

Annual performance report for: FCC Environment (Lincolnshire) Limited: Lincolnshire Energy from Waste Facility.

Permit Number: EPR/FP3739FS

Year: 2018

This report is required under the Industrial Emissions Directive's Article 55(2) requirements on reporting and public information on waste incineration plants and co-incineration plants, which require the operator to produce an annual report on the functioning and monitoring of the plant and make it available to the public.

1. Introduction

Name and address of plant	Lincolnshire Energy from Waste Facility Paving Way Off Whisby Road North Hykeham Lincoln Lincolnshire LN6 3QW
Description of waste input	Residual domestic and commercial & industrial waste.
Operator contact details if members of the public have any questions	01522 814315 info@fccenvironment.co.uk

2. Plant description

The EFW facility has a total capacity of approximately 49.7 MW (thermal input) and is capable of generating up to 13.1 MWe of electrical power, the majority of which is exported to the National Grid. Provision has been made to supply additional heat in the form of up to 10 MWth when a commercial scheme becomes available to take the heat.

The facility consists of one incinerator line with a total annual permitted capacity of 190,000 tonnes per year.

Waste material burned at the facility is residual municipal solid waste (i.e. waste that has had recyclable and re-usable materials source segregated) and commercial and industrial (C&I) waste derived from residential, commercial and industrial sources. All waste material for processing received at the facility is non-hazardous.

Waste material arrives by road and is weighed before proceeding into the tipping hall where it is tipped into the waste bunker of sufficient capacity to hold several days waste inputs.

Moving grate technology is used for burning the waste material. The furnace design ensures that a temperature of at least 850°C for a period of at least two seconds is achieved in the combustion chamber. To ensure that the temperature does not fall below 850°C auxiliary burners firing fuel oil are automatically triggered by online process monitoring equipment.

Hot gases from the furnace pass into a boiler. Steam raised in the boiler is passed to a turbine to generate electricity. Combustion gases are cleaned before they are released to atmosphere. There are four components to the gas cleaning abatement technique;

- Selective Non-Catalytic Reduction (SNCR) involving the injection of ammonia into the combustion chamber above the flame providing for the abatement of nitrogen oxides.
- Dry hydrated lime re-agent injected to neutralise acid gas compounds.
- Activated carbon injected to absorb heavy metals, dioxins and furans.
- Bag filtration to remove fine particulates. The residues of the bag filters are collected and directed to a residues silo. Part of the residues are recycled to the reagent injection points to ensure maximum usage of the lime content.

Cleaned flue gases exiting the abatement system of the incinerator line are discharged through the 75m tall stack. Gases are continuously monitored for particulate matter, oxides of nitrogen, sulphur dioxide, carbon monoxide, total organic carbon, hydrogen chloride and ammonia. Monitoring for heavy metals, dioxins, nitrous oxide and hydrogen fluoride is carried out periodically.

Under normal circumstances there are no liquid effluent emissions from the incinerator. Water arising from boiler blowdown and water treatment backwash is recycled to the Incinerator Bottom Ash (IBA) quench. Water surplus to the requirements of quenching is discharged to the sewerage system.

All plant areas are surfaced to the appropriate standards for the activities within those areas. All liquid tanks and drums whose emissions to water or land could cause pollution, are contained in adequate bunding constructed in line with industry best practice standards and sized to contain 110% of the contents of the largest tank or 25% of the total tonnage within the bund; whichever is the larger. Materials used for surfacing of process areas and bunds are resistant to the materials they may come into contact with.

There are no direct discharges to groundwater from the facility.

Odour problems are not expected from the facility. Any potential odours from storage of the waste materials are extracted from above the waste bunker and used as combustion air within the furnace, thereby destroying any potentially odorous compounds.

The solid residues produced by the EFW facility are Incinerator Bottom Ash (IBA) and Air Pollution Control (APC) residues. APC residues are hazardous and sent for treatment before landfill disposal. IBA is sent for separation and recycling of the metal content; with the remaining ash being used as a substitute aggregate.

3. Summary of Plant Operation

Municipal waste received	168,990.4 tonnes
Commercial and industrial waste received	1,910.82 tonnes
Hazardous waste received	4.5 tonnes
Clinical waste received	4.5 tonnes

Total waste received	170,901.18 tonnes
Total plant operational hours	8,099 hours
Total hours of “abnormal operation” (see permit for definition)	0.5 hours
Total quantity of incinerator bottom ash (IBA) produced	38281.86 tonnes
Disposal or recovery route for IBA	Recovery
Did any batches of IBA test as hazardous? If yes, state quantity	None
Total quantity of air pollution control (APC) residues produced	4,016.18 tonnes
Disposal or recovery route for APC residues	Disposal
Total electricity generated for export to the National Grid	91,537 MWh

4. Summary of Plant Emissions

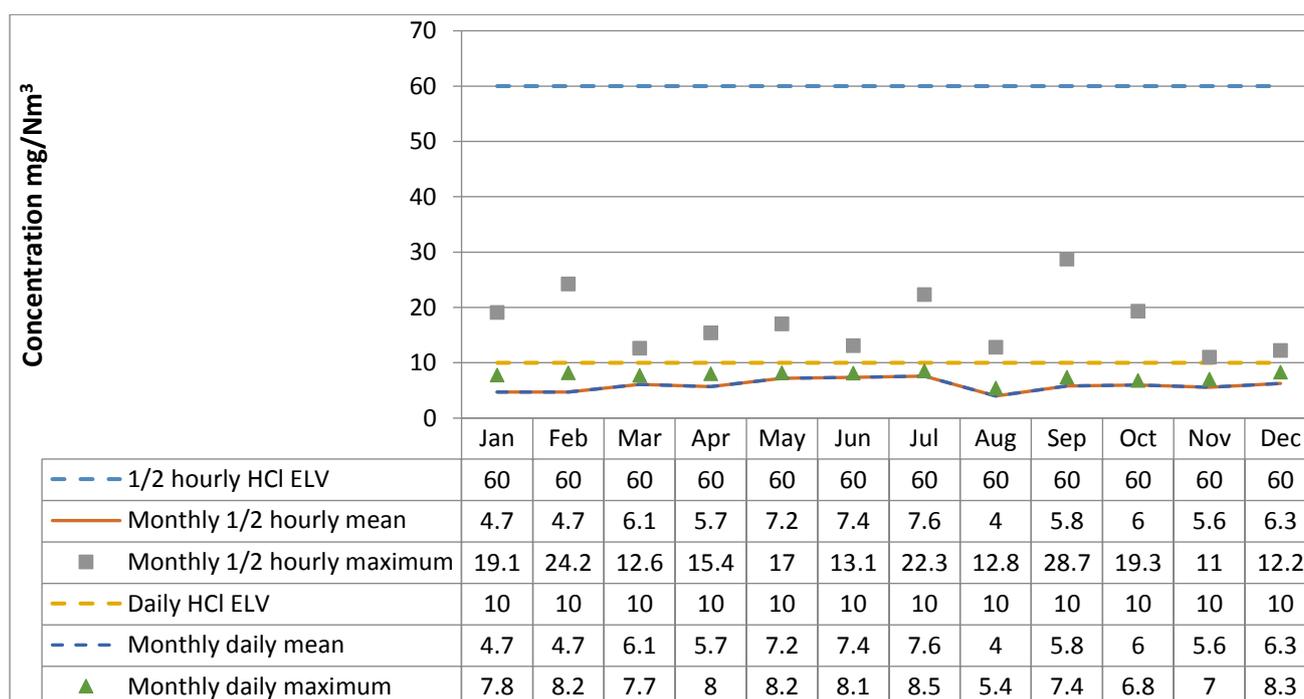
4.1 Summary of continuous emissions monitoring results for emissions to air

The following charts show the performance of the plant against its emission limit values (ELVs) for substances that are continuously monitored.

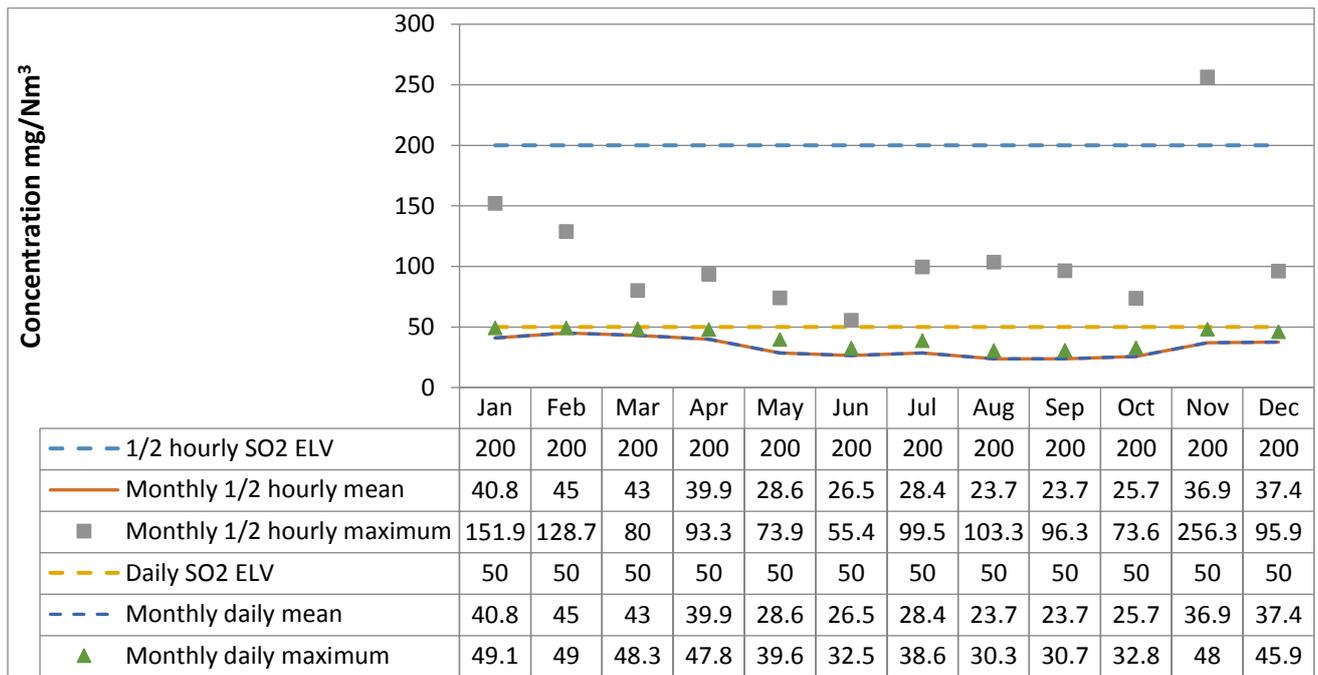


Monthly emissions summary incl half-hou

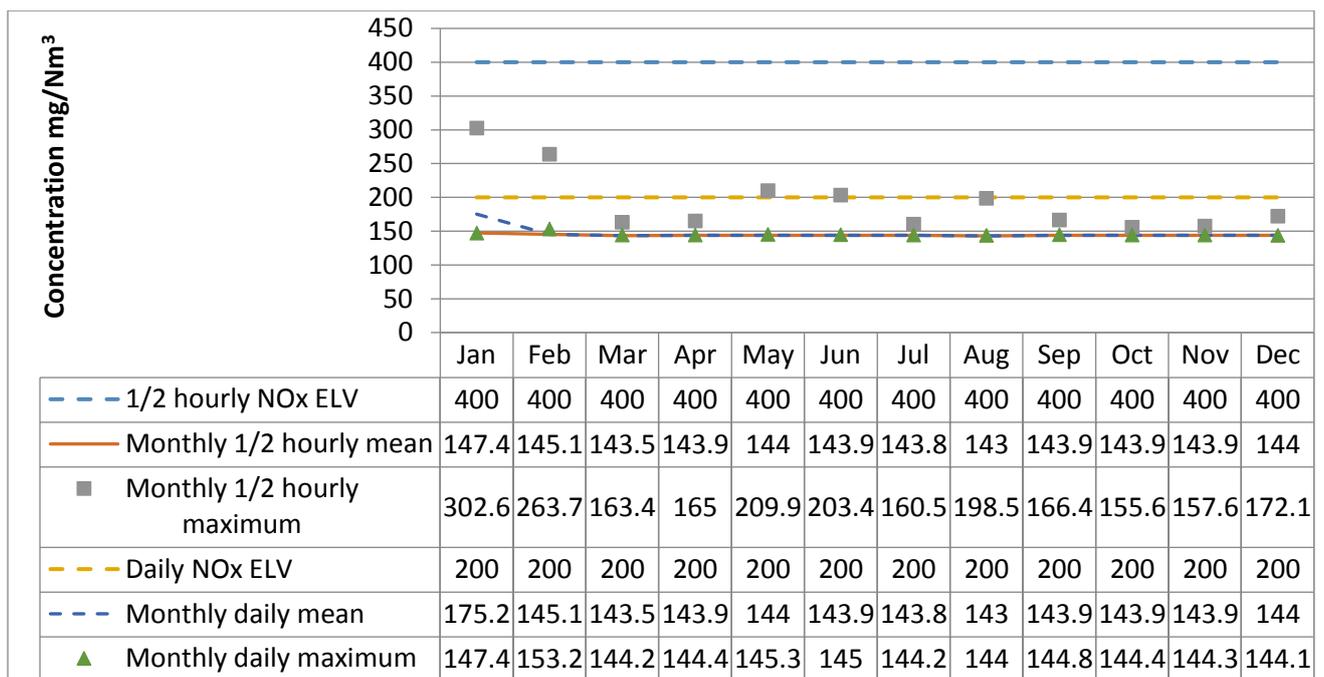
Line 1 - Hydrogen chloride



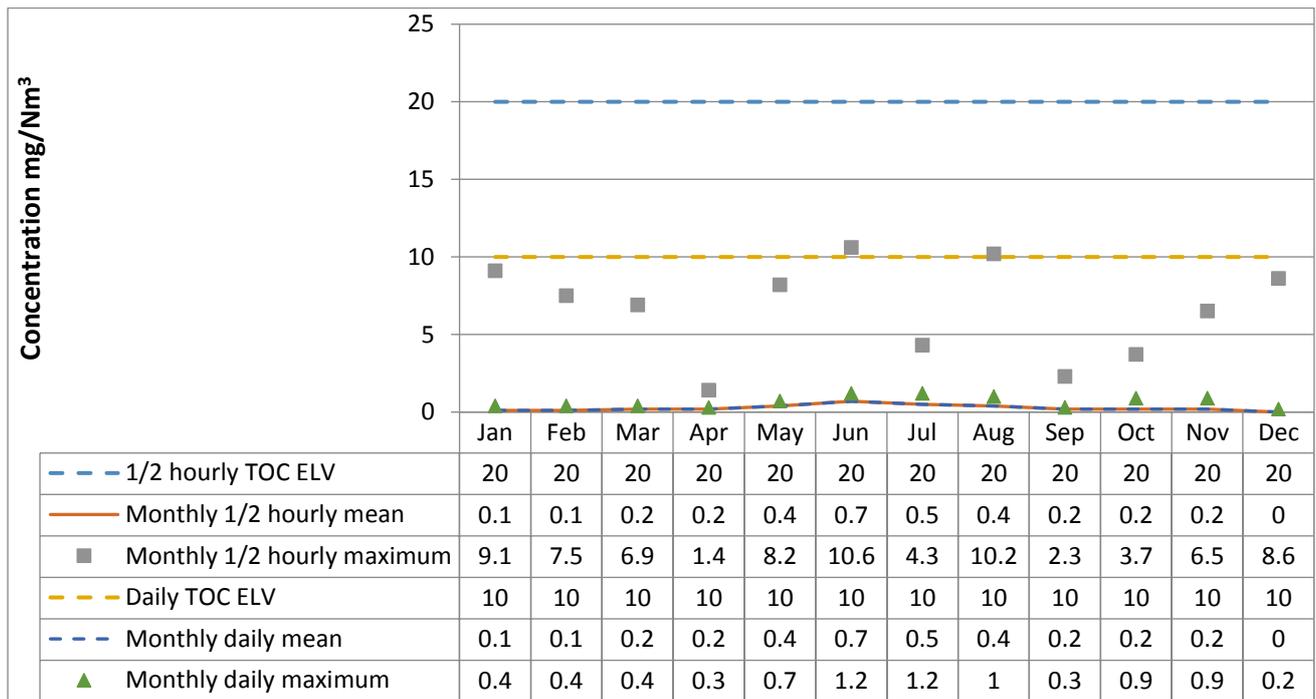
Line 1 – Sulphur dioxide



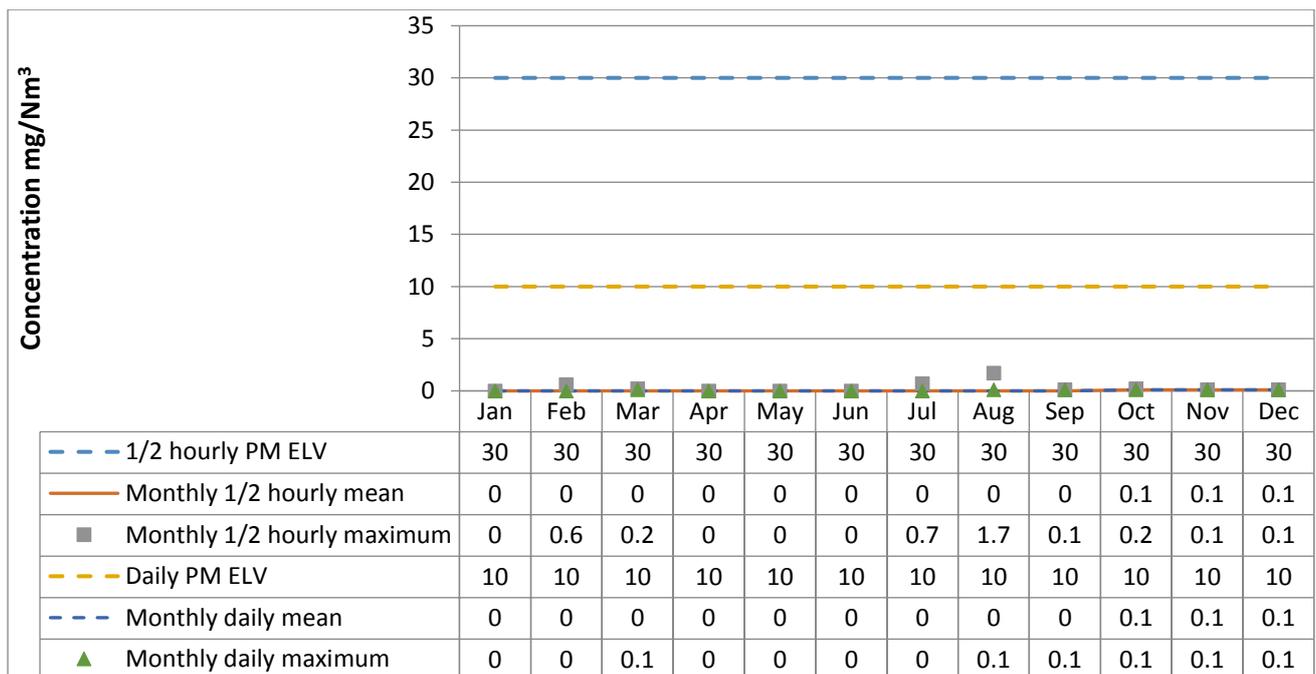
Line 1 – Oxides of nitrogen



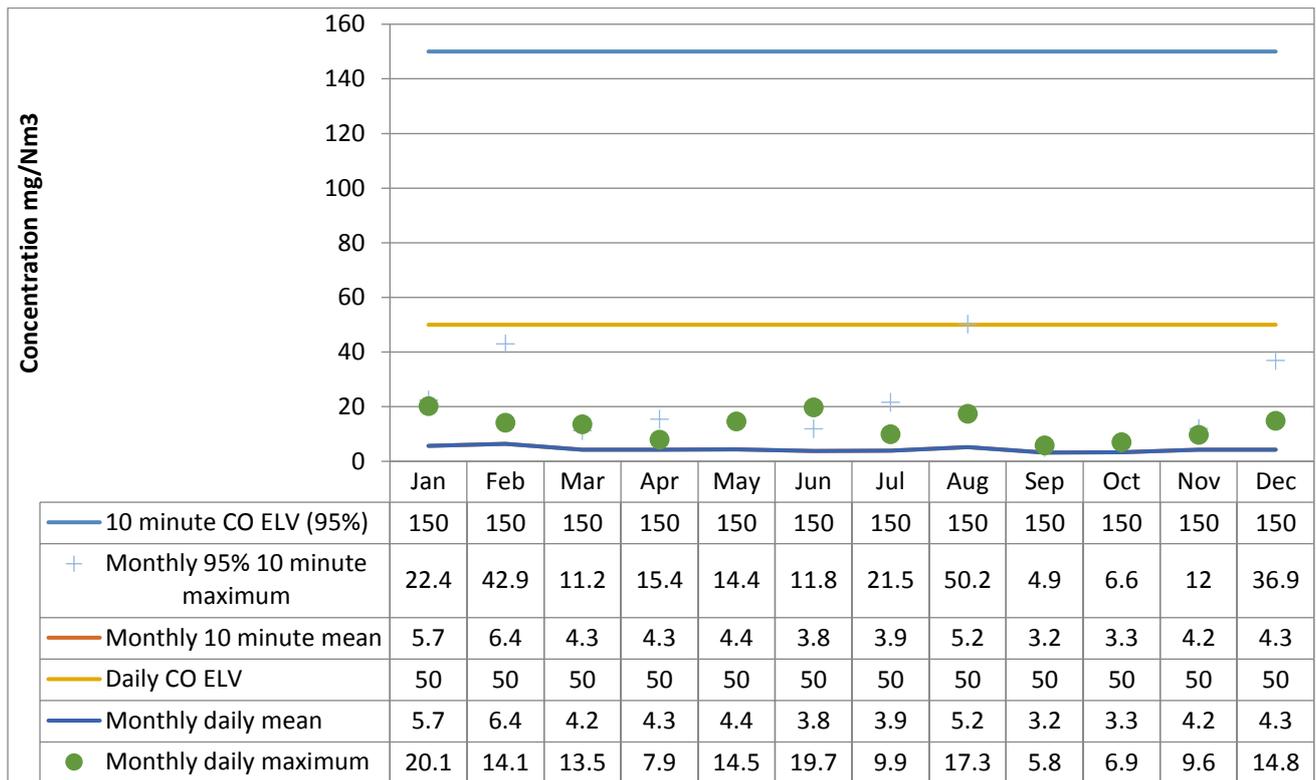
Line 1 – Total organic carbon



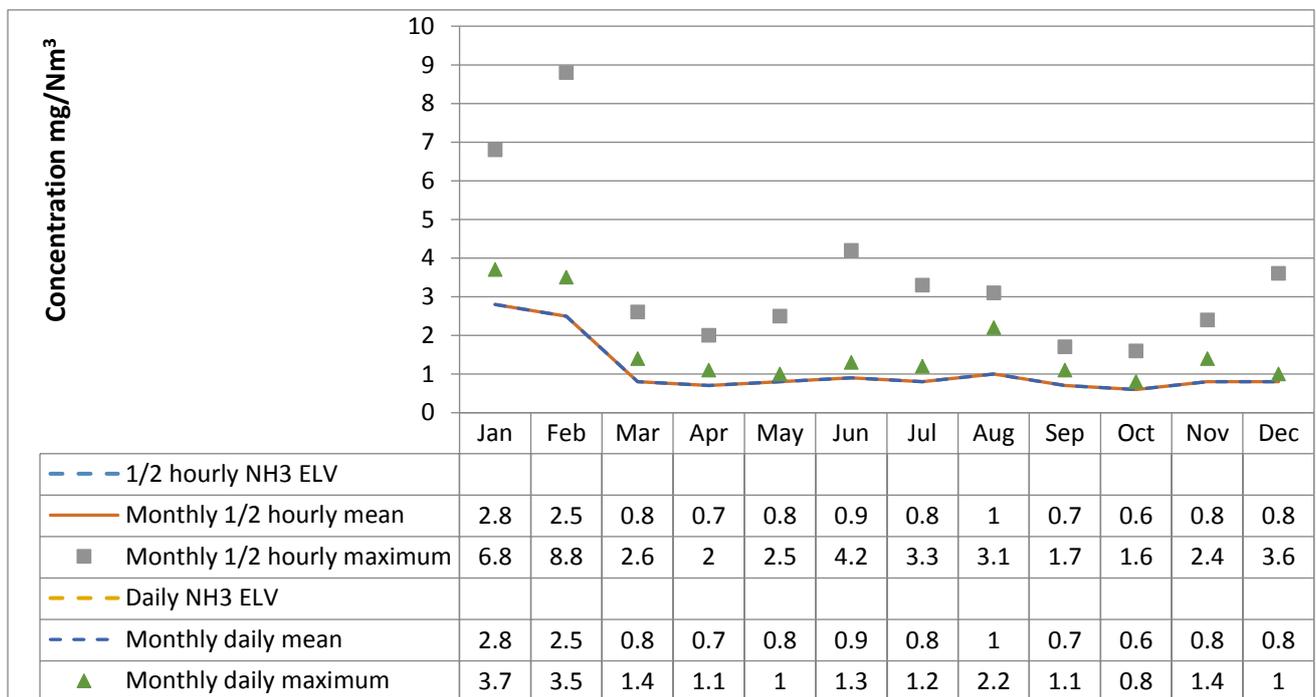
Line 1 – Particulates



Line 1 – Carbon monoxide



Line 1 – Ammonia



NB.

1. Abnormal operation for half hourly result for SO₂
2. No ELV applies for Ammonia; however the permit requires it to be monitored
3. CO 10 minute values require 95% compliance against the 150mg/m³ limit; thus some values may be higher while compliance is maintained.
4. Values are rounded to 1 decimal place.

4.2 Summary of periodic monitoring results for emissions to air

The table below shows the results of periodically monitored substances.

Substance	Emission limit value	Results	
		03/2018	11/2018
Mercury and its compounds	0.05 mg/m ³	0.001 mg/m ³	0.0006 mg/m ³
Cadmium & thallium and their compounds (total)	0.05 mg/m ³	0.001 mg/m ³	0.0011 mg/m ³
Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg/m ³	0.09 mg/m ³	0.05 mg/m ³
Dioxins and furans (I-TEQ)	0.1 ng/m ³	0.000558 ng/m ³	0.049 ng/m ³
Hydrogen Fluoride	2 mg/m ³	0.41 mg/m ³	0.12 mg/m ³

4.3 Summary of monitoring results for emissions to water

There are no emissions to water from the process which require monitoring within the permit.

5. Summary of Permit Compliance

5.1 Compliance with permit limits for continuously monitored pollutants

The plant met its emission limits as shown in the table below.

Substance	Percentage time compliant during operation	
	Half-hourly limit	Daily limit
Particulates	100%	100%
Oxides of nitrogen	100%	100%
Sulphur dioxide	100 %	100%
Carbon monoxide	100% 95% of 10-min averages	100%
Total organic carbon	100%	100%
Hydrogen chloride	100%	100%

5.2 Summary of any notifications or non-compliances under the permit

Date	Summary of notification or non-compliance	Reason	Measures taken to prevent reoccurrence
07/11/2018	Half hourly Sulphur Dioxide emission during a period of abnormal operation.	Error within the flue gas cleaning lime dosing control logic system.	Modification to the dosing logic control system implemented.

5.3 Summary of any complaints received and actions to taken to resolve them.

Date of complaint	Summary of complaint	Reason for complaint including whether substantiated by the operator or the EA	If substantiated, measures to prevent reoccurrence
None			

6. Summary of plant improvements

Summary of any permit improvement conditions that have been completed within the year and the resulting environmental benefits.
None required
Summary of any changes to the plant or operating techniques which required a variation to the permit and a summary of the resulting environmental impact.
<p>The site received a permit variation during 2018 to increase the permitted throughput to 190,000 tonnes.</p> <p>Site received a Local Enforcement Position to accept clinical waste from the NHS in order to alleviate disposal problems being encountered for this waste stream.</p>
Summary of any other improvements made to the plant or planned to be made and a summary of the resulting environmental benefits.
Modifications to combustion control system; resulting in improved ash burn out and significant reduction in gas oil requirements.

7. Details of any public liaison planned for 2019

Date and time	Description	Location
Dates to be confirmed	Liaison meeting	Lincolnshire EfW facility

If you wish to be involved in the public liaison programme, please contact sally.hood@fccenvironment.co.uk