

DUDLEY ENERGY FROM WASTE PLANT

PERMIT No AP3435SD

WASTE INCINERATION DIRECTIVE

ANNUAL REPORT

2011

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Annual performance report for MES Environmental Dudley EfW Plant – Permit No. AP3435SD – Year 2011

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, their agents or contractors, comprise almost all of the wastes delivered to the plant, at around 99.06 % of all deliveries. In 2011 85.02 % was from within the Dudley area with a further 14.94 % of wastes from other local authorities in the West Midlands. Only 0.04% of wastes were 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 15% of electricity generation from renewable energy sources by the year 2020.

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 2011 13,644 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 or 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 2011 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	45525
		Stream 2	45763
		Total	91288
<i>Separately collected fractions</i>	15.01.06 Packaging	Total	37
	20.01.01 Paper & card		
	20.01.08 Kitchen waste		
	20.02.01 Biodegradable		
	20.03.02 Market waste		
20.03.03 Street sweepings			
<i>Total burnt – all types</i>			91325

Table 2 - Incinerated Wastes 2011

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 2011 was a staggered outage with both boilers offline for only a short period of time. This reduces the need to redirect waste which may end up as landfill. Scheduled maintenance works were carried out on Boiler 1 for 15 days from 4th June to 18th June with boiler 2 off for 13 days from the 30th May to 11th June. Both boilers were off together so that essential common system and turbine work.

The overall level of plant availability, in terms of operating hours, was consistent with expectations with boiler 1 and boiler 2 available for 8112 and 8153 hours respectively. This was equivalent individually to 92.6% and 93.07% of potential operating hours or 92.84% overall. This comparable to previous levels of availability in 2008 average availability was 92.48%, 2009 average availability was at 92.93% and in 2010 average availability was at 94.28%.

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 2011.

Residue	Annual tonnage	Percentage of input waste	Disposal destination.
Bottom ash	16088	17.53%	Landfill
Fly ash	3286	3.6%	Reprocessing prior to landfill
Ferrous metals	1288	1.41%	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 2011 the average calorific value of wastes delivered over the year was 8.2 Mj/Kg. This is comparable with previous years.

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
196	43054	7420	35635

Table 4 - Electrical power production 2011

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 and 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 2011 the cumulative volume of water discharged to sewer was 14451m3.

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 Monitors (CEMs) Operation

The CEMs 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 CEMs failure.

CEMs 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	0.0026	0.0009	0.0011	0.0006
		2	0.0035	0.0011	0.0004	0.0005
		Overall Ave	0.0030	0.001	0.0007	0.0005
		5	5	5	5	
Hg (mg/m ³)	0.05 mg/m ³	1	0.0078	0.0016	0.0019	0.0016
		2	0.0004	0.002	0.0011	0.0126
		Overall Ave	0.0041	0.0018	0.0015	0.0071
Hf (mg/m ³)	2 mg/m ³	1	<0.06	0.06	<0.06	0.06
		2	<0.06	0.12	<0.07	<0.07
		Overall Ave	<0.06	0.09	<0.065	<0.065
Group III Metals (mg/m ³)	0.5 mg/m ³	1	0.0578	0.1588	0.1498	0.043
		2	0.1068	0.7308	0.0407	0.0549
		Overall Ave	0.0823	0.4448	0.0952	0.0489
		5	5	5	5	
Dioxins (ng/m ³)	0.1 ng/m ³	1	0.0897		0.0146	
		2	0.0066		0.0135	
		Overall Ave	0.0481		0.0140	
		5	5	5		
Dioxins (ng/m ³)	0.1 ng/m ³	Annual Ave				0.0311

Table 6 Emissions of periodically monitored pollutants 2011

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 equates to 0.06% for the whole year.

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 2011 there was 4 occasion of abnormal operation and 3 schedule1 reports for stream 1 (see table 8).

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 88.5% and 69% 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	99.96%	100%	99.98%
Sulphur Dioxide	99.99%	100%	99.995%
Oxides of Nitrogen	100%	100%	100%
Volatile Organic Carbon	100%	100%	100%
Particulates	99.4%	99.98%	99.69%
Carbon Monoxide	100%	100%	100%

Table 7 - Percentage of plant operating time within limits

A summary of all emissions anomalies for 2011 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 2011 there were 3 occasions where Schedule 1 incidents were reported as shown in Table 8 below.

NO.	Date	Start	End	Stream	S1 or Ab	Substance	Quantity	Accumulative	Comments
1	18/06/2011	10:00	13:59	1	Ab	HCl	82.75	2.5	Low lime SG
2	21/06/2011	16:00	16:30	1	Ab	SO2	213.4	3	Poor waste/burn-Low Lime SG
3	24/05/2011			1	S1	Metals	0.7308	1	1hr Spike of Cu vapour phase during extractive testing
4	29/08/2011			1	S1	Dust	12.65	2	Plant tripped
5	30/08/2011			1	S1	Dust	16.26	3	Bag house problems
6	01/09/2011	14:00	14:30	1	Ab	Dust	45.71	3.5	Bag house valve not seated
7	20/11/2011	22:30	00:00	2	Ab	Dust	71.37	1.5	
							72.33		
							57.82		

Table 8 – Unauthorised Releases 2011

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.

During 2011 there were 4 occasions of abnormal operations, 3 on stream 1, (3.5 hrs) and 1 on stream 2 (1.5 hrs). See table 8 for further details.

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.

Enforcement Notices.

No enforcement notices were issued by the Environment Agency in respect of any aspect of plant operations in 2011.

6. Summary of plant improvements:

Other than works carried out during the major outage in May/June and ongoing routine maintenance work, the one major area of plant improvement for 2011 was the upgrading of the computerised plant control system.

The COSWIN computer based maintenance system is now in daily operation though it still needs further populating and upgrading to full fill all of the plants operational and maintenance needs.

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:

Stuart Thompson
Environmental Manager
MES Environmental
Crown Street
Wolverhampton
WV1 1QB

Appendices

Appendix 1 Performance Reports 2011

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 year2011.....

Waste Description	Disposal		Recovery
	Route	Tonnes	Tonnes
1) Hazardous Wastes			
Named haz. Waste (Specify each separately)	Reprocess Fly ash (APC)	3286	0
Other hazardous wastes			
Total hazardous waste		3286	0
2) Non-Hazardous Wastes			
Named non-haz. Waste (Specify each separately)	Landfill IBA	16008	0
Other non-hazardous wastes	Recycling (Fe)	1288	1288
Total non-hazardous waste		17296	1288
TOTAL WASTE	-	20582	

Trends in Waste Disposal and Recovery			
Year	Parameter		
	Named Waste	Total Waste	Waste per unit output
2010			
	APC	2839	0.062T/MWh
		2839	0.062T/MWh
	IBA	17574	0.467T/MWh
	Fe	1287	0.034T/MWh
		18861	0.501T/MWh
		21700	0.563T/MWh

Operator's comments : Waste per unit output above expressed in terms of nett exported energy of 37671 MWh in 2010.

If expressed in terms of gross energy production of 45513 MWh figures are adjusted to 0.062, 0.388 & 0.028 T/MWh for APCR, IBA and recycled tins respectively. (0.478T/MWh overall)

Signed
(authorised to sign as representative of Operator)

Date.....

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 year2011.....

Water Source	Usage (m ³)	Specific Usage (m ³ /t)
Mains water	56526	0.619m ³ /t
Site borehole		
River abstraction		
Canal abstraction		
TOTAL WATER USAGE	56526	0.619m³/t

Year	Trends in Water Usage Parameter		
	Named Water source	Total Water usage	Water per unit output
2010	Mains supply	44463	0.847m ³ /MWh
	Canal		
		44463	0.847m ³ /MWh

Operator's comments: Water per unit output above expressed in terms of nett exported energy of 37671 MWh in 2010.
 If expressed in terms of gross energy production of 45513MWh figures are adjusted to 1.024m³/MWh

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

Reporting of Energy Usage for the year2011.....

Energy Source	Energy Usage		CO ₂ Produced (tonnes)
	Quantity	Primary Energy (MWh)	
Electricity	MWh	7616	3275
Natural Gas	tonnes	N/A	
Gas Oil	tonnes	38.59	142
Recovered Fuel Oil	tonnes	N/A	
TOTAL	-		3417

Year	Trends in Energy Usage Parameter		
	Primary Energy usage	CO ₂ Produced (tonnes)	CO ₂ per unit output
2010	8083	3476	0.092T/MWh
	43.2	159	0.004T/MWh
		3635	0.096T/MWh

Operator's comments: CO₂ per unit output above expressed in terms of nett exported energy of 37671 MWh in 2010.
 If expressed in terms of gross energy production of 45513 MWh figures are adjusted to 0.076 and 0.003T/MWh for electricity and gas oil consumption respectively. (0.079T/MWh overall)

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

Installation; Dudley Waste Services Limited

Form Number: Agency Form / AP3435SD / P11

Reporting of Performance Indicators for the period ...01/01/2011..... to ...31/12/2011.....

Annual Production/Treatment	
Total municipal waste incinerated (excluding separately collected fractions)	91325 tonnes
Total other wastes Incinerated	37 tonnes
Electrical energy generated and exported	43054 MWhrs
Electrical energy generated and used on installation	7420 MWhrs

Environmental Performance Indicators

Parameter	Quarterly Average	Units
Electrical energy imported to site	2.15	kWhrs/ tonne of waste incinerated (dry basis)
Fuel oil consumption	0.42	kg/ tonne of waste incinerated (dry basis)
Mass of bottom ash produced	175.29	kg/ tonne of waste incinerated (dry basis)

Trends in Environmental Performance		
Year	Parameter	
2010	Electrical energy imported to site	2.57 Kwhrs / tonne waste incinerated
	Fuel oil consumption	0.35 kg / tonne waste incinerated
	Mass of bottom ash produced	187.36 kg / tonne of waste incinerated

Mass of APC residues produced	35.98	kg/ tonne of waste incinerated (dry basis)
Mass of other solid residues produced	14.1	kg/ tonne of waste incinerated (dry basis)
Urea consumption	1.98	kg/ tonne of waste incinerated (dry basis)
Activated carbon consumption	0.055	kg/ tonne of waste incinerated (dry basis)
Lime consumption	10.37	kg/ tonne of waste incinerated (dry basis)
Water consumption	0.619	m ³ / tonne of waste incinerated (dry basis)

Trends in Environmental Performance		
2010	Mass of APC residues produced	30.27 kg / tonne of waste incinerated
	Mass of other solid residues produced	13.72 kg / tonne of waste incinerated
	Urea consumption	1.48 kg / tonne of waste incinerated
	Activated carbon consumption	0.06 kg / tonne of waste incinerated
	Lime consumption	9.58 kg / tonne of waste incinerated
	Water consumption	0.474 m3 / tonne of waste incinerated

Operator's comments :

Signed
 (authorised to sign as representative of Operator)

Date.....

APPENDIX 2

Continuously Monitored Emissions to Air (mg/m³*) from Emission Point A1 – 2011

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	83	Monthly ½ Hrly Max	46	29	42	25	57	83	27	30	24	37	47
Annual ½ Hrly Mean		5	Monthly ½ Hrly Mean	5	8	5	5	7	8	4	4	5	3	3	4
Daily Ave ELV 10	Annual Daily Max	10	Monthly Daily Max	8	10	8	7	9	10	6	7	7	6	10	9
	Annual Daily Mean	5	Monthly Daily Mean	5	8	5	5	7	8	4	4	5	3	3	4

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	213	Monthly ½ Hrly Max	96	131	182	73	139	213	85	82	139	142	93
Annual ½ Hrly Mean		8	Monthly ½ Hrly Mean	8	12	7	7	10	20	7	6	4	6	4	6
Daily Ave ELV 50	Annual Daily Max	31	Monthly Daily Max	12	20	12	15	15	31	11	18	12	15	17	13
	Annual Daily Mean	8	Monthly Daily Mean	8	12	7	7	10	20	7	6	4	6	4	6

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	395	Monthly ½ Hrly Max	349	389	366	360	395	382	390	337	285	264	343
Annual ½ Hrly Mean		168	Monthly ½ Hrly Mean	176	173	171	171	176	173	177	167	157	151	157	168
Daily Ave ELV 200	Annual Daily Max	199	Monthly Daily Max	198	195	183	180	198	182	190	199	169	158	186	185
	Annual Daily Mean	168	Monthly Daily Mean	176	173	171	171	176	173	177	167	157	151	157	168

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	20	Monthly ½ Hrly Max	12	20	14	8	9	13	12	16	6	13	11
Annual ½ Hrly Mean		1	Monthly ½ Hrly Mean	0	1	1	0	1	1	1	1	0	0	0	1
Daily Ave ELV 10	Annual Daily Max	2	Monthly Daily Max	1	1	1	1	1	1	1	1	1	1	0	2
	Annual Daily Mean	1	Monthly Daily Mean	0	1	1	0	1	1	1	1	0	0	0	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	109	Monthly ½ Hrly Max	51	19	12	26	40	52	58	109	18	44	33
	Annual ½ Hrly Mean	4	Monthly ½ Hrly Mean	4	3	2	2	5	5	5	5	2	5	2	3
Daily Ave No ELV	Annual Daily Max	16	Monthly Daily Max	16	7	4	4	15	10	10	9	4	9	5	5
	Annual Daily Mean	4	Monthly Daily Mean	4	3	2	2	5	5	5	5	2	5	2	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	69	Monthly ½ Hrly Max	6	27	18	7	8	9	9	69	46	6	4
	Annual ½ Hrly Mean	3	Monthly ½ Hrly Mean	2	4	3	3	2	3	3	4	4	2	2	3
Daily Ave ELV 10	Annual Daily Max	16	Monthly Daily Max	2	8	7	3	5	5	4	16	9	3	3	6
	Annual Daily Mean	3	Monthly Daily Mean	2	4	3	3	2	3	3	4	4	2	2	3

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	60	Monthly 10 min Max	45	34	45	40	51	27	17	48	19	53	42
	Annual 10 min Mean	9	Monthly 10 min Mean	14	14	12	8	9	12	7	10	4	7	6	9
Daily Ave ELV 50	Annual Daily Max	43	Monthly Daily Max	24	21	16	17	18	43	11	23	7	31	11	17
	Annual Daily Mean	9	Monthly Daily Mean	14	14	12	8	9	12	7	10	4	7	6	9

* Figures reported to the nearest whole number.

Continuously Monitored Emissions to Air (mg/m³*) from Emission Point A2 – 2011

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	59	Monthly ½ Hrly Max	24	52	57	40	59	54	48	49	53	20	36
Annual ½ Hrly Mean		3	Monthly ½ Hrly Mean	3	4	3	3	3	5	2	2	2	2	3	4
Daily Ave ELV 10	Annual Daily Max	10	Monthly Daily Max	7	6	8	7	6	8	5	5	7	7	10	7
	Annual Daily Mean	3	Monthly Daily Mean	3	4	3	3	3	5	2	2	2	2	3	4

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	191	Monthly ½ Hrly Max	123	168	185	137	191	181	111	153	71	130	164
Annual ½ Hrly Mean		15	Monthly ½ Hrly Mean	17	21	17	18	25	25	11	9	8	10	8	12
Daily Ave ELV 50	Annual Daily Max	38	Monthly Daily Max	30	32	35	34	38	35	25	34	16	24	26	32
	Annual Daily Mean	15	Monthly Daily Mean	17	21	17	18	25	25	11	9	8	10	8	12

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	398	Monthly ½ Hrly Max	295	311	373	398	353	240	289	327	216	293	319
Annual ½ Hrly Mean		165	Monthly ½ Hrly Mean	163	168	175	178	175	170	168	160	155	150	151	164
Daily Ave ELV 200	Annual Daily Max	196	Monthly Daily Max	179	194	188	196	193	171	172	190	157	155	164	177
	Annual Daily Mean	165	Monthly Daily Mean	163	168	175	178	175	170	168	160	155	150	151	164

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	20	Monthly ½ Hrly Max	12	20	19	15	12	2	11	13	11	11	9
Annual ½ Hrly Mean		0	Monthly ½ Hrly Mean	0	0	1	0	0	1	0	0	0	0	1	1
Daily Ave ELV 10	Annual Daily Max	2	Monthly Daily Max	2	1	1	1	1	1	1	1	1	1	1	1
	Annual Daily Mean	0	Monthly Daily Mean	0	0	1	0	0	1	0	0	0	0	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	97	Monthly ½ Hrly Max	44	54	49	97	89	66	35	41	38	50	18
Annual ½ Hrly Mean		2	Monthly ½ Hrly Mean	2	1	4	4	2	2	1	2	1	3	2	1
Daily Ave No ELV	Annual Daily Max	15	Monthly Daily Max	12	7	9	15	4	7	4	11	4	9	5	2
	Annual Daily Mean	2	Monthly Daily Mean	2	1	4	4	2	2	1	2	1	3	2	1

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	72	Monthly ½ Hrly Max	13	25	2	12	22	5	2	1	1	4	72
Annual ½ Hrly Mean		1	Monthly ½ Hrly Mean	2	2	1	2	1	1	0	0	0	0	3	3
Daily Ave ELV 10	Annual Daily Max	9	Monthly Daily Max	7	9	1	4	4	1	0	0	0	1	6	4
	Annual Daily Mean	1	Monthly Daily Mean	2	2	1	2	1	1	0	0	0	0	3	3

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	53	Monthly 10 min Max	39	23	40	40	32	34	32	52	27	45	43
Annual 10 min Mean		11	Monthly 10 min Mean	12	11	13	10	11	13	8	12	11	11	7	13
Daily Ave ELV 50	Annual Daily Max	28	Monthly Daily Max	18	19	21	28	18	27	16	25	14	26	13	28
	Annual Daily Mean	11	Monthly Daily Mean	12	11	13	10	11	13	8	12	11	11	7	13

* Figures reported to the nearest whole number.