents were reported as shown in Table 8 below. This in fact was not in relation to any exceedence of any emission limit but relates to a minor spillage of lime during delivery.

Periodic test results for Dioxins on both streams 1 and 2 in Q4 also remain outstanding and whilst these are in excess of the ELV of 0.1ng/m³ results conflict with historical levels which are much lower. Arrangements have been made for re-tests to be carried out

Date	Time	Substance / Location	Anomaly
20 March	13.30	Lime escape from Silo during delivery.	During a routine delivery of lime around 3-4kg of lime was spilled around the base of the lime silo. Investigations revealed that safety valve bolts had loosened allowing the mounting plate to lift during the filling operation. This was repaired and valve bolts added to the monthly maintenance schedule to be checked for tightness

Table 8 – Unauthorised Releases 2008

Abnormal Operations

As with any type of plant or machinery there will inevitably be occasions where problems or breakdowns are experienced.

Abnormal operations are technically unavoidable stoppages, disturbances, or failures of the abatement plant or measurement devices, during which the concentrations into air and the purified water of the regulated substances may exceed normal emission limit values

As referred to earlier this is recognised within the permit which provides for the plant to continue to operate within limited circumstances for up to 4 hours to enable restoration of normal operations or failed equipment or its replacement as quickly as possible.

In practice MES Environmental have adopted a policy to initiate the shut down process after only ½ hour of any abnormal operation unless it is clear that the problem can be resolved well within the 4 hour period. Whilst this does not necessarily affect the level of incidence of abnormal operation it significantly reduces the number of operating hours in this situation.

Table 9 identifies the situations in which abnormal operating conditions were applied in 2008.

Date	Time	Substance / Location	Anomaly
1 st January	00.30 – 00.59	HCl – Boiler 1	Lime system blockage – Pipework cleared
22 nd January	01.00 – 02.59	HCl – Boiler 2	Lime pipe failure – Pipework repaired
27 th March	09.00 – 09.29	HCl – Boiler 1	Lime turbine electrical failure – Electrical system repaired
2 nd April	08.30 – 08.59	HCl – Boiler 1	Lime turbine electrical failure – Electrical system repaired
23 rd May	14.00 – 15.00	HCl – Boiler 2	Lime turbine disc problem – Disc replaced
21 st July	11.00 – 12.00	Particulates – Boiler 1	Bag-house bag change. Bags replaced and cell put back in service

Table 9 – Abnormal Operations 2008

Non reportable incidents

In addition to unauthorised releases and abnormal operations there are also situations where incidents will occur that are not required to be reported to the Environment Agency if these either result in no emission being made to atmosphere or occur during start up or shut down mode.

There were 2 such occasions in 2008, both of which related to VOC ‘spikes’ during change over of the calibration gas bottles. These occurred on the 13th May on Stream 2 and on the 16th December on stream 1 neither of which resulted in releases to atmosphere.

All emission anomalies are recorded on the shift log.

Enforcement Notices.

No enforcement notices were issued by the Environment Agency in respect of any aspect of plant operations in 2008.

6. Summary of plant improvements:

Other than works carried out during the major outage in April and ongoing routine maintenance work no specific plant improvements have been carried out during 2008.

Notwithstanding this the operational and environmental efficiency and effectiveness of the plant infrastructure and systems are constantly monitored to identify potential areas for improvement.

Key performance indicators are considered at regular management meetings to identify trends and variations in performance, not only at an individual plant level but in comparison with sister plants at Wolverhampton and Stoke.

This provides a focus for Managers to consider possible areas for improvement and/or situations where action may be necessary in the future.

7. Summary of information made available:

MES. Environmental operate an inclusive policy of involving the public in their operations by encouraging escorted tours of their facilities by interested groups. Last year numerous schools, colleges and industry or environmental groups visited sites and the same will happen this year.

For information about the facility or to arrange a visit, please contact the Operations Manager Mr. D Williams on 01384 457321

All information sent to the Environment Agency including the operation permit details are available on the public register which is accessible on the Environment Agency website.

Extra copies of this report are available by request from either the above referenced persons or by writing to:

Mr. P Wright
Senior Policy Manager
MES Environmental
Crown Street
Wolverhampton
WV1 1QB

Appendices

Appendix 1 Performance Reports 2008

Permit Reference Number: AP3435SD

Operator : MES Environmental Limited

Installation; Dudley Waste Services Limited

Form Number : Agency Form / / R1

Reporting of Waste Disposal and Recovery for the year2008.....

Waste Description	Disposal Route	Tonnes	Recovery Tonnes
1) Hazardous Wastes			
Named haz. Waste (Specify each separately)	Reprocess Fly ash (APC)	3125	0
Other hazardous wastes			
Total hazardous waste		3125	0
2) Non-Hazardous Wastes			
Named non-haz. Waste (Specify each separately)	Landfill IBA	16905	0
Other non-hazardous wastes	Recycling (Fe)	1478	1478
Total non-hazardous waste		18383	1478
TOTAL WASTE	-	21508	1478

Trends in Waste Disposal and Recovery			
Year	Named Waste	Total Waste	Waste per unit output
2007			
	APC	3173	0.081T/MWh
		3173	0.081T/MWh
	IBA	17159	0.441T/MWh
	Fe	1296	0.033T/MWh
		18455	0.474T/MWh
		21628	0.555T/MWh

Operator's comments : Waste per unit output above expressed in terms of nett exported energy of 38931 MWh in 2007.

**If expressed in terms of gross energy production of 47037MWh figures are adjusted to 0.067, 0.365 & 0.028T/MWh for
APCR, IBA and recycled tins respectively. (0.460T/MWh overall)**

Signed

Date.....

(authorised to sign as representative of Operator)

Permit Reference Number: AP3435SD Operator : MES Environmental Limited

Installation; Dudley Waste Services Limited Form Number : Agency Form / AP3435SD / WU1

Reporting of Water Usage for the year2008.....

Water Source	Usage (m ³)	Specific Usage (m ³ /t)
Mains water	38342	0.413m ³ /t
Site borehole		
River abstraction		
Canal abstraction		
TOTAL WATER USAGE	38342	0.413m³/t

Year	Trends in Water Usage Parameter		
	Named Water source	Total Water usage	Water per unit output
2007	Mains supply	39195	1.007m ³ /MWh
	Canal		
		39195	1.007m ³ /MWh

Operator's comments : Water per unit output above expressed in terms of nett exported energy of 38931 MWh in 2007.

If expressed in terms of gross energy production of 47037MWh figures are adjusted to 0.833m³/MWh

Signed Date.....
(authorised to sign as representative of Operator)

Permit Reference Number: AP3435SD

Operator : MES Environmental Limited

Installation; Hanford Waste Services Limited

Form Number : Agency Form / AP3435SD / E1

Reporting of Energy Usage for the year2008.....

Energy Source	Energy Usage		CO ₂ Produced (tonnes)
	Quantity	Primary Energy (MWh)	
Electricity	MWh	8055	3464
Natural Gas	tonnes	N/A	
Gas Oil	tonnes	44.7	164
Recovered Fuel Oil	tonnes	N/A	
TOTAL	-		3628

Year	Trends in Energy Usage Parameter		
	Primary Energy usage	CO ₂ Produced (tonnes)	CO ₂ per unit output
	8382	3604	0.093T/MWh
2007	56.9	209	0.005T/MWh
		3813	0.098T/MWh

Operator's comments : CO₂ per unit output above expressed in terms of nett exported energy of 38931 MWh in 2007.

If expressed in terms of gross energy production of 47037MWh figures are adjusted to 0.077 and 0.004T/MWh for electricity and gas oil consumption respectively. (0.081T/MWh overall)

Signed Date.....
 (authorised to sign as representative of Operator)

Permit Reference Number: AP3435SD Operator : MES Environmental Limited

Installation; Dudley Waste Services Limited

Form Number : Agency Form / AP3435SD / PI1

Reporting of Performance Indicators for the period ...01/01/2008..... to ...31/12/2008.....

Annual Production/Treatment	
Total municipal waste incinerated (excluding separately collected fractions)	92714 tonnes
Total other wastes Incinerated	120 tonnes
Electrical energy generated and exported	37840 MWhrs
Electrical energy generated and used on installation	7877 MWhrs

Environmental Performance Indicators

Parameter	Quarterly Average	Units
Electrical energy imported to site	1.92	kWhrs/ tonne of waste incinerated (dry basis)
Fuel oil consumption	0.48	kg/ tonne of waste incinerated (dry basis)
Mass of bottom ash produced	182.10	kg/ tonne of waste incinerated (dry basis)

Trends in Environmental Performance		
Year	Parameter	
2007	Electrical energy imported to site	2.91 Kwhrs / tonne waste incinerated
	Fuel oil consumption	0.60 kg / tonne waste incinerated
	Mass of bottom ash produced	181.07 kg / tonne of waste incinerated

Parameter	Quarterly	Units
Mass of APC residues produced	33.66	kg/ tonne of waste incinerated (dry basis)
Mass of other solid residues produced	15.92	kg/ tonne of waste incinerated (dry basis)
Urea consumption	2.08	kg/ tonne of waste incinerated (dry basis)
Activated carbon consumption	0.05	kg/ tonne of waste incinerated (dry basis)
Lime consumption	9.04	kg/ tonne of waste incinerated (dry basis)
Water consumption	0.413	m ³ / tonne of waste incinerated (dry basis)

Trends in Environmental Performance		
2007	Mass of APC residues produced	33.48 kg / tonne of waste incinerated
	Mass of other solid residues produced	13.68 kg / tonne of waste incinerated
	Urea consumption	2.10 kg / tonne of waste incinerated
	Activated carbon consumption	0.02 kg / tonne of waste incinerated
	Lime consumption	10.44 kg / tonne of waste incinerated
	Water consumption	0.414 m3 / tonne of waste incinerated

Operator's comments :

Signed Date.....
 (authorised to sign as representative of Operator)

APPENDIX 2

Continuously Monitored Emissions to Air (mg/m³*) from Emission Point A1 – 2008

HCL	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	½ Hourly Av ELV 60	Annual ½ Hrly Max	112	Monthly ½ Hrly Max	59	56	76	112	52	22	57	58	36	43	35
Annual ½ Hrly Mean		6	Monthly ½ Hrly Mean	6	6	6	6	7	6	6	6	6	6	7	7
Daily Ave ELV 10	Annual Daily Max	10	Monthly Daily Max	8	8	8	8	8	8	8	8	9	10	9	9
	Annual Daily Mean	6	Monthly Daily Mean	6	6	6	6	7	6	6	6	6	6	7	7

SO₂	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	½ Hourly Av ELV 200	Annual ½ Hrly Max	170	Monthly ½ Hrly Max	64	81	67	91	96	61	53	70	66	169	170
Annual ½ Hrly Mean		24	Monthly ½ Hrly Mean	23	27	26	29	29	26	20	25	23	26	21	17
Daily Ave ELV 50	Annual Daily Max	41	Monthly Daily Max	27	31	28	36	33	30	26	37	29	41	38	20
	Annual Daily Mean	24	Monthly Daily Mean	23	26	26	28	29	26	19	25	23	26	21	17

NO_x	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	½ Hourly Av ELV 400	Annual ½ Hrly Max	360	Monthly ½ Hrly Max	320	267	348	278	327	274	309	337	326	334	340
Annual ½ Hrly Mean		156	Monthly ½ Hrly Mean	169	167	168	166	168	169	168	162	134	139	128	130
Daily Ave ELV 200	Annual Daily Max	189	Monthly Daily Max	181	172	189	171	178	187	186	184	153	181	157	147
	Annual Daily Mean	156	Monthly Daily Mean	169	167	168	166	168	168	168	163	134	139	128	130

VOC	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	½ Hourly Av ELV 20	Annual ½ Hrly Max	36	Monthly ½ Hrly Max	13	8	4	7	19	10	14	13	15	18	11
Annual ½ Hrly Mean		1	Monthly ½ Hrly Mean	2	0	0	0	0	0	0	1	1	1	1	1
Daily Ave ELV 10	Annual Daily Max	5	Monthly Daily Max	3	1	1	1	0	0	1	3	1	3	3	5
	Annual Daily Mean	1	Monthly Daily Mean	2	0	0	0	0	0	0	1	1	1	1	1

NH₃	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	½ Hourly Av No ELV	Annual ½ Hrly Max	134	Monthly ½ Hrly Max	34	85	32	19	72	17	24	45	32	134	34
Annual ½ Hrly Mean		3	Monthly ½ Hrly Mean	1	2	1	1	1	1	3	3	4	7	7	9
Daily Ave No ELV	Annual Daily Max	20	Monthly Daily Max	3	3	2	2	7	2	6	20	6	20	14	19
	Annual Daily Mean	3	Monthly Daily Mean	1	2	1	1	1	1	3	3	4	7	7	9

Particulates	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	½ Hourly Av ELV 30	Annual ½ Hrly Max	42	Monthly ½ Hrly Max	6	15	2	2	5	17	42	11	8	18	13
Annual ½ Hrly Mean		4	Monthly ½ Hrly Mean	2	4	1	1	2	5	6	4	4	4	4	5
Daily Ave ELV 10	Annual Daily Max	10	Monthly Daily Max	2	8	1	1	4	8	8	7	6	7	6	10
	Annual Daily Mean	4	Monthly Daily Mean	2	4	1	1	2	5	6	4	4	4	4	5

CO	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	10 min Av ELV 150	Annual 10 min Max	88	Monthly 10 min Max	88	76	31	44	19	26	22	46	57	76	71
Annual 10 min Mean		11	Monthly 10 min Mean	28	10	11	17	5	5	7	7	10	11	11	14
Daily Ave ELV 50	Annual Daily Max	45	Monthly Daily Max	45	40	20	27	9	10	15	14	19	22	27	18
	Annual Daily Mean	11	Monthly Daily Mean	28	9	11	18	5	5	8	6	10	11	11	14

* Figures reported to the nearest whole number.

Continuously Monitored Emissions to Air (mg/m³*) from Emission Point A2 – 2008

HCL	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
½ Hourly Av ELV 60	Annual ½ Hrly Max	147	Monthly ½ Hrly Max	28	51	47	48	147	21	42	39	31	41	35	56
	Annual ½ Hrly Mean	6	Monthly ½ Hrly Mean	7	7	5	4	6	5	7	8	6	7	6	7
Daily Ave ELV 10	Annual Daily Max	10	Monthly Daily Max	9	9	8	6	9	8	9	8	9	10	8	9
	Annual Daily Mean	6	Monthly Daily Mean	7	7	5	5	6	5	7	8	7	7	6	7

SO₂	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
½ Hourly Av ELV 200	Annual ½ Hrly Max	126	Monthly ½ Hrly Max	77	80	63	96	126	54	63	62	55	76	103	66
	Annual ½ Hrly Mean	19	Monthly ½ Hrly Mean	22	22	24	30	27	21	12	12	14	16	18	15
Daily Ave ELV 50	Annual Daily Max	34	Monthly Daily Max	31	25	30	33	34	27	18	20	17	22	25	21
	Annual Daily Mean	19	Monthly Daily Mean	22	22	24	29	27	21	12	12	14	16	18	15

NO_x	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
½ Hourly Av ELV 400	Annual ½ Hrly Max	396	Monthly ½ Hrly Max	298	302	351	339	396	308	350	380	342	356	331	302
	Annual ½ Hrly Mean	154	Monthly ½ Hrly Mean	166	166	165	177	155	158	174	163	132	137	126	127
Daily Ave ELV 200	Annual Daily Max	187	Monthly Daily Max	183	177	175	171	185	180	187	186	170	186	131	164
	Annual Daily Mean	153	Monthly Daily Mean	166	166	166	166	155	158	174	163	132	134	126	127

VOC	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
½ Hourly Av ELV 20	Annual ½ Hrly Max	72	Monthly ½ Hrly Max	10	13	19	8	72	7	15	5	16	18	8	2
	Annual ½ Hrly Mean	0	Monthly ½ Hrly Mean	0	0	2	1	0	0	0	0	1	0	0	0
Daily Ave ELV 10	Annual Daily Max	3	Monthly Daily Max	2	2	3	2	1	1	0	0	2	1	1	0
	Annual Daily Mean	0	Monthly Daily Mean	0	0	2	1	0	0	0	0	0	0	0	0

NH₃	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	½ Hourly Av No ELV	Annual ½ Hrly Max	100	Monthly ½ Hrly Max	77	52	39	52	27	94	57	100	21	28	98
Annual ½ Hrly Mean		3	Monthly ½ Hrly Mean	1	3	3	2	1	2	3	5	4	7	7	3
Daily Ave No ELV	Annual Daily Max	39	Monthly Daily Max	6	11	7	2	3	10	6	39	8	19	14	5
	Annual Daily Mean	3	Monthly Daily Mean	1	3	3	1	1	2	3	5	4	7	7	3

Particulates	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	½ Hourly Av ELV 30	Annual ½ Hrly Max	28	Monthly ½ Hrly Max	26	16	26	23	25	28	13	14	3	3	11
Annual ½ Hrly Mean		3	Monthly ½ Hrly Mean	4	4	4	6	6	5	3	1	1	1	2	2
Daily Ave ELV 10	Annual Daily Max	9	Monthly Daily Max	9	6	8	7	9	9	8	8	1	2	5	8
	Annual Daily Mean	3	Monthly Daily Mean	4	4	4	5	6	5	3	1	1	1	2	2

CO	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	10 min Av ELV 150	Annual 10 min Max	146	Monthly 10 min Max	59	32	47	79	20	33	90	36	21	146	51
Annual 10 min Mean		11	Monthly 10 min Mean	10	11	18	16	9	12	11	8	7	14	11	7
Daily Ave ELV 50	Annual Daily Max	28	Monthly Daily Max	28	21	25	19	13	17	22	18	13	24	26	13
	Annual Daily Mean	11	Monthly Daily Mean	10	11	18	13	8	12	9	8	7	13	11	7

* Figures reported to the nearest whole number.