

## Annual Report for Allington Energy from Waste Facility



Permit Number: BR4551IC

Report prepared by



Kent Enviropower Ltd

Version 1

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Prepared by		Approved by
	Name Trevor Ellis	Name Paul Newton
Date:  31 <sup>st</sup> January 2017	Signature 	Signature 

## Introduction

The Allington Waste Management Facility operated by Kent Enviropower Ltd, ("KEL") comprises an Energy from Waste (EfW) facility and a transfer loading station.

KEL is a wholly owned subsidiary of Fomento de Construcciones y Contratas ("FCC").

Permit BR4551IC 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. This report is submitted in accordance with the permit and relates only to the EfW facility (the "Facility").

The Facility is located at

Laverstoke Road,  
20/20 Business Park,  
Allington, Maidstone,  
Kent.  
ME16 0LE

Grid Reference: TQ 738 578

Name of Company	Kent Enviropower Ltd
Name of Plant	Allington Waste Management Facility
Permit Number	BR 4551 IC
Address	Laverstoke Road, 20/20/ Business Park, Allington, Maidstone, Kent. ME16 0LE
Contact	Community information line
Phone	0844 736 9990 (staffed 9am to 5.30pm weekdays)
Fax	01622 697186
Web	<a href="http://www.fccenvironment.co.uk/kent-enviropower.html">www.fccenvironment.co.uk/kent-enviropower.html</a>
Position	General Manager
Further information, description of waste types burned and origin.	Municipal Solid Waste (MSW) collected from households by Kent County Council (KCC) and trade waste that is collected from industry

## Installation Description

The Installation receives non hazardous municipal and industrial waste, recovers recyclable elements for reuse and eliminates the combustible element of the residue by burning in a fluidised bed furnace. Energy is recovered from the process and converted to electricity for export to the National Grid in place of non renewable fossil fuels. The combustion gases are cleaned to meet the standards required by the Directive before discharge from a tall chimney. Ashes and other solid residues are removed from the installation.

The Installation covers the site and the entire EfW plant including all EfW lines, waste reception, storage, on-site pre-treatment facilities, water, fuel and air supply systems, boiler, facilities for the treatment of exhaust gases, on-site facilities for treatment or storage of residues and waste water, stack, devices and systems for controlling combustion operations, recording and monitoring conditions.

The Installation has a design throughput of approx 580,000 tonnes per annum with an EfW capacity approx 560,000\* tonnes per annum. The transfer loading station receives food waste and clean source separated recyclables which it reloads for onward transport and recovery. There is a single waste reception followed by three independent waste treatment lines each complete with a heat recovery boiler, acid gas abatement, bag filter and a separate flue in the chimney. The heat produced from the combustion of the waste is used to generate steam in the boilers and the steam is then combined and passed to a steam turbine which generates approx 34.5 MW of electrical energy for export to the National Grid.

**\* The facility obtained a permit variation (EPR/BR4551IC/V010) on 27th October 2016 to increase annual EFW capacity from 500,000 to 560,000 tonnes per annum.**

## Raw Materials

Waste is delivered to the plant in road vehicles which are weighed before proceeding to the tipping hall. This is a fully enclosed building with controlled airflow to reduce the likelihood of odours, dust or litter escaping the building. The municipal solid waste (MSW) is tipped into an appropriate storage bunker.

The MSW waste (black bag) is transferred by crane grab to a waste shredding line, it then moves forward through a metals extraction section where ferrous metals are removed for recycling before moving to the prepared fuel bunker.

Crane grabs in the prepared fuel bunker both mix the waste and feed the hoppers of the three lines.

## **General**

Hydrated lime for the flue gas cleaning process is delivered by bulk tanker and offloaded pneumatically into three 125m<sup>3</sup> silos vented through a reverse pulse jet filter.

Activated carbon for the flue gas cleaning process is stored in dedicated silos that are pneumatically filled from delivery trucks. There are three silos, one for each line and one common silo each equipped with filters to prevent dust emissions during filling.

Urea, dissolved in water is stored in a fully bunded tank and is injected into the furnaces as necessary to control Nox emissions.

Caustic soda for water treatment resin regeneration is delivered by bulk tanker and offloaded into a 5.5m<sup>3</sup> tank with scrubber, inside the demineralisation area.

Hydrochloric acid for water treatment resin regeneration is delivered by bulk tanker and offloaded into a 5.5m<sup>3</sup> tank vented through caustic soda scrubber in a bund outside the demineralisation area.

Various other water treatment chemicals are delivered in appropriate containers and stored in bunded areas.

Gas oil for the combustion chamber burners and on-site vehicles is stored in a fully bunded 100m<sup>3</sup> tank.

Sand for the fluidised bed furnaces is stored in 3 silos each of 55m<sup>3</sup> capacity and a further 'common' sand silo with a capacity of 71m<sup>3</sup> (approx. 80 tonnes).

Various maintenance materials (oils, greases, insulants, antifreezes, welding and fire fighting gases etc.) are stored in the appropriate manner.

## **Combustion Process**

The ROWITEC unit uses a twin interchanging fluidised bed process. The design has an inclined air distributor plate with a number of separate air supply nozzles providing differential air flows across the bed, causing a revolving action of the sand. This technique promotes rapid and uniform combustion of the waste and ensures that heavy inert and non-combustible material migrates to the sides of the bed where they can easily be removed.

An angled furnace wall above the fluidised bed zone restrains bed expansion under high fluidising air flows and so minimises particulate carry over. The elliptical patterns of air flow converge in the centre of the combustion area ensuring effective vertical and lateral turbulent mixing and high combustion efficiency and uniformity.

The material is burned above and on a bed consisting of sand, fuel and ash that is held in suspension by an upward flow of primary air that maintains the sand in suspension.

The furnace operating design is based on a thermal capacity of 53.8MW at full load and this can be achieved over a typical range of waste calorific values expected with municipal waste.

The combustion air system provides the furnace with the total air requirements for fluidisation and combustion. Primary air is supplied to the bottom of the combustion chamber and fluidises the bottom bed. This air is extracted from the tipping hall and waste storage areas and burnt in the combustion chamber.

Each furnace is equipped with two lance burners for use at start-up to heat the furnace and also during extreme reductions in waste fuel calorific value when the temperature of the furnace would otherwise fall below 850 degrees Centigrade.

Combustion control of the furnace will be achieved through a combination of furnace bed and freeboard temperature control, primary air flow control, oxygen control within the flue gas and furnace load.

Recirculated flue gas is fed to the furnace bed as a cooling medium to control the furnace bed temperature and also to assist the control of Nox by influencing the combustion temperature conditions within the furnace.

The furnace bed is managed to remove non-combustible material (bottom ash) from the bed and maintain the sand level within the optimum operating range. Bottom ashes produced in the furnace together with sand migrate down the slope of the furnace to the discharge section located at each side of the bed. The bottom ash and sand are both withdrawn from the discharge sections of the bed by water-cooled discharge screw conveyors, operating on an alternating basis. Material passing out of the screw conveyors is discharged to a vibrating screen. Material of a suitable size is returned to the sand hopper for re-use within the furnace while the oversized material is sent off site for use as a secondary aggregate.

### **Energy Recovery**

Hot gases from the furnace pass through to a boiler designed to generate steam. The boiler comprises two water tubed steam generating vertical gas passes, and a single pass horizontal section incorporating an evaporator, three stage superheater, and a plain tube economiser sections.

Steam is generated at 65 bar and a final temperature of 420°C. The high pressure steam from all three boilers feeds into a common header which in turn feeds a condensing steam turbine that generates electricity. Steam exiting the turbine is condensed in an air cooled condenser and the condensate returned to the boilers.

## Gas Cleaning

The Facility is designed to meet the requirements of the Waste Incineration Directive as a minimum for releases to air by a combination of main process design and operation and abatement equipment.

Flue gases pass from the boiler to the gas cleaning equipment. The gas passes to an electrostatic precipitator (ESP) for the separation of ash carried over from the furnace with the flue gas. Material collected in the ESP will be discharged by means of rotary valves and chain conveyors and then pneumatically fed to the residual ash silos.

Gases leaving the ESP enter the gas cleaning system. This comprises a Circulating Fluidised Bed (Circoclean) reactor and bag filter system. Gases entering the core will be at a temperature of 170°C to 230° C and come into contact with a mixture of water, hydrated lime and activated carbon that have been injected into the reactor. The reactor is designed to reduce or remove acidic pollutants such as HCl, SO<sub>2</sub> and HF by the use of the hydrated lime and dioxins and furans, PCBs, PAHs, mercury vapour and heavy metal salts such as mercury chloride by the use of the activated carbon. The injected water cools the gas and enhances the reactions and cools the gas. The control system of the CFB optimises the use of reagents by balancing the feed rate with the concentration of the pollutants entering the circoclean.

The final stage of the gas cleaning system is the bag filter unit which separates the particulate material from the flue gas. The baghouse filter consists of 4 compartments each of which contains 427 tubular filter bags. A thick porous layer of particulate builds on the bag surfaces to form a filter cake which efficiently removes ultra fine particles from the gas stream and the excess lime continues to react with the acid gases.

Bag house residue is discharged from the compartments via the integrated buffer storage by a closed pneumatic conveying system into the reaction product silos. Silos are equipped with a filter, hopper heating and fluidisation system to assist discharge. The residue is then discharged directly into road vehicles under dust free conditions for transport off site to a licensed landfill.

Nitrogen oxides (NO<sub>x</sub>) abatement is achieved by the use of both flue gas recirculation (FGR) and selective non-catalytic reduction (SNCR). The SNCR is based on the injection of urea into the furnace chambers before the boilers.

The cleaned gas then discharges to atmosphere via three 80-metre flues in a common stack both at an efflux velocity in excess of 15 ms<sup>-1</sup> at maximum throughput.



### **Ancillary Operations**

Demineralised water is required to compensate for boiler blowdown losses. A package demineralisation plant provides this water. The ion exchange resins are regenerated using sodium hydroxide and hydrochloric acid and the regeneration effluent is routed through a neutralisation tank to the collection pit for reuse where possible.

### **Ash Handling**

Bottom ash, the combined boiler and ESP ash and the flue gas treatment residue (FGT) from the bag filter system, are each sent for disposal off site by licensed contractors subject to environmental permitting and waste legislation. The bottom ash is subject to ferrous and non ferrous metals extraction by the contractors before reuse. All operations are subject to waste legislation regulated by the Environment Agency. At least quarterly sampling of the bottom ash is being carried out to ensure effective burn out is being achieved by testing for the "loss on ignition" of the residual ash. All other solid waste residues arising from the operation of the process will be removed from site, in enclosed containers, for disposal by suitably licensed contractors.

### **Liquid Effluent and Site Drainage**

Uncontaminated surface water from roads and parking area within the process is discharged to sewer or to the conservation area on site.

### **Emissions Monitoring**

Emissions from the stack are continuously monitored for: particulate, carbon monoxide (CO), ammonia (NH<sub>3</sub>), sulphur dioxide (SO<sub>2</sub>), hydrogen chloride (HCl), oxygen (O<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC). In addition periodic sampling and measurement will be carried out for metals; cadmium (Cd), thallium (Tl), mercury (Hg), antimony (Sb), arsenic (As), lead (Pb), chromium (Cr), cobalt (Co), copper (Cu), manganese (Mn), nickel (Ni), vanadium (V), dioxins and furans, dioxin like PCBs, hydrogen fluoride (HF) and nitrous oxide (N<sub>2</sub>O). Periodic measurements will be carried out four times in the first year and thereafter either at the same frequency or twice per year dependant on the substances.



## **Public Liaison**

The Installation has an active liaison group involving representatives from the following stakeholders:

- Environment Agency
- 10 Local Residents
- Councilors Thomason and Hammond (TMBC members)
- Councilors Robertson, Harwood and Daley (MBC members). Cllr Daley is also a member of KCC.
- Councilors Homewood and Bird (KCC members)
- Maidstone Borough Council Environmental Health, Wilcock
- Councilors Walker and Balcombe (Aylesford Parish Council)
- Tonbridge & Malling & Maidstone Borough Council Environmental Health
- Kent County Council Waste Management
- Kent Enviropower

The liaison group currently meets approx every 16 weeks. For further information please contact:

- Brian White (Chairman) - Email: [drbdwhite@yahoo.co.uk](mailto:drbdwhite@yahoo.co.uk)

### Annual Waste Throughputs

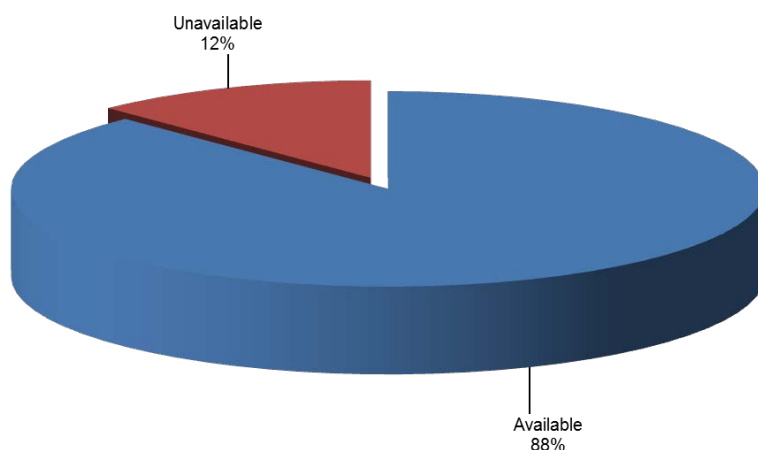
Waste Type	EWC code	Tonnes in
Municipal waste from KCC (door step collections)	20-03-01	330,381
Municipal waste from trade & commercial collections	20-03-01	183,073
Recyclates (transfer)	20-03-01	15,535
Food Waste (transfer)	20-01-08	4,048

### Total Plant Operational Hours

The Facility has a computerised maintenance management system which allows the planning of scheduled maintenance activities and the monitoring of performance levels which assists in predicting operational issues. This coupled with operational experience maximises the availability of the plant. On occasions part of the Facility may be brought offline for further investigation or maintenance.

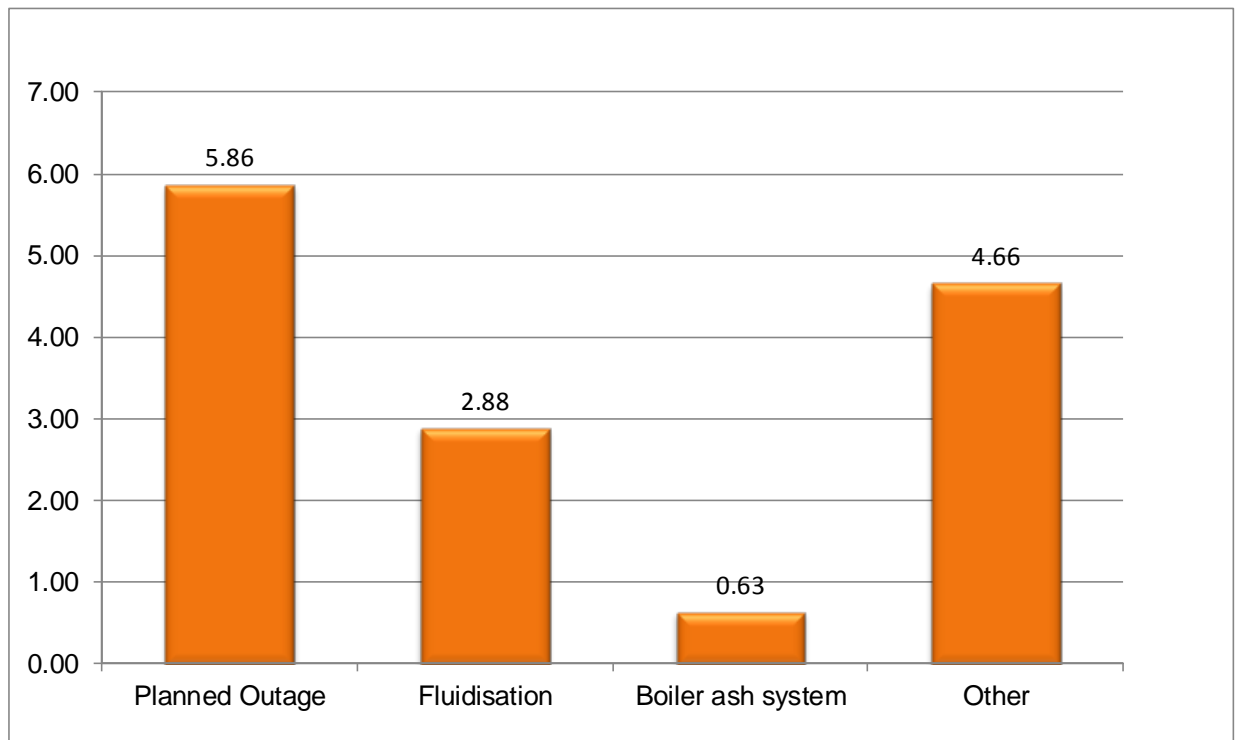
### Total plant availability

In total the three lines operated for 23,109 hours giving an overall availability of 88% for the reporting period.



### Lost Time

The analysis of lost time (% against running time) for the plant is broken down into various categories.

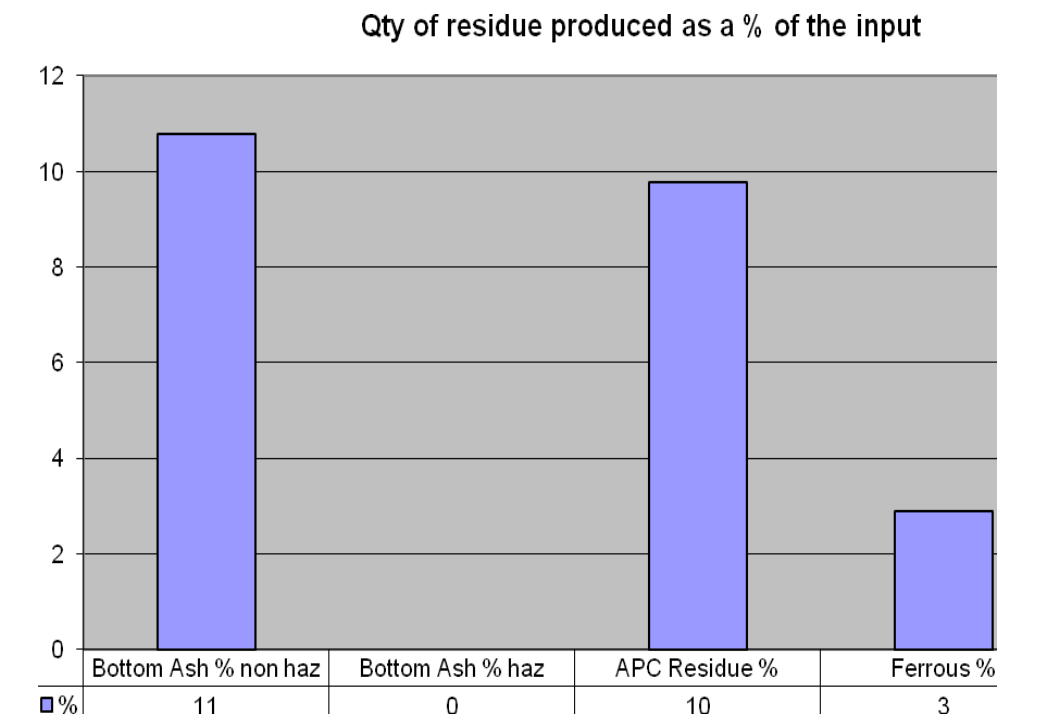


The largest lost time (5.86%) was due to planned outages that are necessary shutdowns to ensure maintenance and detailed inspections are carried out

The second largest single cause of lost time (2.88%) was due to loss of fluidisation that then required the Rowitec furnaces to undergo bed cleaning.

The third largest lost time (0.63%) was due to boiler ash system unplanned maintenance.

### Residues Produced



The plant produces three types of residue; (see above):-

- Bottom Ash – primarily an inert material left over from the combustion process. This material is currently sent to a local recycling facility where it is sorted into separate size fractions and used primarily as road aggregates. This saves on virgin materials which would otherwise be used. This material is subject to analysis and all material produced in 2016 was considered to meet the requirements for non hazardous ash.
- Air Pollution Control Residue – A mixture of lime and other particles that have been captured by the Electrostatic precipitator and Flue Gas Treatment Facility. This material is sent to a treatment facility where it is treated with water before final disposal in a suitable licensed landfill site. For the first time a % of the APC residue has been used in building materials.
- Ferrous – the ferrous metal collected post shredding is sent to a local recycling facility.

### Electricity Inputs & Outputs

The heat produced from the combustion process is used to generate steam in the boilers. The steam is then passed to a steam turbine which generates electrical energy for export to the National Grid reducing reliance on non renewable fossil fuels. The Facility also produces electricity to run the plant independently from the National Grid. This report identifies both electricity imported and exported from the Facility as follows:-

Electricity	MWhr
Imported	3,031
Exported	227,791
Total number of houses this would provide electricity for = 46,488*	
*Calculation based on the renewable energy association. <a href="http://www.r-e-a.net/resources/facts-and-figures">http://www.r-e-a.net/resources/facts-and-figures</a> Calculated as exported divided by 4.9	

## Summary of plant monitoring

The monitoring requirements are set out in Section 6 of the permit.

The Facility is required to carry out both continuous monitoring as well as extractive tests bi annually. In addition to this the Environment Agency may carry out a full suite of tests during a year. The tests are unannounced i.e. Environment Agency attendance is without prior warning.

## **Substances Measured**

Substances Measured	Continuously	Periodically
Particulates	✓	✓
Total Organic carbon (TOC)	✓	✓
Hydrogen Chloride (HCL)	✓	✓
Carbon Monoxide (CO)	✓	✓
Sulphur dioxide (SO2)	✓	✓
Oxides of Nitrogen (NOX)	✓	✓
Ammonia (NH3)	✓	✓
Nitrous Oxide (N2O)		✓
Hydrogen Fluoride		✓
Cadmium and Thallium		✓
Mercury		✓
Metals		✓
Dioxins (PCCD) and Furans (PCDF's)		✓
Dioxin Like PCBs.		✓
Polycyclic aromatic hydrocarbons (PAH's)		✓

## Control of Emissions

The control of 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 urea solution. The control system reacts to the changing parameters within the boiler exactly controlling the levels of NOx and minimising the formation of ammonia slip.
- The particulates or dust are captured by the electrostatic precipitator and the bag filters which are highly effective capturing around 99.9% of the particles generated from the process.

## Emissions Limit Values (ELV's)

		Half Hour Average	Daily Average	10 minute average	Abnormal Operation
Dust	Particulate	30	10		150 (half hr avg)
TOC	Total Organic Carbon	10*	10		20 (half hr avg)
HCL	Hydrogen Chloride	60	10		
CO	Carbon Monoxide	N/A	50	150**	150** (10 min avg)
SO2	Sulphur Dioxide	200	50		
NOX	Oxides of nitrogen	400	200		
NH3	Ammonia	20	10		

\* 97% of all half hour averages in a rolling year will be calculated from the effective operating time, which does not include periods of start-up, shut-down or abnormal operation.

\*\* 95% of all measurements in a calendar day to be reported. which does not include periods of start-up, shut-down or abnormal operation. Any 24 hour period is to be calculated from midnight to midnight. Example: a full day has 144 ten minutes meaning if the plant has 144 valid 10 mins then 95% of this is 7 exceedances that would not need to be reported.

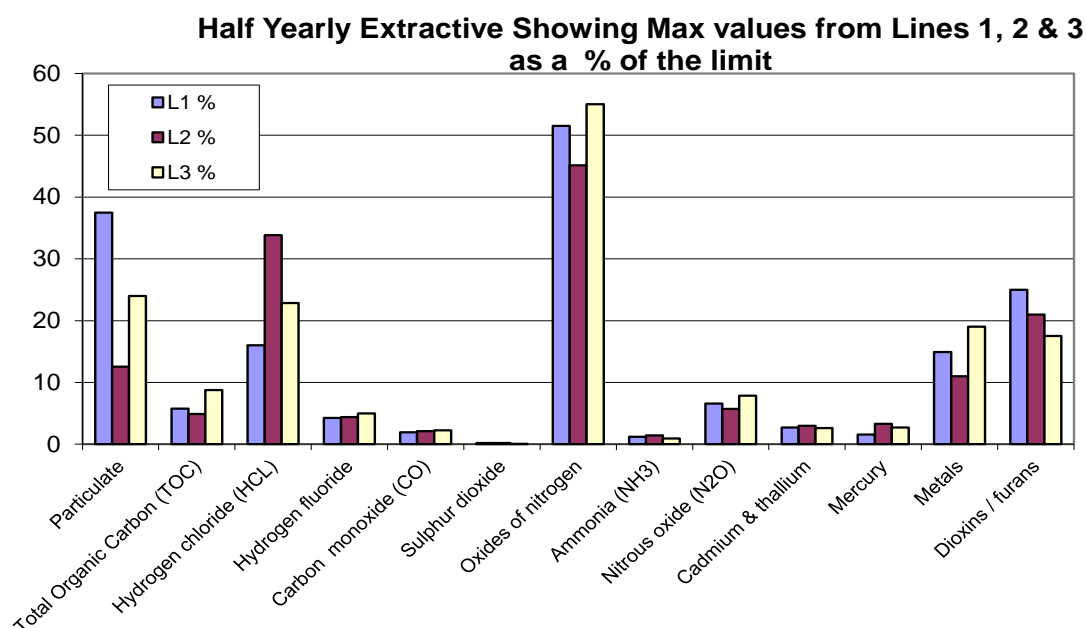
## Emissions of periodically monitored substances

### Emissions to Air

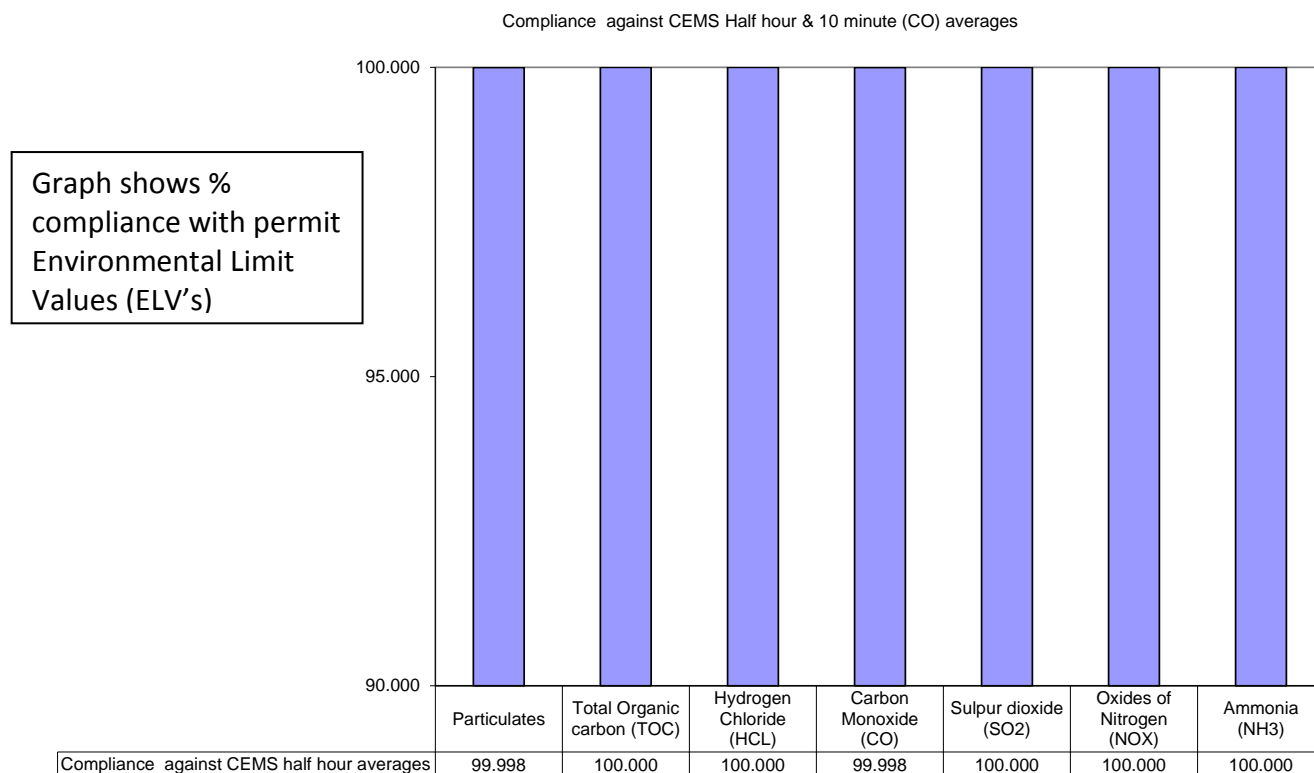
Within the permit there is an obligation to carry out extractive tests on the substances emitted from the stack. These tests act as a comparison for the CEMS equipment. The extractive tests are carried out bi annually. The results from the tests are included in a bi annual report to the Environment Agency.



## Summary of Plant Compliance



## Compliance with Emissions to Air



### Heat Emissions

A local company is progressing with approval for a project to take both electricity and rejected steam from the Allington facility to provide power to their facility and possibly in the future consider using the rejected steam to cool their facility through absorption chillers. The initial power wiring has been completed at the Allington facility and awaits further approval to continue with the project.

### Fugitive Emissions

Following a review of fugitive emissions from storage areas a significant project commenced in 2016 and will continue into 2017 to replace all of the ash system pipework that will result in significant improvements and reduce the risk of leaks.

### Summary of plant improvements

#### Progress against 2016 improvement plan:-

Implementation of BS 50001- Energy Management System	Completed - FCC UK has achieved accreditation to this standard – The Allington facility will be audited 2018.
Waste segregation (site generated waste) review existing facilities and determine if further improvement is reqd.	Completed - The dividers have been purchased and installed.
Bottom ash - review current storage and implement possible fugitive emissions improvements.	Completed - Major pipework replacement project underway in late 2016 through to early 2017 – this will then be subject to a further review to determine any further improvements necessary.
Ash leaks – review ash leaks to atmosphere and reduce the number experienced.	Completed – As above, £800,000 spend on new pipework and new pipework installation currently in progress.
Continue to reduce the amount of diesel oil used in the process	Complete - 30% reduction in oil usage during the first 6 months in comparison with 2015
Install automatic lighting control for low risk fluorescent areas	In progress - 2nd half of the year
Review possibility of exporting power to local business including electricity and steam.	See above
Encourage Environment near miss reporting onto the Safeguard reporting system.	This is in place but will be formally added to our computerised system in 2017

## Summary of plant improvements

The Installation's 2017 environmental improvement plan is as follows:-

Targets
Introduce Environmental Installation checks to continue to encourage proactive permit compliance
Abnormal operation new definition to be reviewed and agreed with the EA
Continue to improve our current CAR score following a very successful 2016
Project – Continue to install full redundancy for our CEM system
Commence compliance legal audits to ensure continued and continual improvement required by environment legal requirements
BS 50001- Energy Management System – internal training of personnel to commence
Continue to reduce the amount of diesel oil used in the process
Continue with the project to Install automatic lighting control for low risk fluorescent areas
Install inverters to the smaller variable torque electrical drives
Environment near miss – needs to be formalised onto the companies computerised system

**Summary of information made available**

General information about Kent Enviropower Ltd and Fomento de Construcciones y Contratas can be found at

<http://www.fccenvironment.co.uk/kent-enviropower.html>

and

[www.fccenvironment.co.uk](http://www.fccenvironment.co.uk)

alternatively written enquiries can be sent to the following address:

Kent Enviropower Ltd,  
Laverstoke Road,  
20/20 Business Park,  
Allington, Maidstone,  
Kent.  
ME16 0LE

For telephone enquiries please phone 0844 736 9990 (staffed 9am to 5.30pm weekdays).

Information held on the public register can be found at:

**Environment Agency.**

Orchard House,  
Endeavour Park,  
London Road,  
Addington,  
West Malling,  
Kent.  
ME19 5SH

Tel: 08708 506 506

# Reporting of Waste Disposal and Recovery for the year 2016

Permit Reference Number: BR4551

Operator: Kent Enviropower Ltd

Installation: Allington Quarry

Form Number: Agency Form / BR4551 / R1 / Form Dated 12 January 2006.

Waste Description	Disposal Route	Tonnes	Recovery Tonnes
1) Hazardous Wastes			
APC residues	Recycle	12,478.76	12,478.76
	Landfill	39,453.88	
Other haz wastes (bottom ash)	Landfill	0	0
Total hazardous waste		51,932.64	0
2) Non-Hazardous Wastes			
Bottom Ash	Recycle	56,337.50	56,337.50
Dirty Ferrous	Recycle	15,280.12	15,280.12
	Landfill	432.88	
MRF Materials	Transfer	15,534.72	15,534.72
Other non-haz wastes (food waste)	Transfer	4,047.62	4,047.62
Reject MSW to landfill	Transfer	56.14	
Bypass MSW to landfill	Transfer	846.2	
Linings & refractory to landfill	Transfer	159.18	
Mixed Metal	Transfer	99.72	
Total non-hazardous waste		92,794.08	
TOTAL WASTE	-	144,726.72	103,678.72

Year	Parameter	Total Waste	Waste per unit output
Total Haz 2006	APC Residue	6939	
Total Haz 2007	APC Residue	23184	
Total Haz 2008	APC Residue	15619	
Total Haz 2009	APC Residue	41303	
Total Haz 2010	APC Residue	34301	
Total Haz 2011	APC Residue	40848	
Total Haz 2012	APC Residue	40,741	
Total Haz 2013	APC Residue & IBA	59,855	
Total Haz 2014	APC Residue	48,989	
Total Haz 2015	APC Residue	51,740	
Total Haz 2016	APC Residue	51,933	
Total Non Haz 2006	Bottom Ash & MRF	20365	
Total Non Haz 2007	Bottom Ash & MRF	39487	
Total Non Haz 2008	Bottom Ash & MRF	34127	
Total Non Haz 2009	Bottom Ash & MRF	64560	
Total Non Haz 2010	Bottom Ash & MRF	67092	
Total Non Haz 2011	Bottom Ash & MRF	73083	
Total Non Haz 2012	Bottom Ash & MRF	85,550	
Total Non Haz 2013	Bottom Ash & MRF	62,288	
Total Non Haz 2014	Bottom Ash & MRF	89,819	
Total Non Haz 2015	Bottom Ash & MRF	92,132	
Total Non Haz 2016	Bottom Ash & MRF	92,794	

Reporting of Water Usage for the year 2016

Permit Reference Number: BR4551

Operator: Kent Enviropower Ltd

Installation: Allington Quarry

Form Number: Agency Form / BR4551 / WU1 / Form Dated 12 January 2006.

Water Source	Usage (m <sup>3</sup> )	Specific Usage (m <sup>3</sup> /t)
Mains water	156,225	N/A
Site borehole	N/A	N/A
River abstraction	N/A	N/A
TOTAL WATER USAGE	156,225	

Trends in Water Usage			
Year	Parameter		
	Named Water source	Total Water usage	Water per unit output
2011	Mains	116,563	
2012	Mains	158,806	
2013	Mains	224,751	
2014	Mains	142,568	
2015	Mains	164,472	
2016	Mains	156,225	

Operator's comments :

# Reporting of Energy Usage for the year 2016

Permit Reference Number: BR4551

Operator: Kent Enviropower Ltd

Installation: Allington Quarry

Form Number: Agency Form / BR4551 / E1 / Form Dated 12 January 2006.

Energy Source	Energy Usage		
	Quantity	Primary Energy (MWh)	CO <sub>2</sub> Produced (tonnes)
Electricity	MWh	3,031	1,241
Gas/Fuel Oil	tonnes	17,152	4,594
Recovered Fuel Oil	tonnes	N/A	N/A

Trends in Energy Usage				
Year	Parameter	Energy	CO <sub>2</sub> produced	CO <sub>2</sub> per unit output
	Primary usage			
2011	81,575		26,604	
2012	39,833		11,728	
2013	46,360		12,599	
2014	49,225		14,451	
2015	23,179		6,363	
2016	20183		5,835	

## Operator's comments :

CO2 based on Carbon Trust conversion of 0.40957 KgCO<sub>2</sub>/Kwh for Electricity and 0.26782 KgCO<sub>2</sub>/Kwh for gas/fuel oil

Gas/Fuel oil conversion from Ltrs used (1,666,480) to tonnes based on density 885 Kg/m<sup>3</sup>

[www.thecalculatorsite.com/conversions/common/liters-to-metric-tons.php](http://www.thecalculatorsite.com/conversions/common/liters-to-metric-tons.php) & then converted from tonnes to MWh [DEFRA Carbon Factors](#)



Reporting of Performance Indicators for the period Jan 2013 to Dec 2015

Permit Reference Number: BR4551

Operator: Kent Enviropower Ltd

Installation: Allington Quarry Form Number: Agency Form / BR4551 / PI1 / Form Dated 12 January 2006.

<b>Annual Production/Treatment</b>		
Total waste incinerated	<b>500,117</b>	Tonnes

### Environmental Performance Indicators

Parameter	Quarterly Average	Units
Supplementary Fuel Oil	416,620	litres
Mass of bottom ash produced	14,084	Tonnes
Mass of boiler, FGT & ESP Ash.	12,983	Tonnes
Mass of other solid residues	0	Tonnes
Mass of carbon used	56.5	Tonnes
Mass of lime used	1050.5	Tonnes
Mass of urea used	26.5	Tonnes
Potable Water Use	39056	M3
Waste Hazard Score	N/A	
Waste Disposal Score	N/A	

Trends in Environmental Performance		
Year	Parameter	

Operator's comments :