Annual Performance Report for Eastcroft Energy from Waste Facility

Permit No: EP3034SN

Year – 2011

Report produced by

Waste Recycling Group
On behalf of WasteNotts (Reclamation) Ltd

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Glossary

	Definition
^{o}C	Degrees Centigrade
APC	Air Pollution Control
As	Arsenic
BAT	Best Available Technique
BS EN	British Standard - European
CDM	Construction Design Management
Cd	Cadmium
CEMs	Continuous Emission Monitoring
CHP	Combined Heat & Power
CFD	Computational Flow Dynamics
Co	Cobalt
CO	Carbon Monoxide
Cr	Chromium
Cu	Copper
CV	Calorific Value
EA	Environment Agency
EfW	Energy from waste
EWC	European Waste Catalogue
FGT	Flue Gas Treatment
HAZOP	Hazardous operations
HCl	Hydrogen Chloride
HWRC	Household Waste Recycling Centre
ID	Induced draught
LOI	Loss Of Ignition
LRHS	London Road Heat Station
Mn	Manganese
NDHS	Nottingham District Heating Scheme
NHIC	Non Hazardous Industrial & Commercial
Ni	Nickel
NOx	Oxides of Nitrogen
OS	Ordnance Survey
Pb	Lead
PPC	Pollution Prevention Control
PPE	Personal Protective Equipment
Sb	Antimony
SNCR	Selective Non Catalytic Reduction
SOx	Oxides of Sulphur
SRCL	Ex White Rose Environmental
Th	Thalium
TOC	Total Organic Carbon
UKAS	United Kingdom Accreditation Service
V	Vanadium
WID	Waste Incineration Directive
WNR	WasteNotts (Reclamation) Ltd
WRG	Waste Recycling Group

Introduction

This report is required to be produced under the Waste Incineration Directive's Article 12(2) requirements on access to information and public participation, which requires the operator to produce an annual report to the Regulator on the functioning and monitoring of the plant and to make this available to the public.

The Nottingham Waste Incinerator installation at Eastcroft comprises the Energy from Waste facility operated by WasteNotts (Reclamation) Limited (WNR) and the clinical waste incinerator operated by SRCL. WNR is owned by Waste Recycling Group (WRG). This report relates only to the Energy from Waste facility.

The Energy from Waste facility is located at

Incinerator Road
Off Cattle Market Road
Nottingham
NG2 3JH

OS Grid Reference: SK45823391

The Energy from Waste facility is part of the Nottingham District Heating Scheme which produces heat and power for local users by burning up to 160,000 tonnes of waste from Nottingham, Nottinghamshire and the surrounding area each year. Non hazardous municipal waste, or similar, is brought to the facility after people have sorted out materials for recycling at home and at the Household Waste Recycling Centres.

The Eastcroft Energy from Waste facility generates nearly 20 megawatts of thermal energy in the form of steam and hot water which helps to reduce the need for non-renewable fossil fuels and produces electricity for the local grid and heat for homes and businesses in the city centre.

Steam from the facility is sent by pipes to an energy generation and distribution facility on London Road. From there it is used for district heating in around 4,600 local homes and converted to electricity for distribution to the grid.

Housing in St Ann's is served by power and heat from the facility, as are the Victoria Shopping Centre, the Nottingham Magistrates Court and the National Ice Centre, amongst others.

Using waste to generate heat and power helps to reduce the need for fossil fuels. A proportion of the waste brought to Eastcroft comes from renewable sources (paper, wood, organic materials, etc.). The Government encourages the use of renewable energy sources as a way of reducing our need for fossil fuels, which are a major cause of climate change.

Should a member of the public want a copy of this report or wish to make comments then please use the following contact information

Email: info.eastcroft@wrg.co.uk
Web: www.wrg.co.uk/eastcroft
Post Eastcroft EfW Facility
Incinerator Road
off Cattle Market Road
Nottingham
NG2 3JH
Call: 0845 601 5432

Plant Description

The EfW facility currently comprises two incineration streams each capable of burning up to 11.7 tonnes/hour of municipal and light commercial and industrial waste. Approximately 160,000 tonnes of waste can be burned in the plant per year at the present time. Waste Recycling Group the owner of WasteNotts (Reclamation) Ltd has planning permission to add a third line to the plant. Planning permission was granted in 2009 for a third line which will increase the capacity of the incineration process to 260,000 tonnes per year. The third line is already included in the scope of the PPC permit (EP3034SN).

The following sections describe the existing operations at Eastcroft EfW. A summary of the proposals for the third line is given at the end of this description.

Raw materials handling

Municipal waste and non-hazardous commercial/industrial/trade waste is delivered to site by lorry and tipped into one of two refuse bunkers inside the tipping hall. Deliveries are typically made from Monday to Saturday morning. Waste is transferred from the bunkers by grab crane into the feed chute of each incinerator stream. Waste is only fed to the incinerator if the temperature is above 850^{o}C.

Incineration

Each incinerator stream has a moving grate on which the waste is burned, with preheated air being injected above and below the grate. Combustion air is drawn from the tipping hall and boiler hall to reduce odours and dust levels in these areas and fed to the furnace via an air preheater which can raise the temperature of the air up to 160 Deg C. Two auxiliary burners, fired on gas oil, are installed halfway up each combustion chamber to maintain temperatures above the 850^{o}C threshold. The auxiliary burners are also used to pre-heat the incinerators before start up. Ammonium hydroxide is injected into the furnaces to reduce emissions of nitrogen oxides (this technique is known as selective non-catalytic reduction or SNCR).

Hot gases from the combustion chamber pass to a boiler in which steam is raised and sent to the London Road Heat Station for supply of heat to the district heating system and generation of electricity. Flue gases leaving the boiler are cooled to about 130^{o}C in the economiser to achieve the correct temperature for gas treatment.

Ash handling system

Grate ash (known as bottom ash) is quenched in water and collected in a residuals bunker inside the building. Ferrous metal items are removed by magnetic separators (and are sent for recycling) and the bottom ash is stored in a silo on site. The silo is emptied regularly and the bottom ash is sent for landfill disposal, where it is used beneficially as top cover or as a road building material.

Fly ash entrained within the incinerator exhaust gases, together with any accumulations of dust removed from the walls of the economiser by the shot

cleaning system, is treated in the air pollution control equipment.

Air pollution control (APC) equipment

Each incinerator stream has its own dedicated air pollution control equipment. Cooled flue gases leaving the economiser are dosed with a mixture of hydrated lime, activated carbon and recirculated reagent, in order to reduce acid gases (by reaction with the lime), and other substances such as heavy metals and hydrocarbons (by adsorption onto the activated carbon). The exhaust gases and reagent particles are then filtered in a four compartment fabric filter to remove the dust burden. The fabric filters are regularly cleaned by reverse jet pulses, and the collected end product is stored in the APC residue silo. The APC residue silo is regularly emptied and the residue used to treat industrial acidic wastes before final disposal in a suitably licensed landfill site.

Stack emission

The treated exhaust gases from both streams are discharged via the 91m high stack. The final emissions from the municipal waste incinerator are continuously monitored for particulate matter, sulphur dioxide, nitrogen oxides, carbon monoxide, hydrogen chloride, volatile organic compounds and ammonia prior to entry into the main stack.

Outline Description of the Third Line

Engineering details of the proposed third line are not yet available since WRG has not yet awarded the contract for the design and build of the incinerator extension. However it is known that the third line will mainly comprise:

- Waste reception into the existing tipping hall and waste bunkers.
- Two new grab cranes serving the existing incineration lines and the third line.
- A moving grate incinerator and integrated steam raising boiler designed to meet the temperature and residence time requirements of the Waste Incineration Directive.
- An ash collection and handling system for incinerator bottom ash with an automatic conveying system to the existing bottom ash silo.
- Abatement of nitrogen oxide emissions in the incinerator combustion chamber by selective non-catalytic reduction and/or flue gas recirculation.
- An air pollution control system similar to that for the existing lines, i.e. comprising acid gas neutralisation, carbon injection and dust filtration.
- Emission of the treated flue gases via the currently unused semi-circular flue of the existing stack.
- Continuous and periodic monitoring of all emitted pollutants in the stack.
- An effluent treatment plant for all effluents which cannot be reused within the process, including back-flush water from the boiler water treatment plant, overflow from the wet ash handling system and surface water drainage.
- A possible steam turbine at the Eastcroft site for generation of electricity for

sale to the grid, and possible supply of residual heat to the district heating scheme.

- An air cooled condenser to condense the residual steam and return it to the boiler system.

Summary of plant operation

The PPC forms relating to annual data can be found in Appendix 1.

Plant size including number of lines

The Eastcroft Energy from Waste facility is designed around two process streams each with a capacity of 11.7 tonnes per hour with the waste having an average calorific value (CV) of 8.3 MJ/kg. The facility however can easily deal with fluctuations in the composition of the waste and has a design CV range of 6 – 12 MJ/kg which it can accept without any adverse effects.

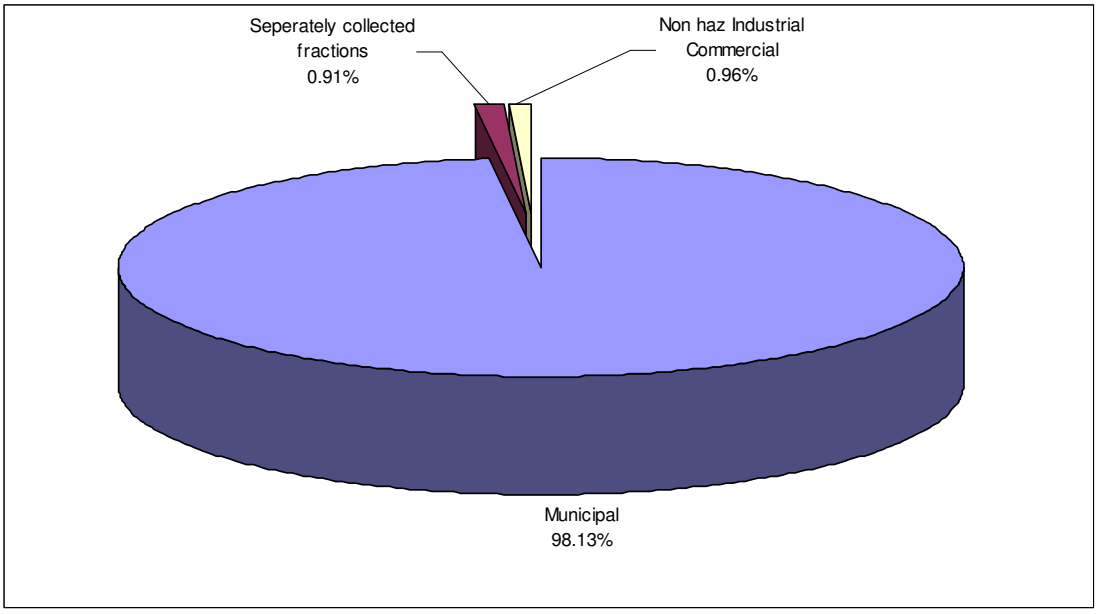
The theoretical maximum capacity of the plant assuming a 'low' CV waste input and the plant running every hour of the year would be approximately 200,000 tonnes. In reality the plant accepts waste with a CV of around 9.3MJ/kg and has to be shut down for annual maintenance and other works, this results in a historical throughput of around 150 – 160,000 tonnes every year.

Following extensive refurbishment in 2009 the plant is now capable of running for longer than prior to the refurbishment. With this in mind WRG have submitted a Permit variation application to extend the allowable throughput of the plant to 200,000. In reality a figure of 170,000 tonnes is a more likely throughput; however the 200,000 tonnes represents approximately the theoretical maximum throughput of the facility.

Under normal operation the facility does not need supplementary fuel to sustain the combustion process. Additional Fuel is only required for start-up and shut down, to ensure that no waste is burnt at temperatures less than 850 ^{o}C.

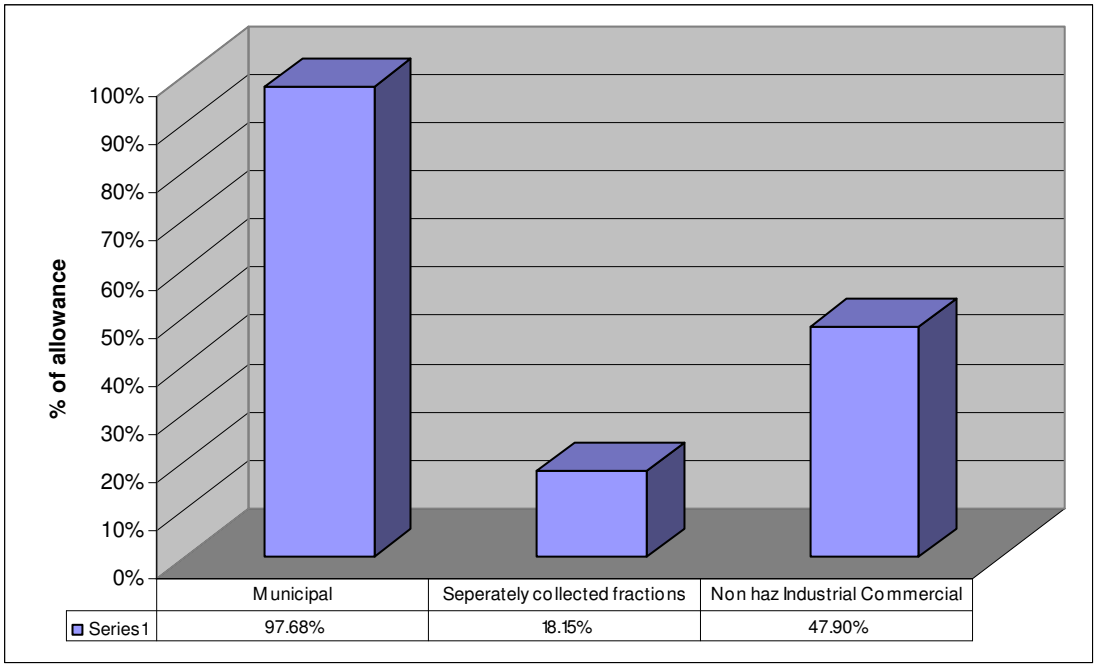
Annual Waste Throughputs

Figure 1: Breakdown by category for waste input



The facility processed approximately 159,268.4 tonnes of waste in the reporting period. The vast majority of this waste was mixed municipal waste from Nottingham City, Nottinghamshire and the surrounding area. A breakdown of the waste inputs is shown in Figure 1. This identifies how much waste was municipal, non hazardous industrial & commercial and separately collected fractions. The separately collected fraction tends to be waste such as confidential paper from sources such as the police, solicitors etc.

Figure 2: Percentage of waste inputs against the specified limits



As required through the Waste Incineration Directive Article 4(4) the permit identifies the types of waste by European Waste Catalogue (EWC) code and can potentially give maximum quantities of waste which can be accepted at Eastcroft.

The EWC codes have been grouped together into three main headings and maximum quantities assigned. The groupings and quantities are as shown below:

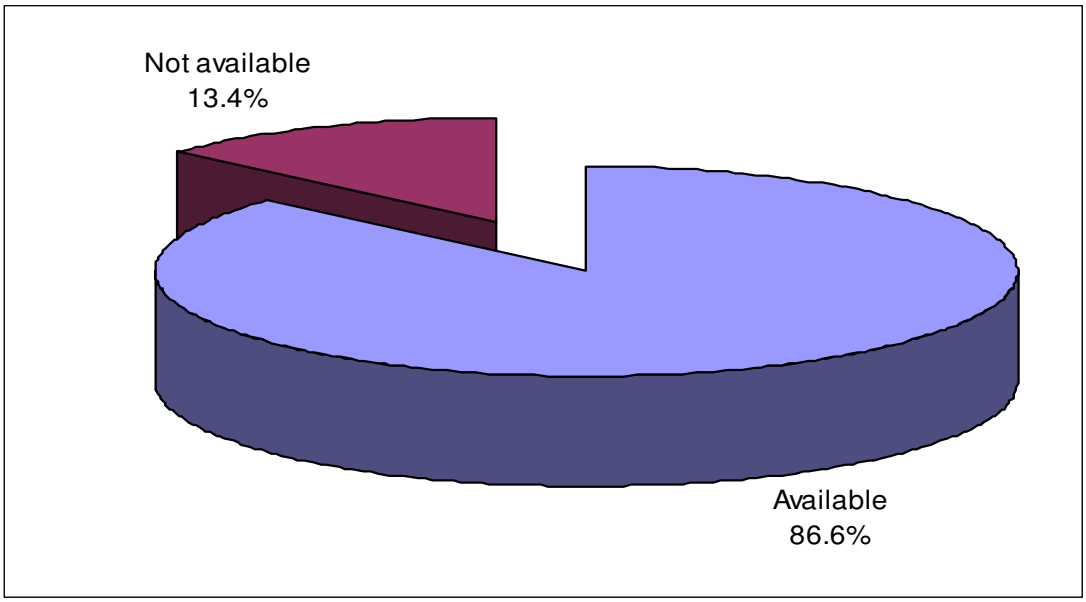
- Municipal Waste
  Limit 160,000 tonnes Actual 156,283 tonnes
- Separately Collected Fraction
  Limit 8,000 tonnes Actual 1,452 tonnes
- Non Hazardous Industrial & Commercial
  Limit 3,200 tonnes Actual 1,533 tonnes

Figure 2 shows the quantity of waste received against the limit as a percentage. It can be clearly seen from the graph that the Eastcroft facility was within its limits.

Total Plant Operational Hours

The Eastcroft facility is similar to all plants in the fact that it has a computerised maintenance management system. This allows the Operators to schedule in maintenance activities and predict when systems are likely to fail. This coupled with the experience of the Operator maximises the availability of the plant. However it must be recognised that no system is perfect and that the plant may have to come offline either because the repair necessitates it or unforeseen issues arise.

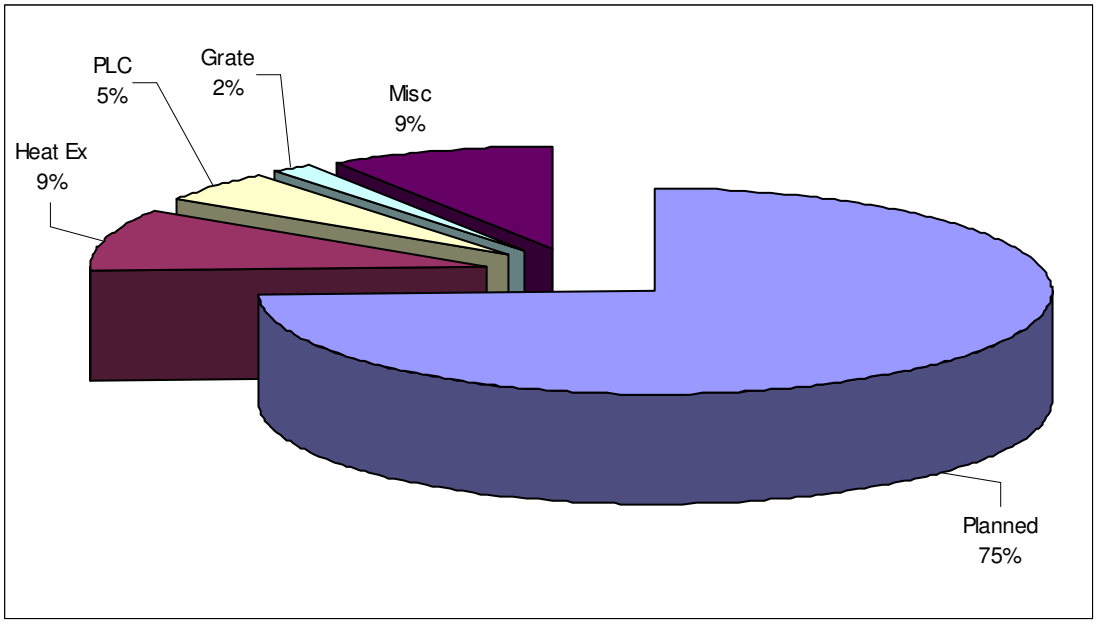
Figure 3: Plant Availability



In total the two lines operated for 15180.3 hours giving an overall availability of 86.6% for the reporting period, as seen in Figure 3.

The analysis of lost time for the plant is broken down into various categories in Figure 4.

Figure 4: Analysis of Lost Time



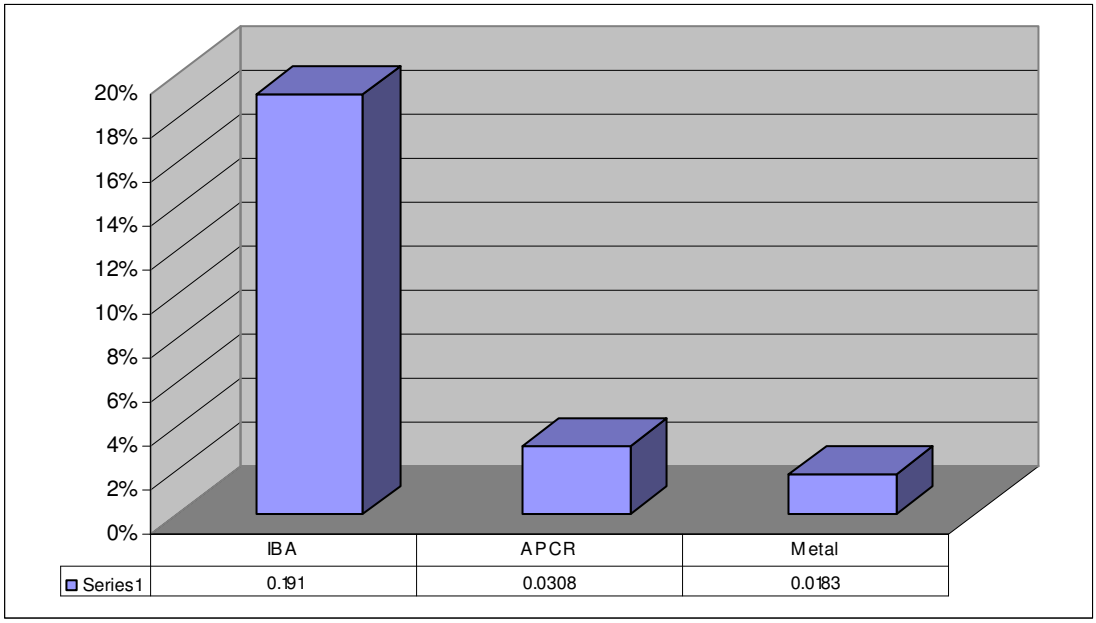
Other than the planned maintenance work in 2011; the major area of significant maintenance work related to repair and ultimately the replacement of parts of the heat exchangers. The heat exchanger is a series of pipework within the gas pass where heat is transferred from the gas stream to the water inside the tubes. The water inside the tubes is treated water supplied by Enviroenergy. Due to leaks within the steam turbine condenser at Enviroenergy the water became contaminated and caused damage to the pipework.

A problem with the PLC – part of the control system was also experienced; this required downtime while a new part was sourced and installed while normal operational difficulties were experienced with the grate such as grate bars lifting. This is usually caused by none standard waste getting under the moving bars. The result is that the units have to come off and personnel have to get on the grate to reposition the bars

A number of small items of maintenance also took the plant out of action in 2011; including problems with the refuse cranes feeding waste. Problems detected on items such as feedwater pumps and fans which were detected through inspections and condition monitoring picking up things like additional noise or vibration.

Residue production

Figure 5: Quantity of Residue Produced as a % of the input



The plant produces three types of residue;

- Bottom Ash – an inert material left over from the combustion process. For the majority of 2011 this material was sent to local landfill sites where it was used as daily top cover and as a road building material. This saves on virgin materials which would otherwise be used. At the end of 2011 some of the IBA went for further metal reclamation and this will continue into 2012.
- Air Pollution Control Residue – A mixture of lime and other particles that have been captured by the Flue Gas Treatment Facility. This material gets sent to a treatment facility where it is mixed with other waste before final disposal in a suitable landfill site
- Ferrous – the ferrous metal in the bottom ash is reclaimed using a magnet. This material is sent away for recycling.

The quantities of residues produced are shown in Figure 5.

Energy Production

The Eastcroft EfW Facility is part of the Nottingham District Heating Scheme providing energy in the form of steam and hot water to the heat station at London Road owned by EnviroEnergy which in turn is wholly owned by Nottingham City Council.

The premises on London Road convert the energy into electricity and hot water. Electricity is supplied to major customers using dedicated cabling. Hot water is distributed to customers over the extensive pipe network that covers much of the city centre. Customers have heat exchangers rather than boilers to keep their building warm and to provide a constant supply of hot water.

EnviroEnergy's customers include the National Ice Arena, the Broadmarsh and Victoria shopping centres, the Inland Revenue offices beside the canal, Capital One's UK headquarters and Nottingham Trent University as well as over 4,600 domestic consumers.

In 2010 EnviroEnergy generated 60,296 MWh of electricity and distributed 132,211 MWh of heat and hot water. If energy were not recovered from Nottingham's waste, fossil fuels would be burnt and more waste would have been disposed of in landfill sites.

For the reporting period Eastcroft exported 1219 TJ of energy in the form of steam.

Summary of plant emissions

The monitoring requirements are set out in Section 2.2 of the permit.

The plant is required to carry out both continuous monitoring as well as extractive tests up to four times a year however the emissions to be measured do vary. In addition to this the EA may carry out a full suite of tests during a year. The EA tests are unannounced i.e. the EA turn up without prior warning.

Pollutants Measured

Pollutants Measured	Continuously	Periodically
Particulates	✓	✓
Oxides of Nitrogen	✓	✓
Sulphur dioxide	✓	✓
Carbon Monoxide	✓	✓
Ammonia	✓	✓
Total Organic carbon	✓	✓
Hydrogen Chloride	✓	✓
Mercury		✓
Cadmium & Thallium		✓
Group III Metals		✓
PCDD & PCDF		✓
Hydrogen Fluoride		✓

Control of emissions

The control of the emissions is explained in the "Plant Description" section although for ease of reference the control measures have been summarised below:

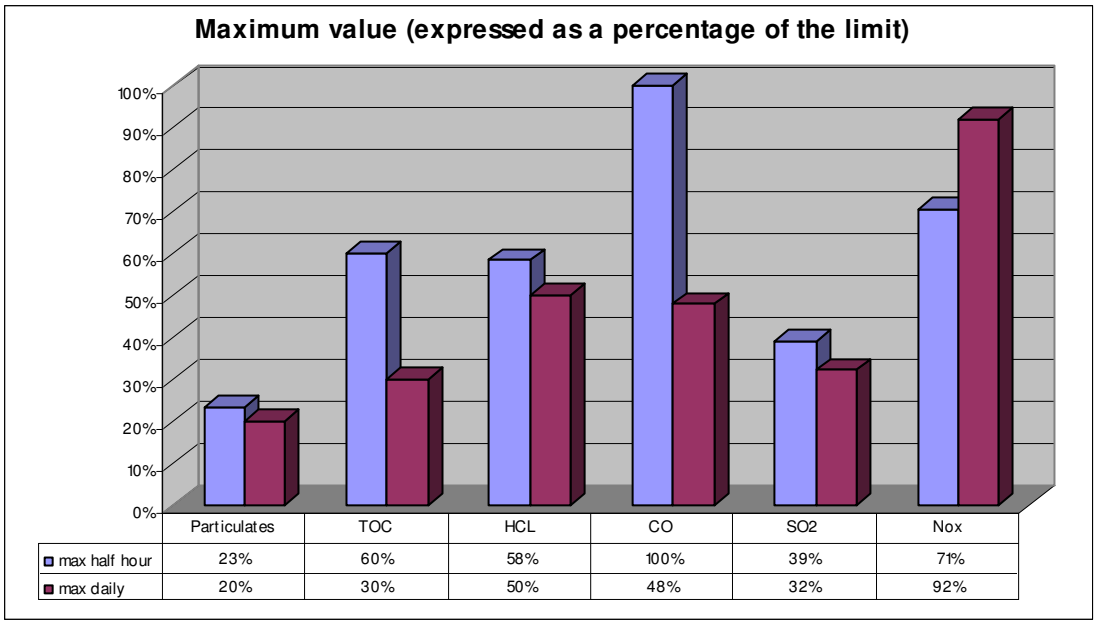
- The acidic gases (Sulphur Dioxide & Hydrogen Chloride) are controlled by the addition of lime to the flue gases.
- Carbon Monoxide and the Total Organic Carbons are controlled through the combustion controls which affect the amount of air in the combustion chamber
- Oxides of Nitrogen are controlled by adding sufficient amounts of ammonium hydroxide solution. The use of computers allows the system to react to the changing parameters within the boiler exactly controlling the levels of NOx and minimising the formation of ammonia.
- The particulates or dust are captured by the bag filters which are highly effective capturing around 99.9% of the particles generated from the process.

Figures 6 and 7 show the maximum daily and half hourly values recorded in the reporting period. During 2011 there were no instances whereby either a half hourly or daily average was exceeded for continuously monitored substances.

Line 1 saw a maximum value for Carbon Monoxide in February at the Emission Limit Value and was reported to the Environment Agency as an approach to limit.

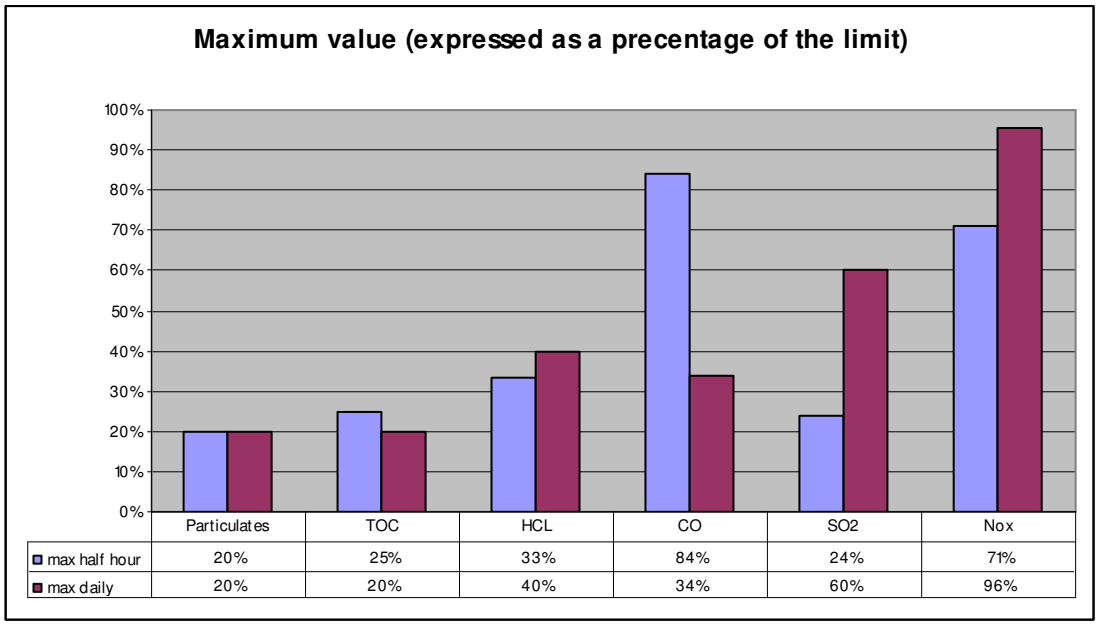
More detailed graphs showing the plants performance on a month by month basis can be found in Appendix 2.

Figure 6: Line 1 Max Values for Year



	Particulates	TOC	HCL	CO	SO2	Nox
max half hour	23%	60%	58%	100%	39%	71%
max daily	20%	30%	50%	48%	32%	92%

Figure 7: Line 2 Max Values for the Year



	Particulates	TOC	HCL	CO	SO2	Nox
max half hour	20%	25%	33%	84%	24%	71%
max daily	20%	20%	40%	34%	60%	96%

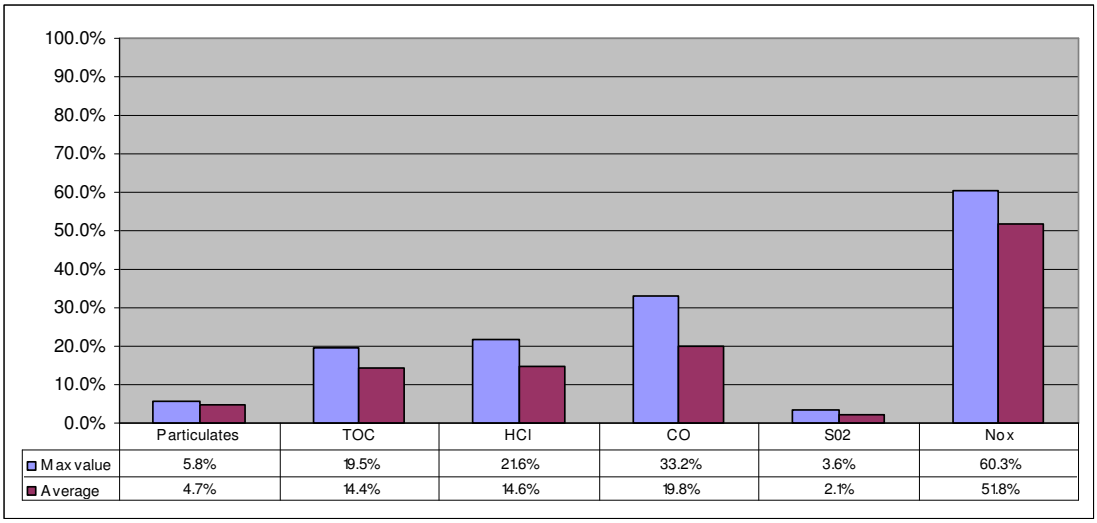
Periodical Monitoring (Extractive testing)

Emissions to Air

Within the permit there is an obligation to carry out extractive tests on the substances emitted from the stack. These tests act as a comparison for the CEMs equipment. Some substances are checked bi-annually others are measured quarterly. A UKAS certified company carries out these tests and submits a report to WRG. The results from the tests are included in the quarterly report to the EA.

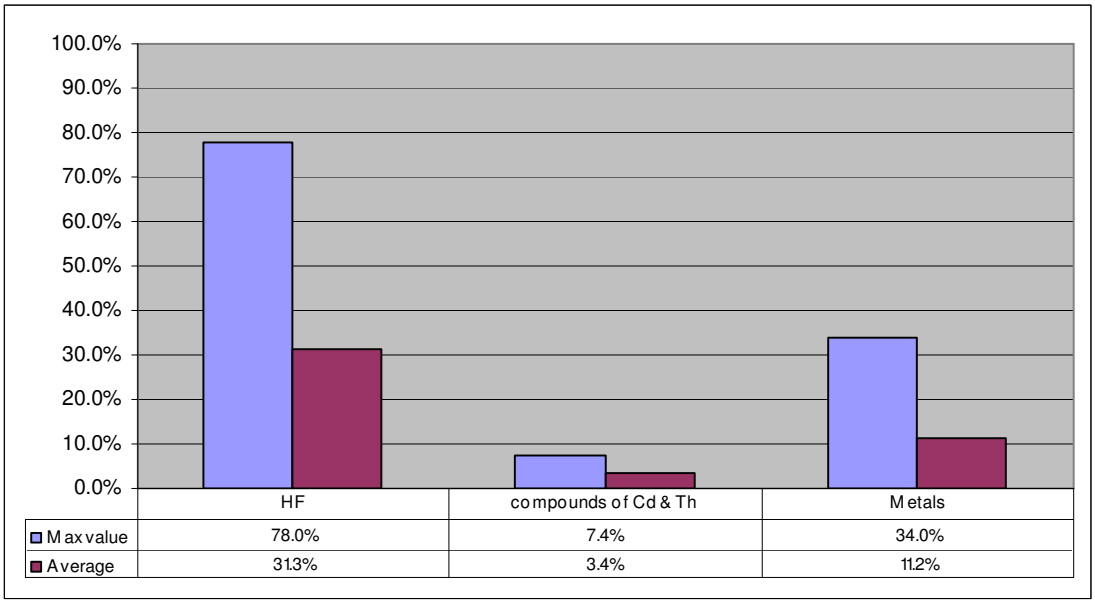
Figures 8 & 9 show the extractive monitoring results expressed as a percentage of the ELV. During quarter 1 on line 2 a Dioxin/Furan result was given as 1.81ng/m³ against an ELV of 0.1ng/m³. A full investigation and 6 months additional testing was undertaken which suggested that the result was due to an analytical error as opposed to the process. Further discussion and details of the additional testing can be found in figure 12 and the full findings of the investigation are on the public register. All of the other substances measured on a bi-annual/quarterly basis were within the limits set in the permit.

Figure 8: Bi- annual results showing the maximum and average reading from Lines 1 & 2 expressed as an average of the limit (excluding Dioxins)



	Particulates	TOC	HCl	CO	S02	Nox
Max value	5.8%	19.5%	21.6%	33.2%	3.6%	60.3%
Average	4.7%	14.4%	14.6%	19.8%	2.1%	51.8%

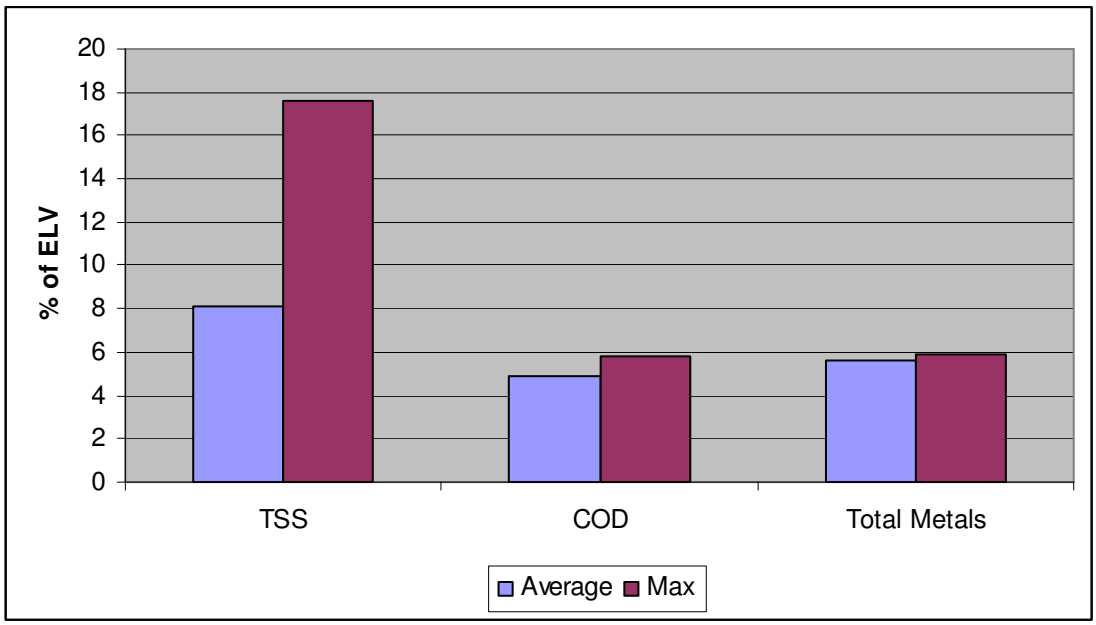
Figure 9: Quarterly extractive Results showing the maximum and average values from Lines 1 & 2 expressed as a % of the limit



Emissions to water

Limits for the emissions to sewer are set in Table 2.2.2.8 of the PPC permit applicable to Eastcroft. These require the substances flowing over the v-notch weir for lines 1 & 2 to be measured quarterly. The method for monitoring is given in the permit.

Figure 10: Emissions to Water (expressed as a percentage of the limit)



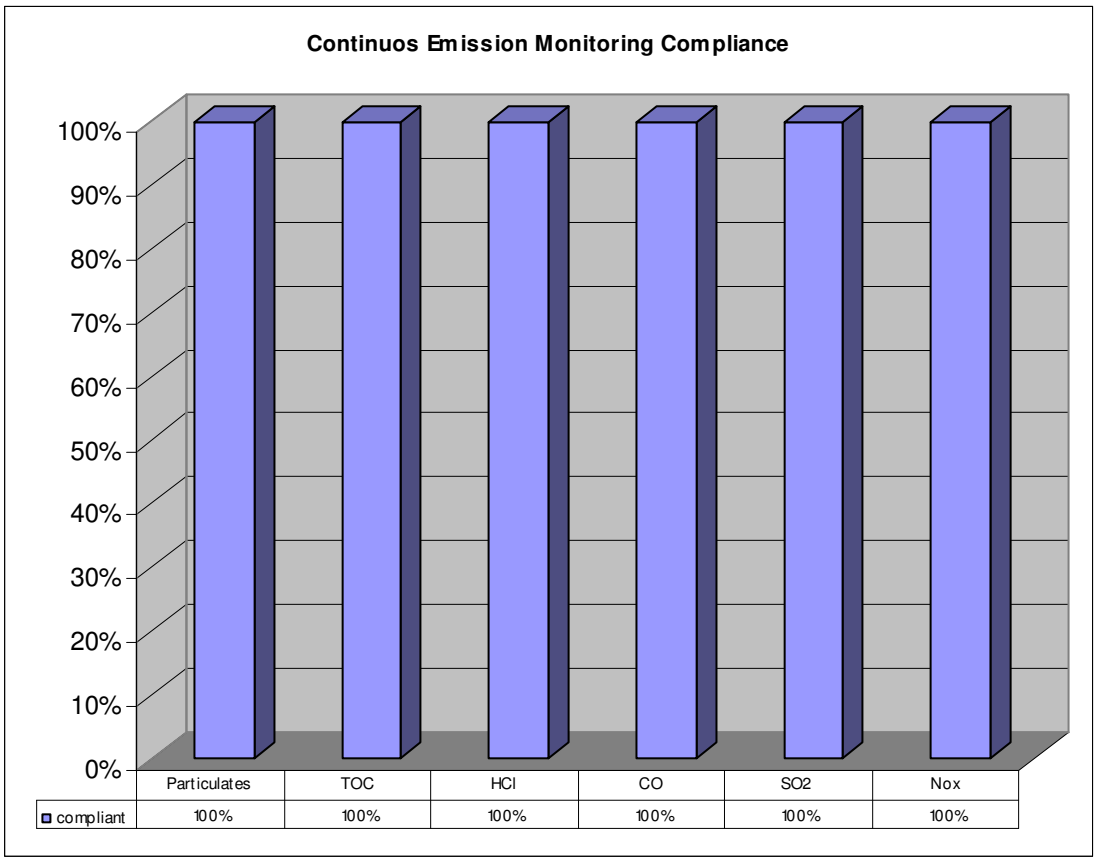
It can clearly be seen in the figure above that the plant remained easily in compliance for all of the quarterly checks.

The pH of the process water going to sewer was between 10.5 and 12.3 averaging at 11.35

Summary of plant compliance

Compliance with emissions to air

Figure 11: Compliance with emissions

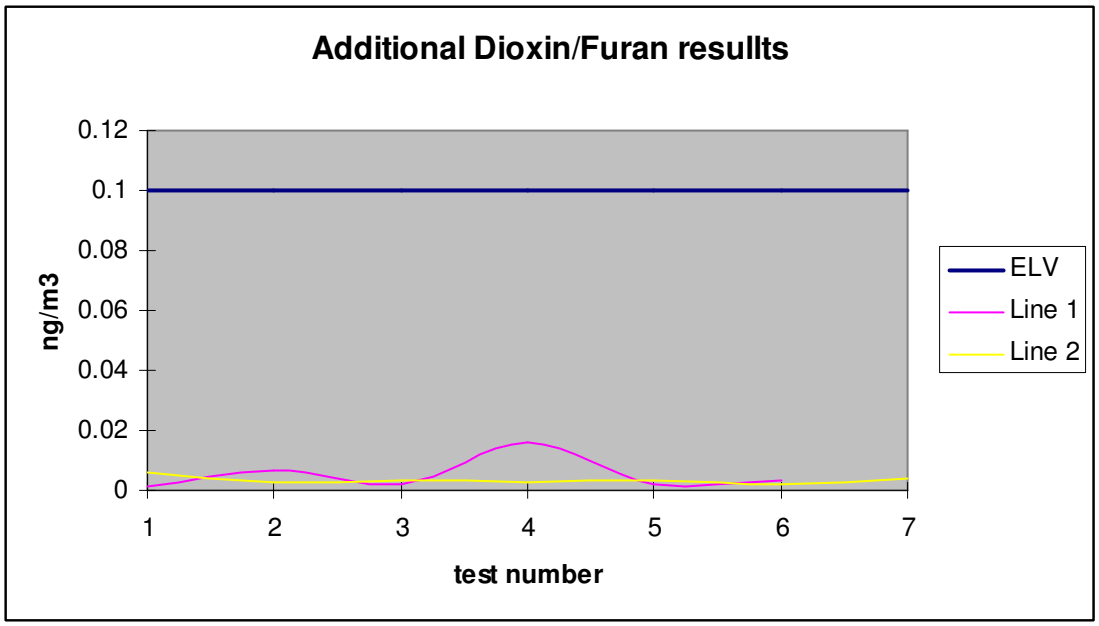


During the reporting period there was full compliance with those emissions which are continuously monitored. In February 2011 there was an instance where an Approach to Limit was reported when a half hourly value for Carbon Monoxide reached but did not exceed the emission limit value of 100mg/m³.

As highlighted in the section on periodic monitoring there was a result for Dioxins/Furans found above the Emission Limit Value in January 2011 on line 2. After an extensive investigation followed by 6 months of additional testing on both lines; this suggests that the initial result is not representative of emissions from Eastcroft and may be as a result of contamination within the analysis phase of sampling.

The results for the 6 months of testing are shown in figure 12 below. (NB, an additional test was carried out on line 2 in the first month following the result)

Figure 12: Additional Dioxin/Furan results



Compliance with Ash Limits.

Full compliance with the permit limits for ash was achieved during 2011

Formal Enforcement Notices

An Enforcement notice was received from the Environment Agency requiring additional testing to be carried out for Dioxins/Furans.

Summary of plant improvements

Improvement Conditions

Within the PPC permit applicable to the EfW facility, the EA set out ten improvement conditions in Table 1.4.1. WRG has not been required to submit responses to any improvement conditions during this reporting period. At the time of writing an application for a variation to the permit is being assessed; all remaining improvement conditions relate to the third line and cannot be met until more detailed plans for the third line are available.

Review of potential for CHP Line 3

(Table 1.4.1 Reference 9 Submission by 28/12/06)
WRG are actively discussing with EnviroEnergy the possibility of using the steam generated from Line 3 on the existing District Heating System. There are many benefits in utilising the steam in this way such as improved efficiencies.

Planning permission for the development of a third line was granted in 2009, there are a number of permit conditions which must be met before a third line can be built and commissioned.

Verification of combustion conditions for Line 3

(Table 1.4.1 Reference 10 Submission by 3 months after Takeover of L3)

No work can be done on this until Line 3 is under construction.

Summary of information made available

General information about Waste Recycling Group and the Eastcroft Energy from Waste Facility can be found at www.wrg.co.uk and www.wrg.co.uk/eastcroft , alternatively written enquiries can be sent to the following address:

Eastcroft Energy from Waste Facility
Incinerator Road
Off Cattle Market Road
Nottingham
NG2 3JH

For telephone enquiries please phone 0845 601 5432 quoting Eastcroft as a reference.

Information held on the public register can be found at:

Environment Agency Trentside Scarrington Road West Bridgford Nottingham NG2 5FA Tel: 0115 846 3608	City of Nottingham City Development Lawrence House Talbot Street Nottingham NG1 5NT Tel: 0115 915 6410

In both cases members of the public are advised to phone to arrange a viewing. This is to allow the sites time to make the information requested more accessible. This information can be viewed during normal working hours e.g. 09:00 to 17:00.

- The Nottingham Waste Installation has re-initiate an active liaison group in 2011 involving a range of representatives from the local community and other interested parties

The liaison group meets once a quarter to discuss the performance of the installation and future activities. If you are interested in joining the group or require further information please contact:

Karl Starkey
Secretary, Eastcroft Liaison Group
Eastcroft Energy from Waste Facility
Incinerator Road
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Nottingham
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Email: karl.starkey@wrg.co.uk

Appendix 1

Permit Reference Number : EP3034SN

Operator : WasteNotts (Reclamation) Limited

Reporting of Waste Disposal and Recovery for the year 2011

Waste Description	Disposal Route	Tonnes	Recovery Tonnes
1) Hazardous Wastes			
APC Residue	Landfill	4898	0
Other hazardous wastes			
Total hazardous waste		4898	0
2) Non-Hazardous Wastes			
Bottom Ash	Landfill	29,561	0
	Recycling	885	885
Ferrous Material.	Recycling	2,915	2,915
Total non-hazardous waste		33,361	3,800
TOTAL WASTE	-	38,846	3800

Trends in Waste Disposal and Recovery			
Year	Parameter		
	Named Waste	Total Waste	Waste per unit output
2007	Bottom Ash	33,852	0.22
	APC Residue	6529	0.04
	Ferrous Material	2395	0.02
2008	Bottom Ash	34,209	0.215
	APC Residue	6031	0.038
	Ferrous Material	2,629	0.0165
2009	Bottom Ash	23,659	0.203
	APC Residue	3904	0.034
	Ferrous Material	2,311	0.0198
2010	Bottom Ash	30,265	0.19
	APC Residue	5,927	0.0371
	Ferrous Material	3,346	0.02

Permit Reference Number : EP3034SN

Operator : WasteNotts (Reclamation) Limited

Installation : Nottingham Waste Incinerator

Form Number : Agency Form / EP3034SN / WU1/ Form Dated 22/12/05

Reporting of Water Usage for the year 2011

Water Source	Usage (m3)	Specific Usage (m3/t)
Mains water	6752	0.042

Trends in Water Usage		
Year	Parameter	
	Named Water source	Water per unit output
2006	Mains Water	0.0582
2007	Mains Water	0.0531
2008	Mains Water	0.0274
2009	Mains Water	0.0442
2010	Mains Water	0.037

Operator's comments : Temporary loss of process water recirculation due to blocked pipe work led to more mains water requirement.

Permit Reference Number : EP3034SN
Installation : Nottingham Waste Incinerator
Operator : WasteNotts (Reclamation) Limited
Form Number : Agency Form / EP3034SN / E / Form Dated 22/12/05

Reporting of Energy Usage for the year 2011

Energy Source	Energy Usage Quantity	Primary Energy (MWh)	CO_2 Produced (tonnes)
2011			
Electricity imported from London Road Heat Station	MWh	9233	0[1]
Electricity imported from national grid	MWh	N/A	N/A[2]
Gas Oil	Tonnes	157	157
2010			
Electricity imported from London Road Heat Station	MWh	8638	0[1]
Electricity imported from national grid	MWh	N/A	N/A[2]
Gas Oil	Tonnes	187	187

Trends in Energy Usage			
Year	Parameter		
	Primary Energy usage	CO_2 produced	CO_2 per unit output
2009			
Electricity imported from London Road Heat Station[1]	7634	0[1]	
Electricity imported from national grid[2]	N/A	N/A[2]	
Gas Oil	416	416	
2008			
Electricity imported from London Road Heat Station*	9861	0[1]	
Electricity imported from national grid*	N/A	N/A[2]	
Gas Oil	782	782	

Operator's comments :
[1]The Electricity imported from London Road is generated from the steam sent by Eastcroft. The CO2 produced is assumed to be zero as it is the process at Eastcroft that produces CO" rather than the activities at London Road. Eastcroft produces approximately 0.39 tonne of CO" for every MW hour of steam
[2] Eastcroft Does not have a direct connection to the grid.

Installation : Nottingham Waste Incinerator Form Number : Agency Form / EP3034SN /PI1/ Form Dated 20/12/05

Reporting of Performance Indicators for the period 2011

Annual Production/Treatment		
Total Municipal Waste Incinerated (including separately collected fractions)	Tonnes	157,735
Total Commercial/Industrial Waste Incinerated	Tonnes	1,533
Steam exported (as measured at London Road Heat Station)	terajoules	1009
Hot water exported (as measured at London Road Heat Station)	MWh	360,088
Electrical energy used on installation (MWI and CWI)	KWhrs	9,233,000
Gas oil used	Tonnes	157.17

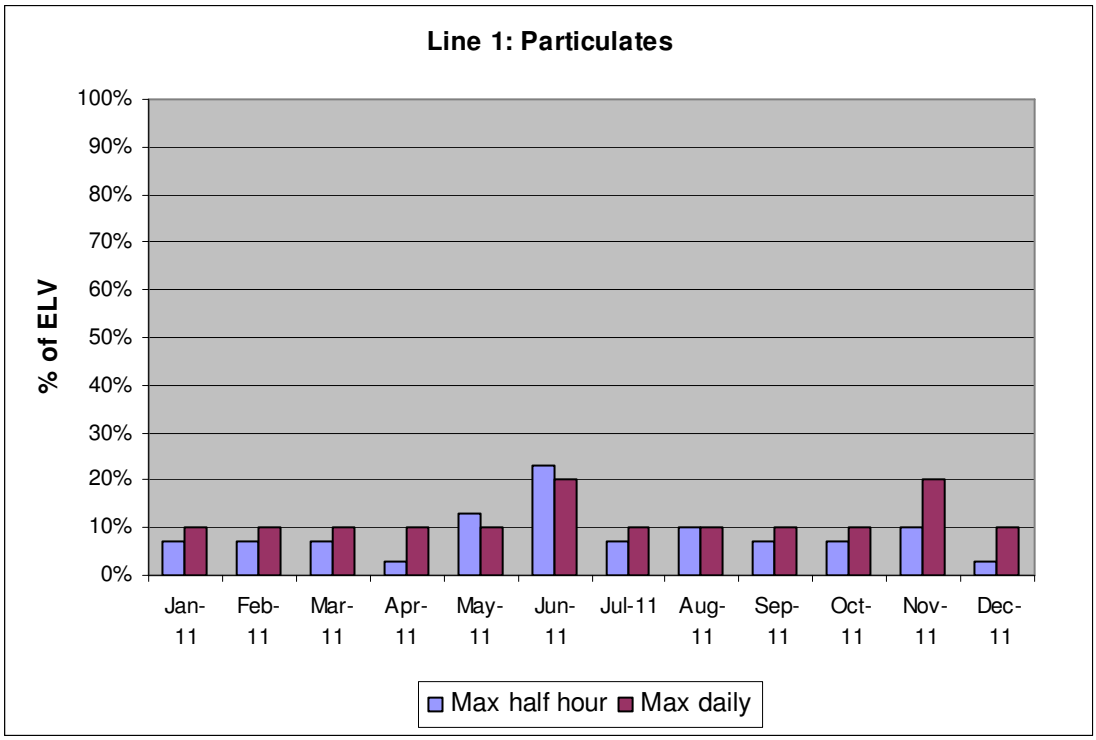
Environmental Performance Indicators

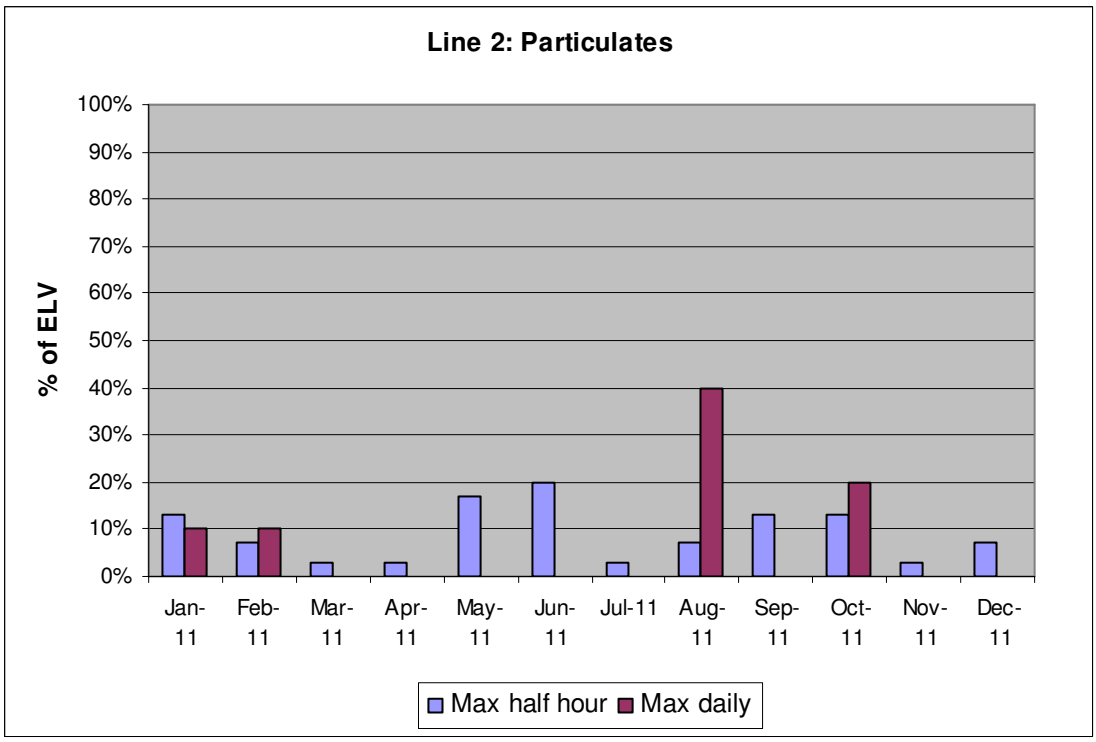
Parameter	Quarterly Average	Units
Electrical Energy imported to site	57.97	KWHrs/t waste
Fuel oil consumption	0.99	Kg/t waste
Mass of bottom ash produced	191	Kg/t waste
Mass of APC residues produced	30.7	Kg/t waste
Mass of ammonia used	2.5	Kg/t waste
Mass of carbon used	0.73	Kg/t waste
Mass of lime used	6.47	Kg/t waste
Water consumption	0.042	M3/t waste

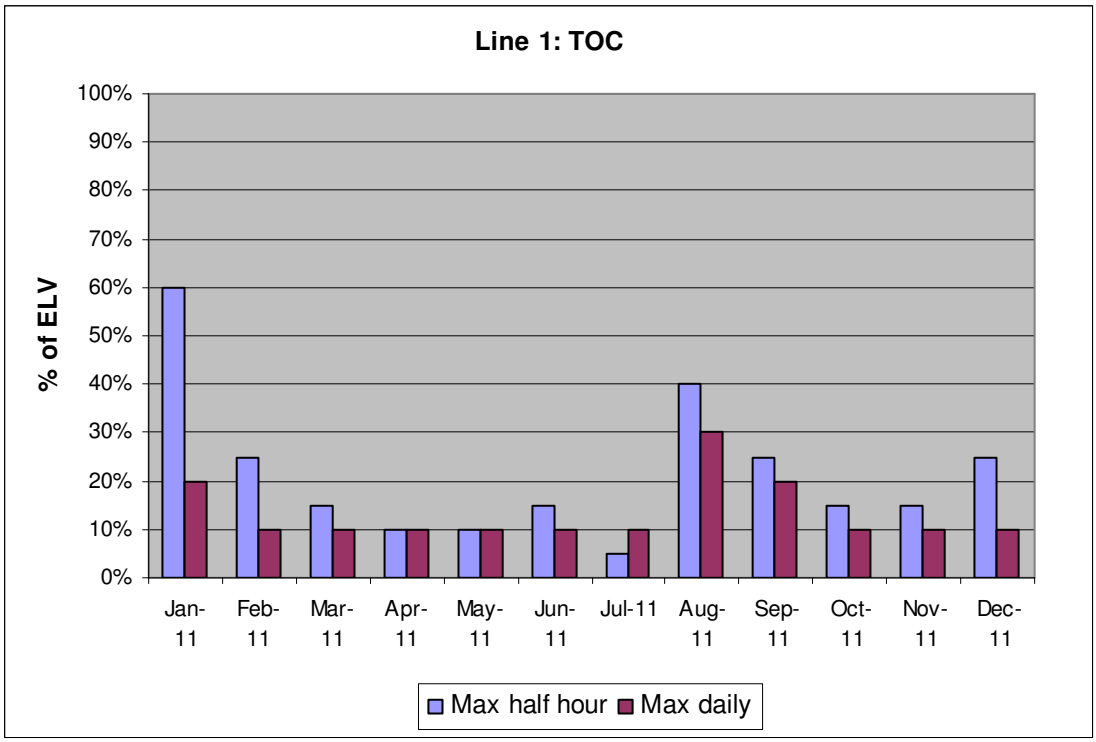
Trends in Environmental Performance					
Year	2007	2008	2009	2010	
Parameter	**Quarterly Average**	**Quarterly Average**	**Quarterly Average**	**Quarterly Average**	**Units**
Electrical Energy imported to site	63	62	66	54.1	KWHrs/t waste
Fuel oil consumption	2.53	4.91	3.18	1.429	Kg/t waste
Mass of bottom ash produced	210	214	203	190	Kg/t waste
Mass of APC residues produced	50	37.9	33.5	37	Kg/t waste
Mass of ammonia used	1.95	1.88	1.7	2.33	Kg/t waste
Mass of carbon used	0.22	0.65	0.68	0.72	Kg/t waste
Mass of lime used	8.75	7.4	7.11	5.89	Kg/t waste
Water consumption	0.06	0.0027	0.04	0.037	m3/t waste

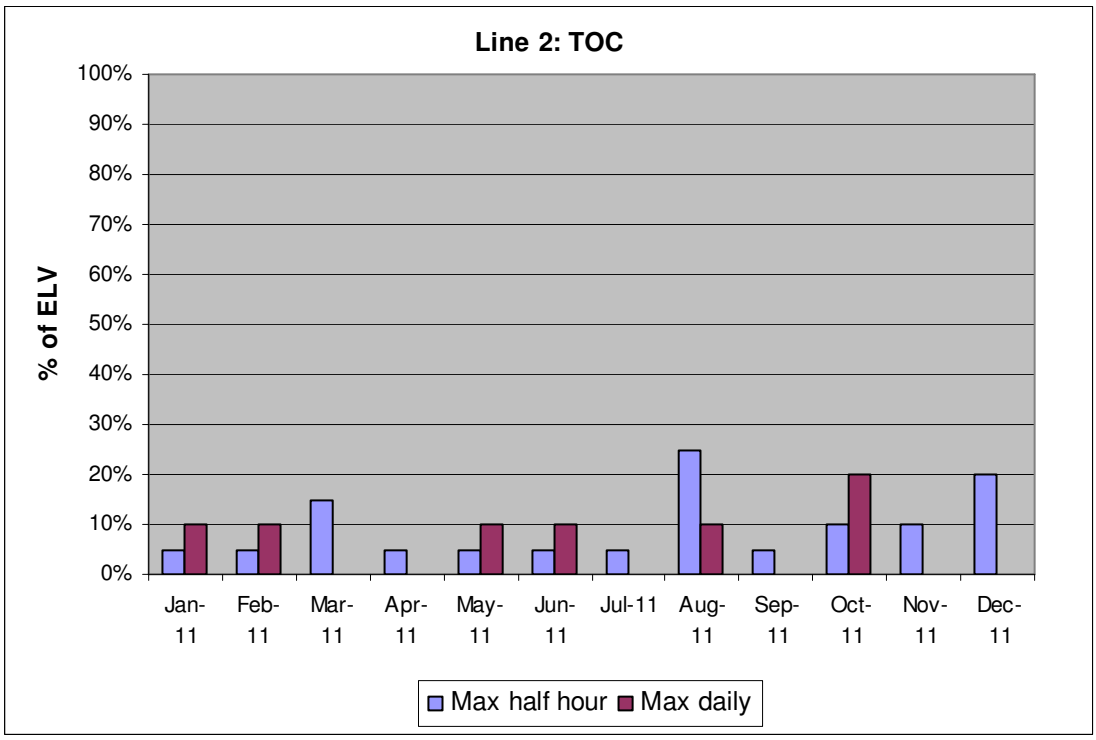
Operator's comments : Increased electrical usage in 2011 linked to Enviroenergy turbine condenser problems and feedwater heat exchanger problems; i.e. Eastcroft required to use more energy to lose temperatures normally lost by condensers/heat exchangers.

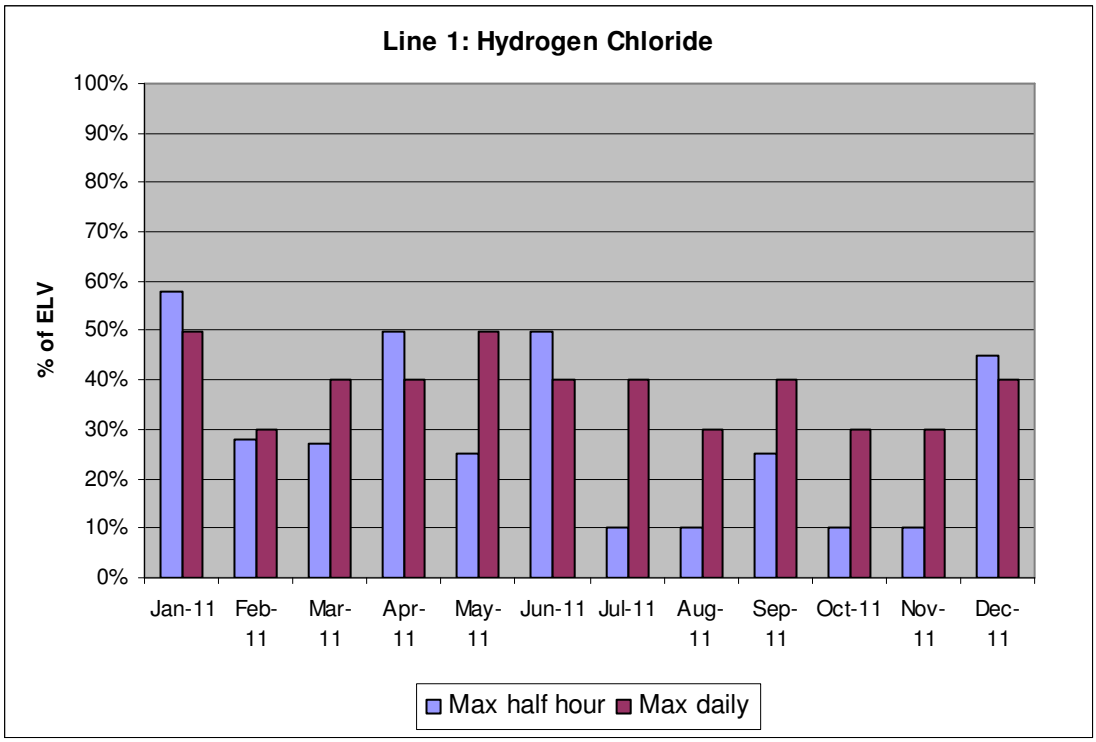
Appendix 2

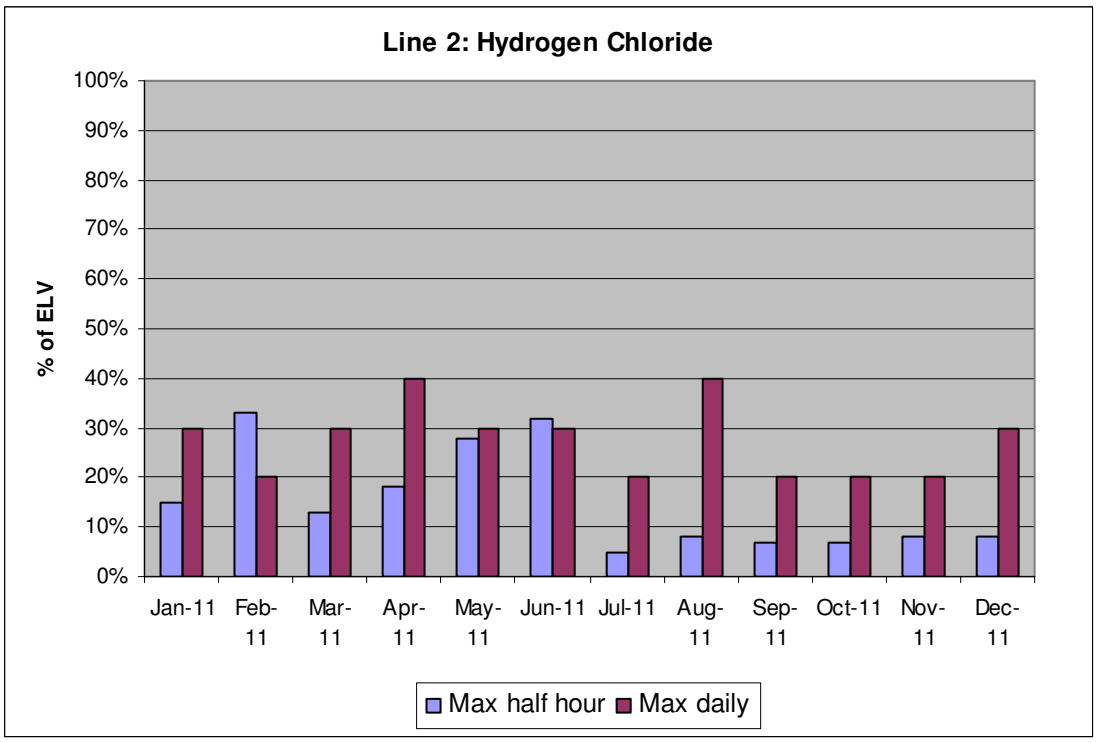

Line 1: Particulates
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% of ELV
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Max half hour
Max daily

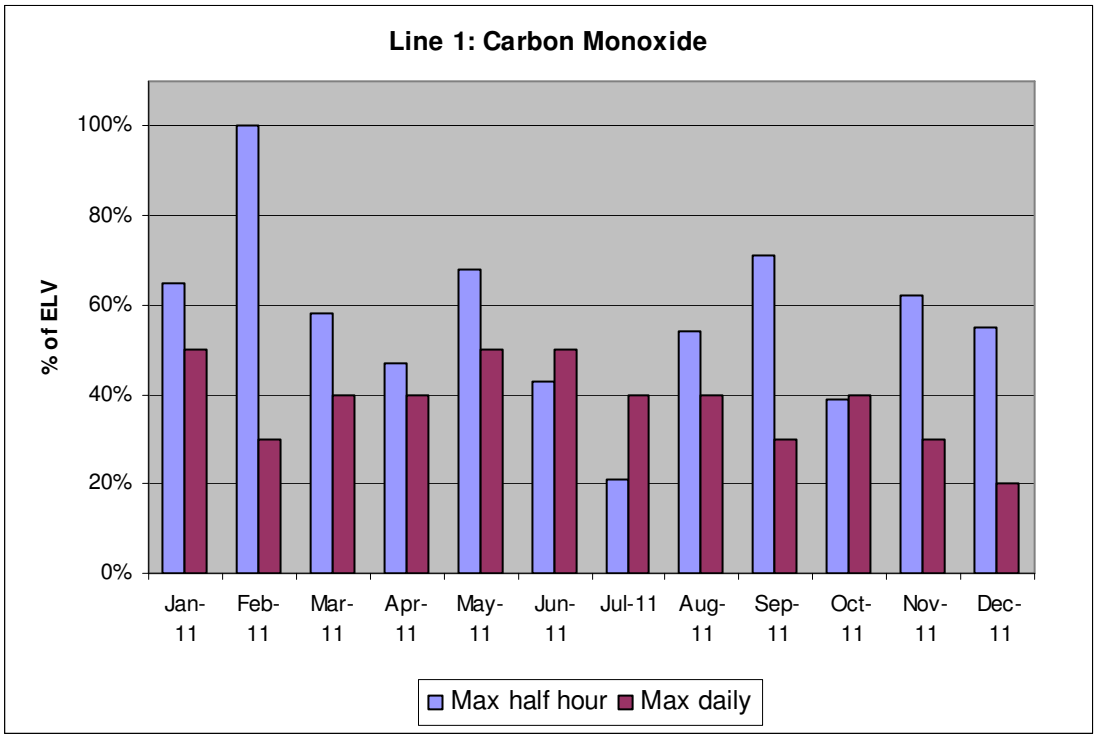

Line 2: Particulates
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% of ELV
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Max half hour
Max daily

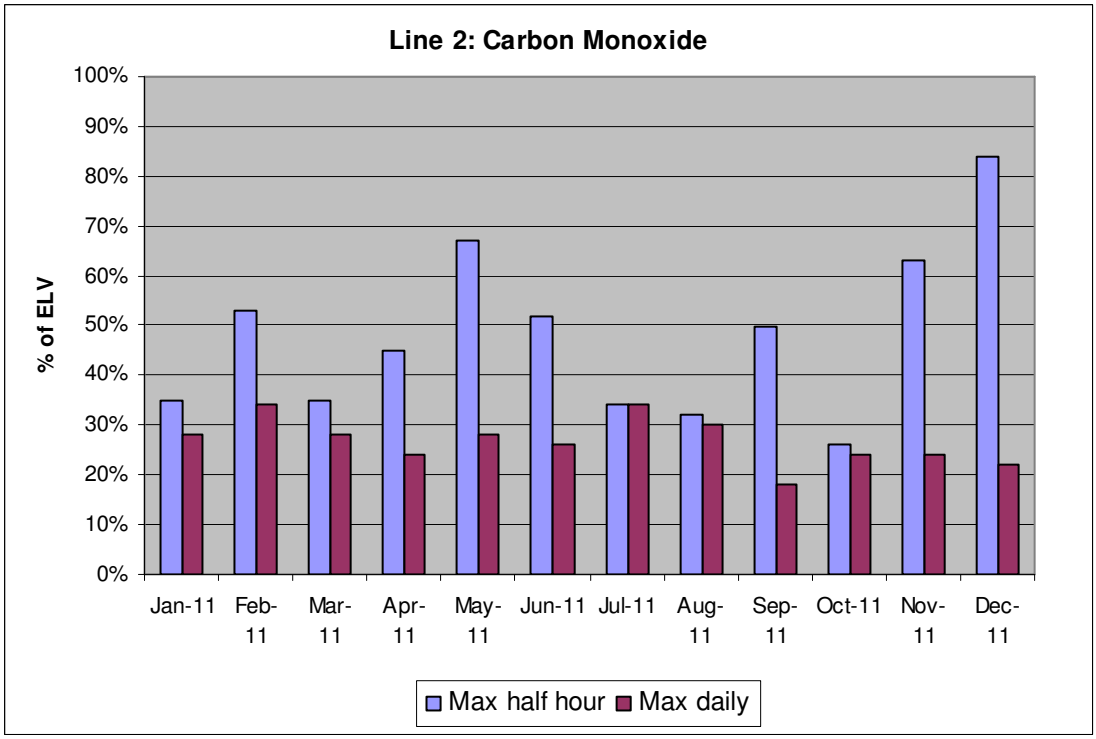

Line 1: TOC
% of ELV
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Max half hour
Max daily

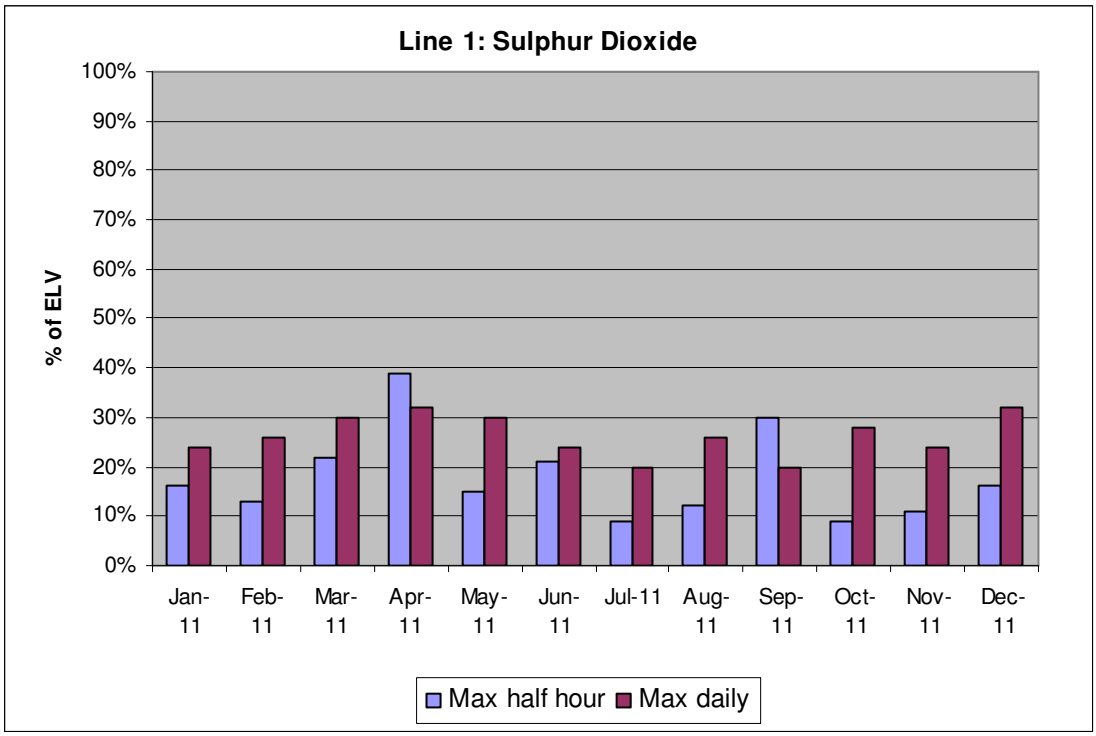

Line 2: TOC
% of ELV
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Max half hour
Max daily

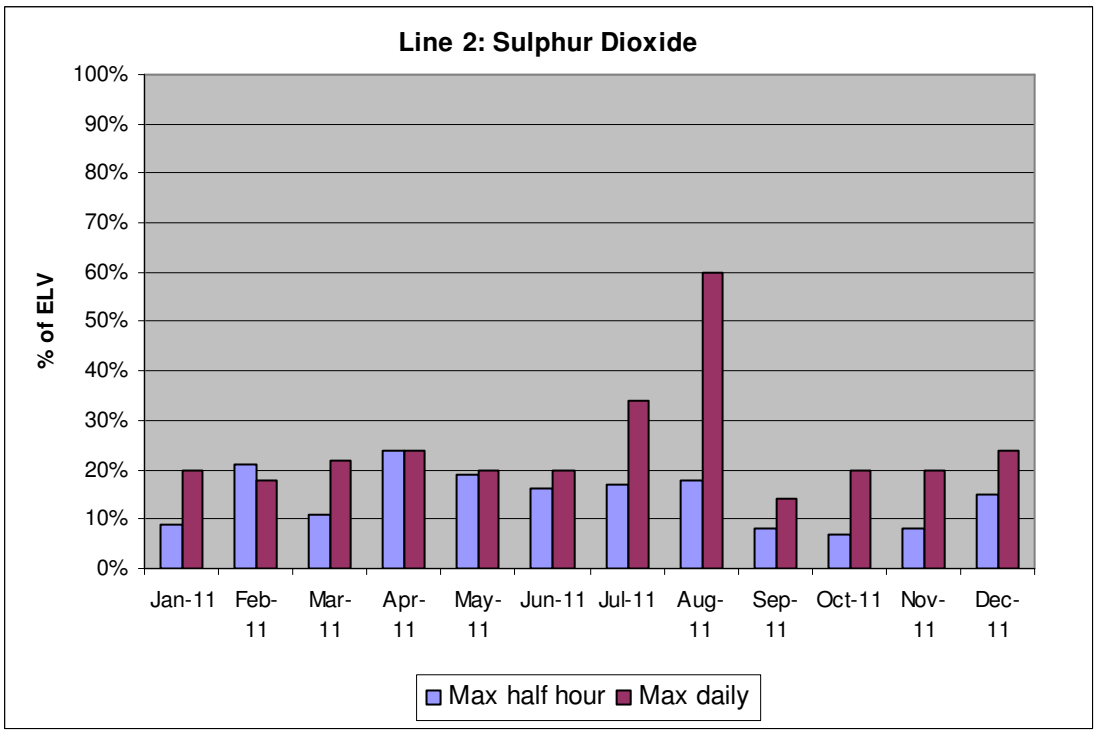

Line 1: Hydrogen Chloride
% of ELV
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Max half hour
Max daily


Line 2: Hydrogen Chloride
% of ELV
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Max half hour
Max daily


Line 1: Carbon Monoxide
% of ELV
100%
80%
60%
40%
20%
0%
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Max half hour
Max daily


Line 2: Carbon Monoxide
% of ELV
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Max half hour
Max daily


Line 1: Sulphur Dioxide
% of ELV
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Max half hour
Max daily


Line 2: Sulphur Dioxide
% of ELV
100%
90%
80%
70%
60%
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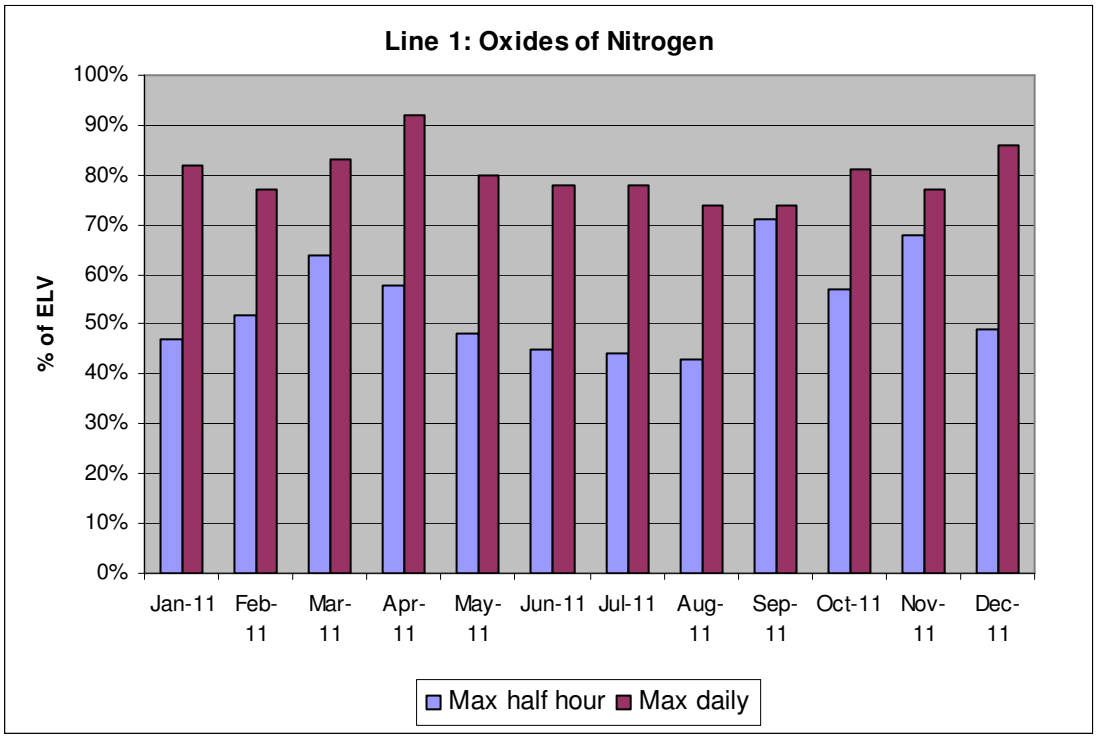
30%
20%
10%
0%
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Max half hour
Max daily


Line 1: Oxides of Nitrogen
% of ELV
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jan-11
Feb-11
Mar-11
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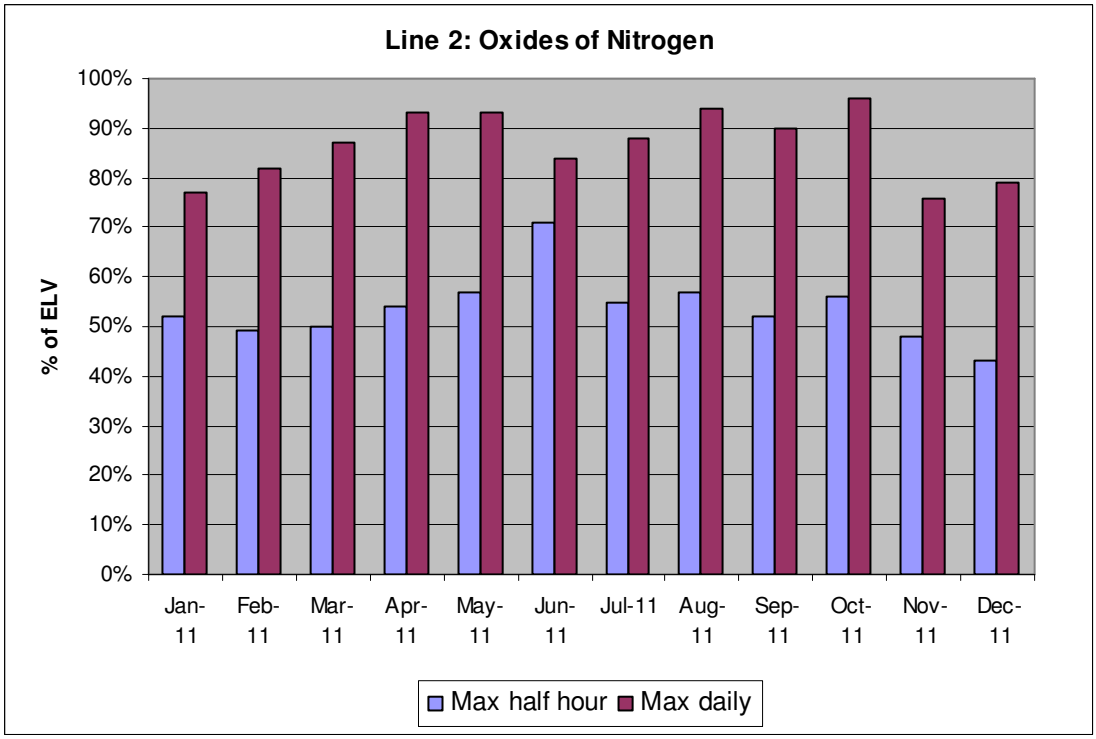
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Max half hour
Max daily


Line 2: Oxides of Nitrogen
% of ELV
100%
90%
80%
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10%
0%
Jan-11
Feb-11
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Apr-11
May-11
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Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Max half hour
Max daily