MES

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Annual performance report for MES Environmental Stoke –on-Trent EfW Plant– Permit No. QP3234SX – Year 2007

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:

Name of Company	*M E S Environmental*
Name of Plant	*Stoke EfW Facility*
Permit Number	*QP3234SX*
Address	*Sideway, Campbell Road, Stoke, ST4 4DX*
Phone	*01782 412131*
Contact name	*Mr. D. Rockey*
Position	*Plant Manager*
Further information, description of waste types burned and origin.	*Constructed in 1997 to burn in the region of 210,000 tonnes per annum of local domestic refuse and generate a nominal 15MW of electricity for the local community.*
(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. Rockey on the above number)	

Table 1 – General information

The plant provides a sustainable method of waste disposal and recovery for the whole of the North Staffordshire conurbation, comprising the districts of Stoke-on-Trent, Newcastle under Lyme, Staffordshire Moorlands and the northern area of Stafford.

Household, commercial or industrial wastes, collected by the local authorities, comprises almost all of the wastes delivered to the plant, at around 99% of all deliveries, with limited quantities of wastes 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 210,000 tonnes per year of municipal and other specified wastes.

The plant contains two incineration lines with a combined design capacity to process up to 24 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 14.2 MW of electricity and, after satisfying its own power needs, exports approximately 12 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 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 deNOx 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.
- 76 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 IS014001 and a Quality Management System, accredited to IS09001
- 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 QP3234SX) and which contains conditions to ensure that the requirements of the Waste Incineration Directive are incorporated and will be met.

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 12 tonnes per hour.

Although this creates a technical capacity for around 210,000 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 210,000 tonnes of mixed municipal waste and 10,500 tonnes of separately collected fractions.

Separately collected fractions are generally wastes delivered by private sector customers with mixed municipal wastes comprising deliveries from local authorities. Total deliveries for 2007 are set out in Table 2 below.

Annual waste throughputs

Waste Types	***EWC codes***	***Tonnes burnt***
Mixed municipal wastes	*20.03.01*	Stream 1 80403 Stream 2 84691 Total 165094
Separately collected fractions	*15.01.06 Packaging* *20.01.01 Paper & card* *20.01.08 Kitchen waste* *20.02.01 Biodegradable* *20.03.02 Market waste* *20.03.03 Street sweepings*	Total 950
Total burnt – all types		166044

Table 2 - Incinerated Wastes 2007

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 with other stoppages tending to be short term shutdowns of individual streams, for one or two days, to deal with smaller scale issues such as tube leaks. Whilst these are relatively small jobs to repair the time taken to complete is extended whilst waiting for boilers to cool down before work can commence and then to bring back up to operating temperatures.

Routine planned maintenance to boiler 2 in 2007 was carried out from the 30th June to 13th July. As repairs were also required to the turbine oil systems during this time boiler 1 was also offline for 3 days during this period.

Routine maintenance to boiler 1 itself was carried out from the 3rd to 13th September.

The overall level of plant availability, in terms of operating hours, was marginally less than anticipated, mainly as a consequence of the issues referred to above, with boiler 1 and boiler 2 available for 7984 and 7898 hours respectively. This was equivalent individually to 91.14% and 90.16% of potential operating hours or 90.65% overall. This is expected to improve in 2008.

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 28% 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 2007.

Residue	Annual tonnage	Percentage of input waste	Disposal destination.
Bottom ash	41756	25.15%	Landfill
Fly ash	5943	3.58%	Reprocessing prior to landfill
Ferrous metals	557	0.34%	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 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 2007 the average calorific value of wastes delivered over the year was 8.91Mj/Kg continuing a gradually increasing trend in comparison with CV's over the last three years of 8.74, 8.45 & 8.30mj/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 20,000 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 CO_2 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 the plant exports 12 MWe from processing around 180,000 tonnes which is equivalent to 6.7MWe 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 small 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
614	94,473	14,618	79,855

Table 4 - Electrical power production

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, with further details of associated plant performance shown in Table 6 and Appendices 1 and 2.

Pollutants measured	Continuously	Periodically
Particulates	✓	
Oxides of Nitrogen	✓	
Sulphur Dioxide	✓	
Carbon Monoxide	✓	
Ammonia	✓	
Total Organic Carbon	✓	
Hydrogen Chloride	✓	
Mercury		✓
Cadmium and Thallium		✓
Group III metals		✓
PCDD and PCDF		✓
Hydrogen Fluoride		✓

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 2007 the cumulative volume of water discharged to sewer was 512m3.

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 ½ hourly and daily average values recorded 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 CEM data is shown at Appendix 2 with a summary of periodically monitored pollutants shown below in Table 6

Pollutant	Stream	*Qtr 1*	*Qtr 2*	*Qtr 3*	*Qtr 4*
Cd/Th (mg/m³)	1	0.0023	0.0090	0.0047	0.0012
	2	0.0069	0.0019	0.0027	0.0092
	Overall Ave	0.0046	0.0055	0.0037	0.0052
Hg (mg/m³)	1	0.0780	0.0188	0.0095	0.0039
	2	0.0067	0.0082	0.0077	0.0047
	Overall Ave	0.0424	0.0135	0.0086	0.0043
Hf (mg/m³)	1	<0.200	<0.100	<0.080	<0.060
	2	<0.100	<0.200	<0.060	<0.060
	Overall Ave	<0.150	<0.150	<0.070	<0.060
Group III Metals (mg/m³)	1	0.0974	0.3941	0.3197	0.0686
	2	0.1624	0.5477	0.0857	0.2977
	Overall Ave	0.1299	0.4709	0.2027	0.1832
Dioxins (ng/m³)	1	-	0.0227	-	0.011
	2	-	0.0156	-	0.110
	Overall Ave	-	0.0192	-	0.061

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 number 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 0.03% depending upon the substance measured.

These are based on the numbers of ½ hourly average readings taken by emissions monitoring instruments and, in reality, although each complete half hour has been considered in this evaluation the duration during which any limit was exceeded is usually for a much shorter period.

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 2007 there were only 6 occasions of abnormal operation (see Table 9) comprising 2 on stream 1 and 4 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 NH_3 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 over 90% and 70% lower than 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	99.99%	100%	99.99%
Sulphur Dioxide	100%	100%	100%
Oxides of Nitrogen	99.99%	99.99%	99.99%
Volatile Organic Carbon	99.97%	99.99%	99.98%
Particulates	100%	99.98%	99.99%
Carbon Monoxide	99.99%	99.97%	99.98%

Table 7 - Percentage of plant operating time within limits

A summary of all emissions anomalies for 2007 is given below

Unauthorised releases

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.

In 2007 there were only 2 incidents of unauthorised release and these are shown in Table 8 below.

Date	Time	Substance / Location	Anomaly
4th January	Various times during the day	NOx Boiler 1	Repeated blockages in the urea system and rotary valve change. Exceedance of daily average.
15th September	Various times of the day	HCl Boiler 1	Low inlet temperature to bag-house. Exceedence of daily average

Table 8 – Unauthorised Releases 2007

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 and 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 2007.

Date	Time	Substance / Location	Anomaly
4th April	11.30 – 12.59	CO Boiler 2	Feed chute blocked causing poor combustion
9th April	11.30 - 12.59	Particulates Boiler 2	Faulty instrument. Initiated shutdown
8th May	07.14 – 07.25	VOC Boiler 1	Faulty Instrument only 19 minutes data in ½ hour
15th July	11.30 – 11.59	VOC Boiler 1	Instrument alarmed due to poor reference sample
15th July	11.30 – 11.59	VOC Boiler 2	Instrument alarmed due to poor reference sample
18th August	06.30 – 07.00	NOx Boiler 2	Underfire damper fault

Table 9 – Abnormal Operations 2007

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 if any such emissions are within the limits prescribed within the Waste Incineration Directive.

The numbers of non reportable incidents on each stream during 2007 are summarised below.

Stream 1

Substance	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO	0	0	0	0	1	0	0	0	0	0	0	0
HCL	1	0	0	0	0	0	0	0	0	0	0	0
NH3	0	0	0	0	0	0	0	0	0	0	0	0
NOx	1	0	0	0	0	0	0	0	0	0	0	0
SO2	0	0	0	0	0	0	0	0	0	0	0	0
Particulates	0	0	0	0	0	0	0	0	0	0	0	0
VOC	0	0	0	0	0	0	0	0	0	1	1	0
Monthly Total	2	0	0	0	1	0	0	0	0	1	1	0

Table 10 – Non reportable incidents Stream 1 2007

Stream 2

Substance	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CO	0	0	1	0	0	0	0	0	1	0	1	0
HCL	0	0	0	0	0	0	0	0	0	0	0	0
NH3	0	0	0	0	0	0	0	0	0	0	0	0
NOx	0	0	0	0	0	0	0	0	0	0	0	0
SO2	0	0	0	0	0	0	0	0	0	0	0	0
Particulates	0	0	0	0	0	0	0	0	0	1	0	0
VOC	0	0	0	0	0	0	0	0	0	0	0	0
Monthly Total	0	0	1	0	0	0	0	0	1	1	1	0

Table 11 – Non reportable incidents Stream 2 2007

One enforcement notice was issued by the Environment Agency in April 2007 and was in relation to the capacity and effectiveness of management systems and organisational structures.

Although technical performance continued to be delivered at high levels throughout, a thorough review and reorganisation of management and operating systems and structures was undertaken and subjected to a rigorous process of external audit and validation.

Revised systems were subsequently approved by the Environment Agency as fully compliant with the notice requirements.

6. Summary of plant improvements:

No changes have been made to the operation or technology of the plant in the past twelve months. Several studies are underway however to improve the environmental performance of the plant and reduce its effect upon the environment these include;

- Proposals for the loading of fly ash directly to tanker to minimise the risk of spills and improve health and safety whilst handling fly ash at both loading and unloading. This is a long term project that is in the very early stages of development.

- Use in the short term of better quality of bags for fly ash that use no liner but the outer material is of better quality. This will reduce the use of plastic for the liner and reduce the use of material that is just discarded at the end of the use.

- Improved design of nozzle for the injection of urea. This will improve the efficiency and effectiveness of the Nox reduction system and reduce wastage of urea.

7. Summary of information made available:

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

For information about the facility or to arrange a visit, please contact either the Plant or Operations Manager Mr D Rockey or Mr. J Buckham on 01782 412131

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 2007

Permit Reference Number: QP3234SX
Installation; Hanford Waste Services Limited

Operator : MES Environmental Limited
Form Number : Agency Form / QP3234SX / DR1

Reporting of Waste Disposal and Recovery for the year .....2007.....

Waste Description	Disposal Route	Tonnes	Recovery Tonnes
1) Hazardous Wastes			
Named haz. Waste (Specify each separately)	Reprocess Fly ash (APC)	5943	0
Other hazardous wastes			
Total hazardous waste		5943	0
2) Non-Hazardous Wastes			
Named non-haz. Waste (Specify each separately)	Landfill IBA	41756	0
Other non-hazardous wastes	Recycling (Fe)	557	557
Total non-hazardous waste		42313	557
TOTAL WASTE	-	48256	557

Trends in Waste Disposal and Recovery Year	Parameter		
	Named Waste	Total Waste	Waste per unit output
2006			
	APC	5665	0.075T/MWh
		5665	0.075T/MWh
	IBA	43043	0.569T/MWh
	Fe	1175	0.016T/MWh
		44218	0.585T/MWh
		49883	0.66T/MWh

Operator's comments : Waste per unit output above expressed in terms of nett exported energy of 75574 MWh in 2006.

If expressed in terms of gross energy production of 89900MWh figures are adjusted to 0.063, 0.479 & 0.013T/MWh for APCR, IBA and recycled tins respectively. (0.555T/MWh overall)

Signed .....Dave Corkey..... **Date** 30th January 2008

(authorised to sign as representative of Operator)

Permit Reference Number: QP3234SX **Operator : MES Environmental Limited**

Installation; Hanford Waste Services Limited Form Number : Agency Form / QP3234SX / WU1

Reporting of Water Usage for the year .....2007.....

Water Source	Usage (m^3)	Specific Usage (m^3/t)
Mains water	**22366**	**0.135m3/t**
Site borehole		
River abstraction		
Canal abstraction	**44590**	**0.268m3/t**
TOTAL WATER USAGE	**66956**	**0.403m3/t**

Trends in Water Usage Year	Parameter		
	Named Water source	**Total Water usage**	**Water per unit output**
2006	**Mains supply**	**20667**	**0.273m3/MWh**
	Canal	**43010**	**0.569 m3/MWh**
		63677	**0.842m3/MWh**

Operator's comments : Water per unit output above expressed in terms of nett exported energy of 75574 MWh in 2006.

If expressed in terms of gross energy production of 89900MWh figures are adjusted to 0.23 and 0.48m3/MWh for mains and canal water supply respectively (0.71m3/MWh overall)

Signed Dana Bakey **Date** 30th January 2008

(authorised to sign as representative of Operator)

Permit Reference Number: QP3234SX **Operator : MES Environmental Limited**

Installation; Hanford Waste Services Limited Form Number : Agency Form / QP3234SX / EU1

Reporting of Energy Usage for the year .....2007.....

Energy Source	Energy Usage Quantity	Primary Energy (MWh)	CO_2 Produced (tonnes)
Electricity	**MWh**	**15232**	**6550**
Natural Gas	**tonnes**	**N/A**	
Gas Oil	**tonnes**	**208.49**	**766**
Recovered Fuel Oil	**tonnes**	**N/A**	
TOTAL	**-**		
			7316

Trends in Energy Usage Year	Parameter		
	Primary Energy usage	**CO_2 Produced (tonnes)**	**CO_2 per unit output**
2006			
	14619	**6286**	**0.083 t/MWh**
	222.98	**819**	**0.011 t/MWh**
		7105	**0.094t/MWh**

Operator's comments : CO_2 per unit output above expressed in terms of nett exported energy of 75574 MWh in 2006.

If expressed in terms of gross energy production of 89900MWh figures are adjusted to 0.070 and 0.009T/MWh for electricity and gas oil consumption respectively. (0.079T/MWh overall)

Signed Dave Barker **Date** 30th January 2008

(authorised to sign as representative of Operator

Permit Reference Number: QP3234SX **Operator : MES Environmental Limited**

Installation; Hanford Waste Services Limited Form Number : Agency Form / QP3234SX / PP1

Reporting of Performance Indicators for the period ...01/01/2007..... to ...31/12/2007.....

Annual Production/Treatment	
Total municipal waste incinerated (excluding separately collected fractions)	165094 tonnes
Total other wastes Incinerated	950 tonnes
Electrical energy generated and exported	79855 MWhrs
Electrical energy generated and used on installation	14618 MWhrs

Environmental Performance Indicators

Parameter	Quarterly Average	Units
Electrical energy imported to site	**3.70**	kWhrs/ tonne of waste incinerated (dry basis)
Fuel oil consumption	**1.25**	kg/ tonne of waste incinerated (dry basis)
Mass of bottom ash produced	**251.47**	kg/ tonne of waste incinerated (dry basis)

Trends in Environmental Performance		
Year	Parameter	
2006	Electrical energy imported to site	**1.69** Kwhrs / tonne waste incinerated
	Fuel oil consumption	**1.28** kg / tonne waste incinerated
	Mass of bottom ash produced	**247** kg / tonne of waste incinerated

Mass of APC residues produced	**35.79**	kg/ tonne of waste incinerated (dry basis)
Mass of other solid residues produced	**3.35**	kg/ tonne of waste incinerated (dry basis)
Urea consumption	**0.98**	kg/ tonne of waste incinerated (dry basis)
Activated carbon consumption	**0.03**	kg/ tonne of waste incinerated (dry basis)
Lime consumption	**13.38**	kg/ tonne of waste incinerated (dry basis)
Water consumption	**0.403**	m^3/ tonne of waste incinerated (dry basis)

Trends in Environmental Performance		
2006	Mass of APC residues produced	**32.58** kg / tonne of waste incinerated
	Mass of other solid residues produced	**6.75 kg** / tonne of waste incinerated
	Urea consumption	**1.22 kg** / tonne of waste incinerated
	Activated carbon consumption	**0.05 kg** / tonne of waste incinerated
	Lime consumption	**11.06 kg** / tonne of waste incinerated
	Water consumption	**0.366 m3** / tonne of waste incinerated

Operator's comments :

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

Date 30th January 2008

APPENDIX 2

Continuously Monitored Emissions to Air (mg/m3*) from Emission Point A1 – 2007

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	78	Monthly ½ Hrly Max	78	14	14	27	14	15	21	18	36	20	24	15
	Annual ½ Hrly Mean	3	Monthly ½ Hrly Mean	4	2	1	2	3	4	2	4	6	3	2	4
Daily Ave ELV 10	Annual Daily Max	12	Monthly Daily Max	9	6	4	4	4	5	4	9	12	6	5	5
	Annual Daily Mean	3	Monthly Daily Mean	4	2	1	2	3	4	2	4	6	3	2	4

SO_2	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	166	Monthly ½ Hrly Max	102	66	86	74	52	36	154	75	141	156	166	73
	Annual ½ Hrly Mean	17	Monthly ½ Hrly Mean	17	18	17	15	14	14	15	20	23	19	20	17
Daily Ave ELV 50	Annual Daily Max	36	Monthly Daily Max	22	27	22	19	18	16	20	32	34	36	28	30
	Annual Daily Mean	17	Monthly Daily Mean	17	18	17	15	14	14	15	19	20	19	20	17

NOx	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	366	Monthly ½ Hrly Max	329	283	300	259	255	366	187	204	205	231	270	194
	Annual ½ Hrly Mean	153	Monthly ½ Hrly Mean	171	153	161	150	143	139	142	153	153	156	157	155
Daily Ave ELV 200	Annual Daily Max	226	Monthly Daily Max	226	165	175	162	161	149	156	159	158	165	159	159
	Annual Daily Mean	153	Monthly Daily Mean	171	153	161	150	143	139	143	153	153	156	157	156

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	24	Monthly ½ Hrly Max	6	5	6	12	13	16	24	5	12	21	21	3
	Annual ½ Hrly Mean	1	Monthly ½ Hrly Mean	0	0	0	0	2	2	2	2	1	1	1	1
Daily Ave ELV 10	Annual Daily Max	2	Monthly Daily Max	0	0	1	1	2	2	2	2	2	2	2	1
	Annual Daily Mean	1	Monthly Daily Mean	0	0	0	0	2	2	2	2	1	1	1	1

NH_3	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	16	Monthly ½ Hrly Max	14	11	7	6	16	9	7	4	9	8	5	9
	Annual ½ Hrly Mean	2	Monthly ½ Hrly Mean	1	2	2	2	3	3	2	1	2	1	1	2
Daily Ave No ELV	Annual Daily Max	5	Monthly Daily Max	2	4	3	2	5	5	4	2	4	2	3	3
	Annual Daily Mean	2	Monthly Daily Mean	1	2	2	2	3	3	2	1	3	1	1	2

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	27	Monthly ½ Hrly Max	3	1	1	4	5	4	11	27	7	11	4	2
	Annual ½ Hrly Mean	<1	Monthly ½ Hrly Mean	0	0	0	0	0	0	1	2	1	1	0	0
Daily Ave ELV 10	Annual Daily Max	5	Monthly Daily Max	1	1	1	0	2	0	3	3	1	5	2	1
	Annual Daily Mean	<1	Monthly Daily Mean	0	0	0	0	0	0	0	2	1	1	0	0

CO	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
½ Hourly Av ELV 100	Annual ½ Hrly Max	147	Monthly ½ Hrly Max	98	94	27	44	147	57	50	46	67	65	62	63
	Annual ½ Hrly Mean	8	Monthly ½ Hrly Mean	4	4	3	9	9	10	10	8	10	10	9	11
Daily Ave ELV 50	Annual Daily Max	17	Monthly Daily Max	7	7	7	11	15	12	17	11	12	11	11	15
	Annual Daily Mean	8	Monthly Daily Mean	4	4	3	8	9	10	10	8	10	9	9	11

* Figures reported to the nearest whole number.

Continuously Monitored Emissions to Air (mg/m3*) from Emission Point A2 – 2007

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	33	Monthly ½ Hrly Max	32	12	19	24	33	26	28	26	20	21	32	32
	Annual ½ Hrly Mean	4	Monthly ½ Hrly Mean	5	4	4	4	4	4	5	5	4	3	4	4
Daily Ave ELV 10	Annual Daily Max	9	Monthly Daily Max	9	5	5	8	5	9	8	6	5	7	6	8
	Annual Daily Mean	4	Monthly Daily Mean	5	4	4	4	4	4	5	5	4	3	4	4

SO_2	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	140	Monthly ½ Hrly Max	92	60	72	75	45	81	94	87	140	68	73	62
	Annual ½ Hrly Mean	15	Monthly ½ Hrly Mean	18	19	15	15	13	15	15	15	13	17	18	10
Daily Ave ELV 50	Annual Daily Max	33	Monthly Daily Max	33	25	19	23	18	28	30	20	22	22	31	20
	Annual Daily Mean	15	Monthly Daily Mean	18	19	15	15	13	14	15	14	13	17	18	10

NOx	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	542	Monthly ½ Hrly Max	338	333	303	293	253	311	193	542	271	260	221	266
	Annual ½ Hrly Mean	153	Monthly ½ Hrly Mean	167	166	153	135	137	135	154	161	155	157	156	157
Daily Ave ELV 200	Annual Daily Max	191	Monthly Daily Max	191	180	171	170	163	158	168	180	165	169	159	171
	Annual Daily Mean	153	Monthly Daily Mean	169	165	153	135	137	140	154	159	155	157	156	157

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	27	Monthly ½ Hrly Max	6	5	6	10	13	10	27	8	12	19	19	13
	Annual ½ Hrly Mean	<1	Monthly ½ Hrly Mean	0	0	0	0	0	1	1	0	0	1	1	0
Daily Ave ELV 10	Annual Daily Max	2	Monthly Daily Max	1	1	0	1	1	2	1	0	1	2	1	1
	Annual Daily Mean	<1	Monthly Daily Mean	0	0	0	0	0	1	1	0	0	1	0	0

NH_3	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	85	Monthly ½ Hrly Max	18	20	10	18	11	18	17	85	26	17	26	6
	Annual ½ Hrly Mean	3	Monthly ½ Hrly Mean	3	3	2	2	2	2	4	5	2	2	4	1
Daily Ave No ELV	Annual Daily Max	14	Monthly Daily Max	7	5	4	4	4	3	9	14	3	6	7	2
	Annual Daily Mean	3	Monthly Daily Mean	3	3	2	2	2	1	4	5	2	2	4	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	23	Monthly ½ Hrly Max	8	15	9	6	2	11	9	19	5	23	7	5
	Annual ½ Hrly Mean	1	Monthly ½ Hrly Mean	1	1	1	0	0	1	1	3	1	3	1	1
Daily Ave ELV 10	Annual Daily Max	6	Monthly Daily Max	3	4	4	2	0	3	2	5	3	6	3	3
	Annual Daily Mean	1	Monthly Daily Mean	1	1	1	0	0	1	1	3	1	2	1	1

CO	Annual Summary		Monthly Summary	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
½ Hourly Av ELV 100	Annual ½ Hrly Max	162	Monthly ½ Hrly Max	96	60	115	150	90	94	94	90	162	69	116	48
	Annual ½ Hrly Mean	10	Monthly ½ Hrly Mean	11	9	7	16	13	10	23	6	5	10	9	6
Daily Ave ELV 50	Annual Daily Max	44	Monthly Daily Max	44	10	12	21	19	23	36	8	8	16	17	12
	Annual Daily Mean	10	Monthly Daily Mean	10	9	7	15	13	9	22	4	5	10	9	6

* Figures reported to the nearest whole number.