

TITLE:	Exeter Energy from Waste Annual Report 2018		
DOC REF:	5272 REPT 20 2018	Revision No:	A

Annual performance report for: Cyclerval (UK) Limited
 Exeter EfW
 Grace Road South
 Marsh Barton
 Exeter
 Devon
 EX2 8QE

Permit Number: EPR/HP3538CR

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	Exeter Energy from Waste Plant Grade Road South Marsh Barton Exeter EX2 8QE
Description of waste input	Municipal Solid Waste including <ul style="list-style-type: none"> • Residual domestic, commercial and Industrial Waste • Street Cleaning Residues • Parks and Garden Waste
Operator contact details if members of the public have any questions	Telephone 01392 255120 Email exeter@cyclervaluk.com

2. Plant description

This installation an incinerator for municipal waste arising from the Exeter area and is operated by Cyclerval UK. It is situated at the Marsh Barton Trading Estate and is adjacent to the Exeter / Torquay railway line. There is one discharge to air in the form of combustion gasses discharged through the main stack, one discharge for uncontaminated storm water runoff to the external storm water drainage system and one discharges to sewer which is available to discharge excess boiler blow down. In practice the discharge to sewer is not used as all excess water is consumed in the ash quench tanks.

The facility has a maximum design capacity of 60,000 tonnes per annum (this equates to a maximum average capacity of 7.5 tonnes / hour at a CV of 9.3 MJ/kg net) of non-hazardous municipal solid waste utilising the oscillating kiln technology. The heat arising from incineration is used to generate electricity and has potential for providing lower grade heat for neighbouring industries or other commercial enterprises should any users become available. All exhaust gases generated by the

incineration process are treated on site to remove pollutants to below emission limits set by the Waste incineration Directive.

Within 10km of the Exeter EfW installation is one European designated area – the Exeter Special Protection Area (SPA) and Ramsar. This is also classed as a Site of Special Scientific Interest (SSSI).

In close proximity to the installation are the river Exe, the Alphin Brook and the Exeter Canal. The installation is within the river Exe flood plain and the facility is equipped with flood defence measures.

3. Summary of Plant Operation

Municipal waste received	57,986 tonnes)
Total waste received	57,986 tonnes
Total plant operational hours	8,059.2 hours
Total hours of “abnormal operation” (see permit for definition)	None
Total quantity of incinerator bottom ash (IBA) produced	10,303 tonnes
Disposal or recovery route for IBA	Un-sorted bottom ash is delivered to Day’s aggregates in Avonmouth where it is re-processed to recover metal and convert remaining ash into building aggregate.
Did any batches of IBA test as hazardous? If yes, state quantity	none
Total quantity of air pollution control (APC) residues produced	2,419 tonnes
Disposal or recovery route for APC residues	APCr is collected by sealed tanker and delivered to Carbon8 re-processing facility where it is converted into concrete like building materials.
Total electricity generated for export to the National Grid	22,860 MWh)

4. Summary of Plant Emissions

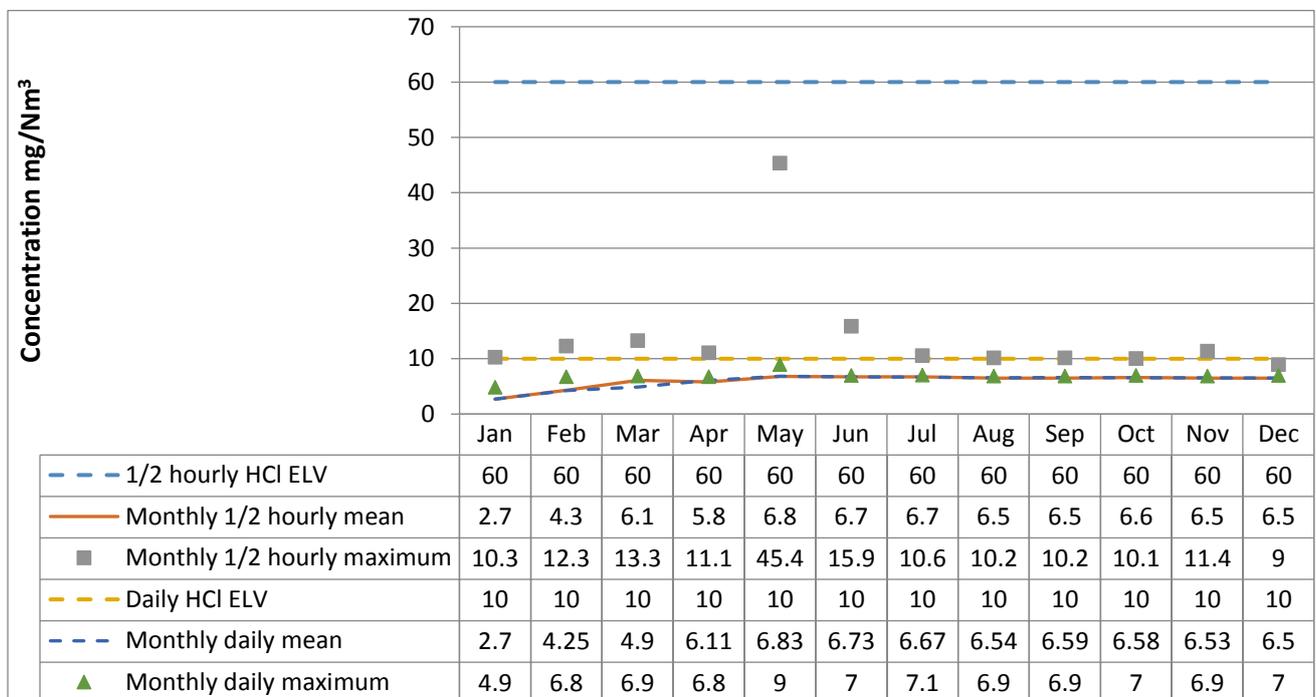
4.1 Summary of continuous emissions monitoring results for emissions to air

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

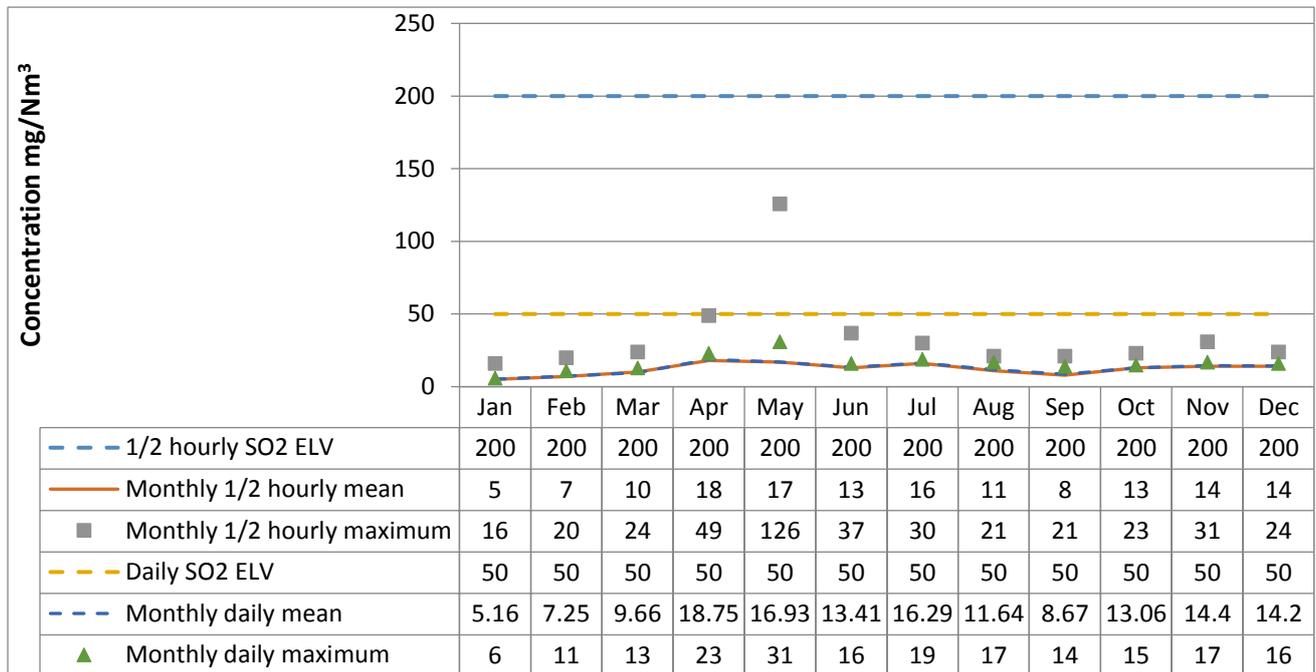


Monthly emissions summary incl half-hour

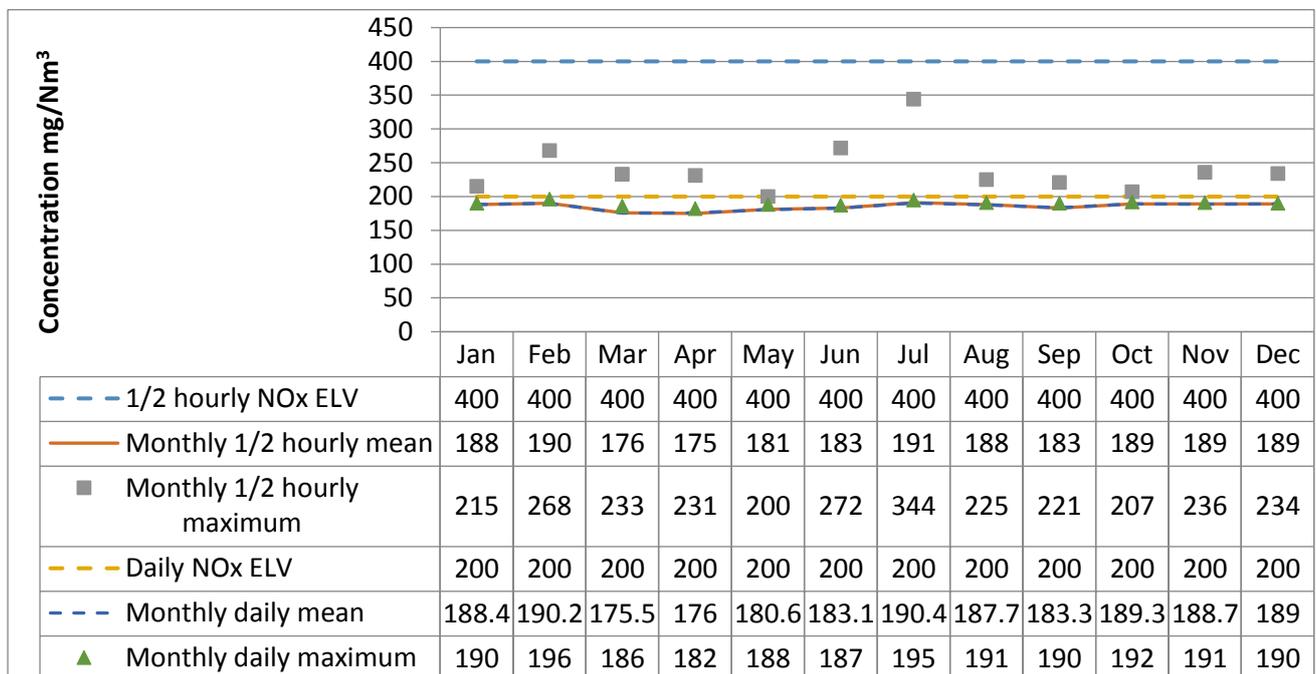
Line 1 - Hydrogen chloride



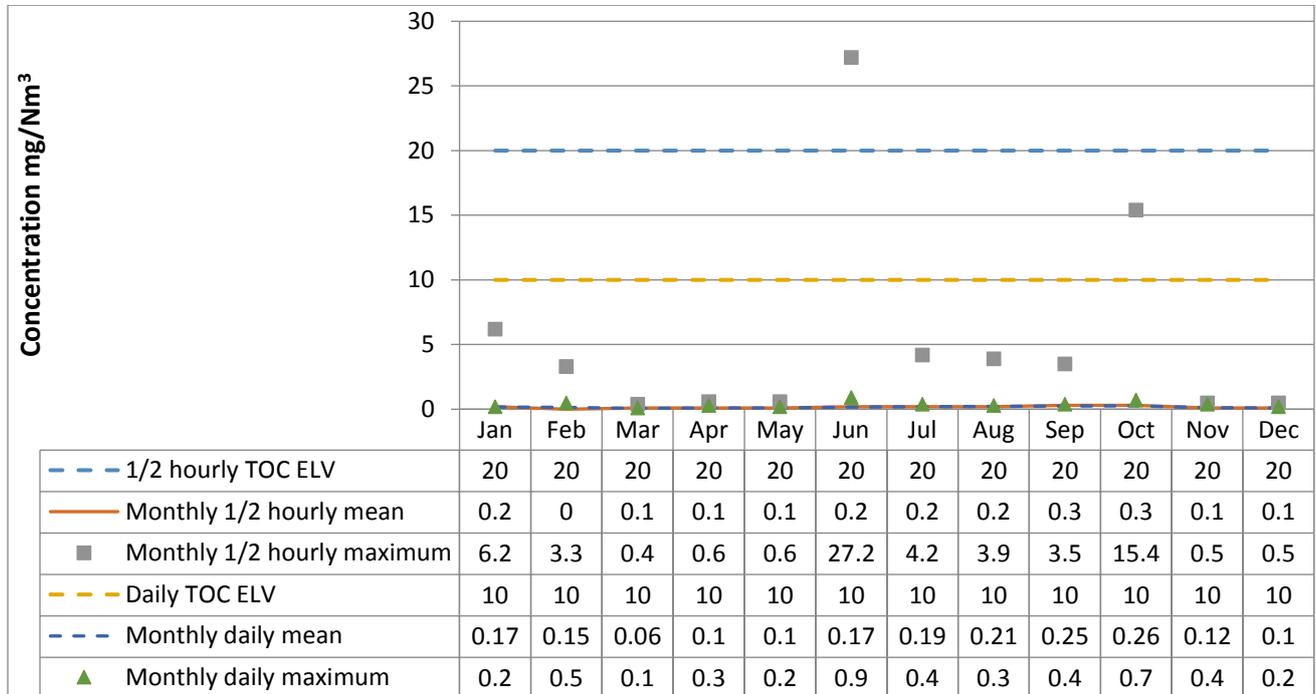
Line 1 – Sulphur dioxide



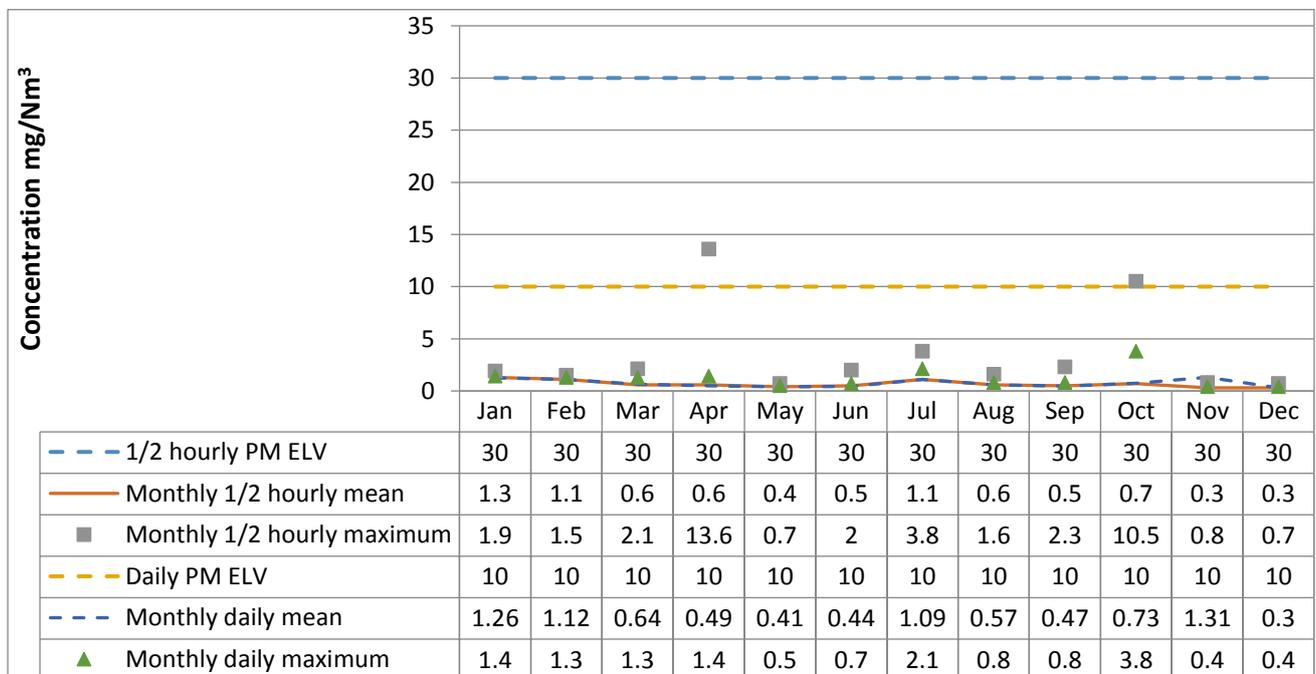
Line 1 – Oxides of nitrogen



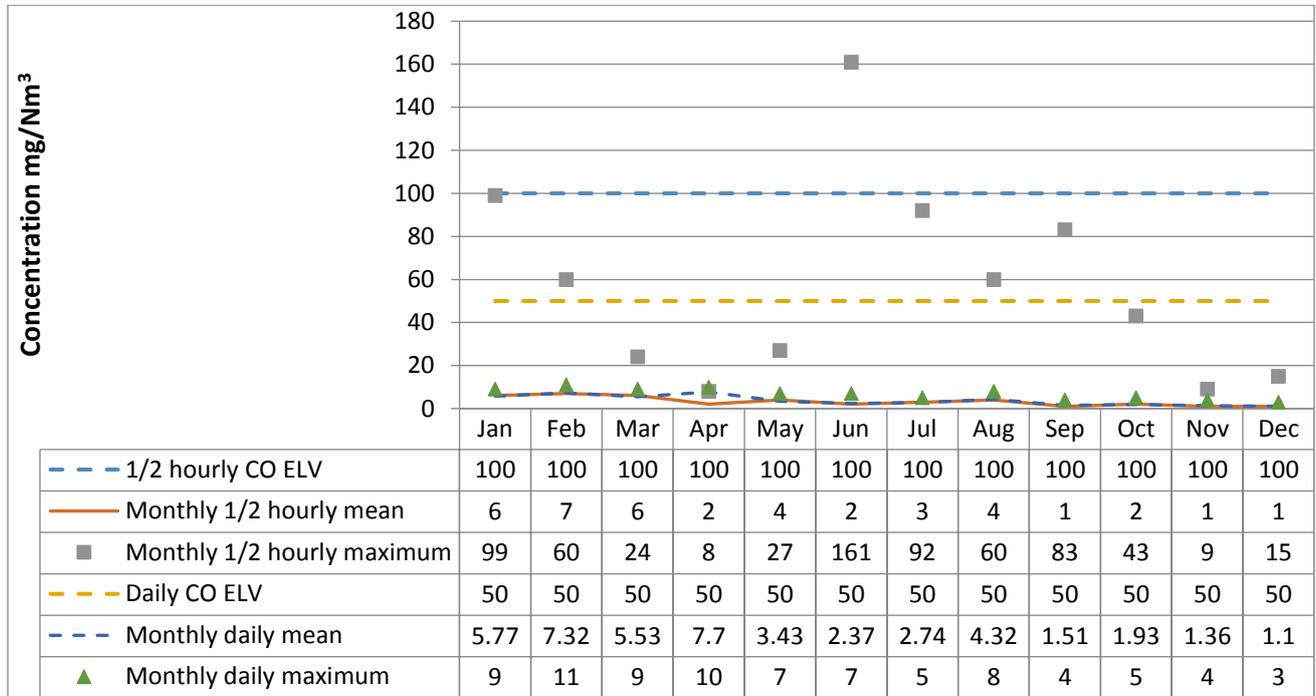
Line 1 – Total organic carbon



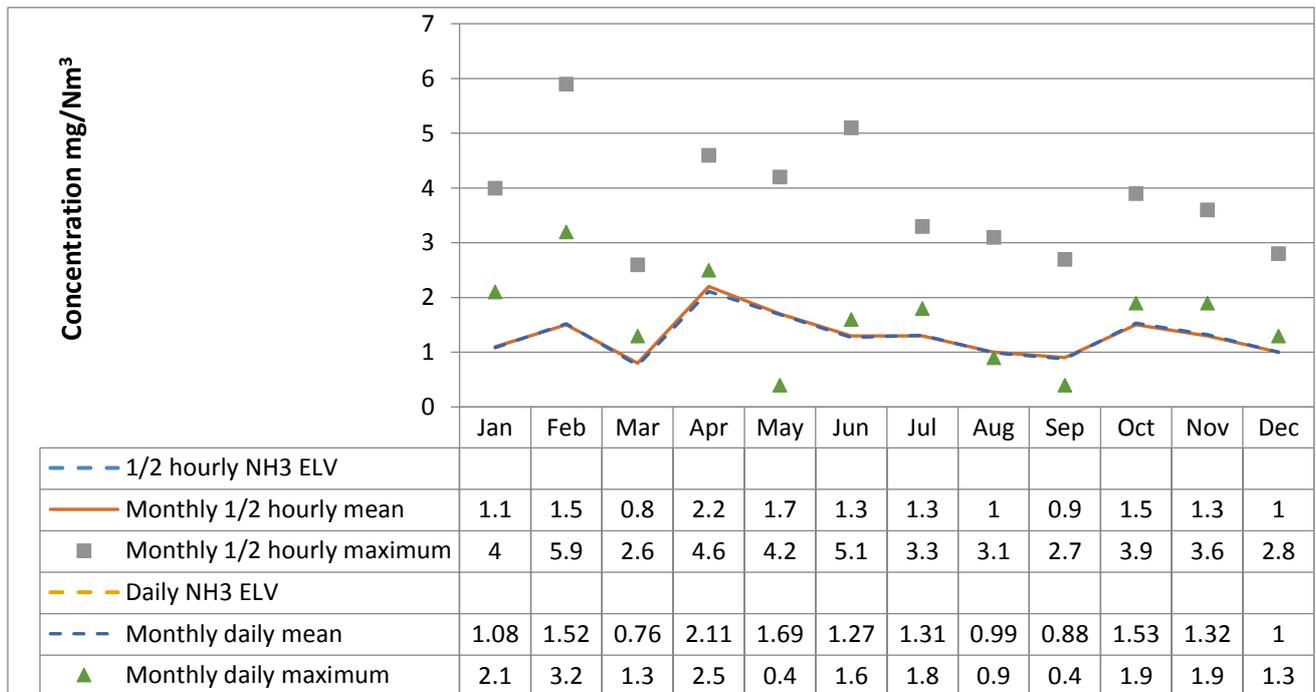
Line 1 – Particulates



Line 1 – Carbon monoxide



Line 1 – Ammonia



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4.1.2 Review of Continuous Emissions Monitoring Results

- Dust:**
 The plant has continued to operate with dust emissions considerably below the emission limit values throughout the year and with no exceedances. During the maintenance shutdown improvements were made to the filter bag house which has resulted in an overall reduction on both the average half hourly and average daily dust emissions which reported 60% and 70% of the 2017 levels.
 Both daily and half hourly peak emissions were higher than in previous years. These higher levels coincide with the period immediately following the shut down and is likely to have been caused by the works disturbing dust with in the filter bag house. A second peak occurred when a filter bag developed a leak. This was quickly identified and the bag replaced. The greatest emission level was less than 50% of the half hourly ELV.
- VOC:**
 Throughout the year VOC emissions were on average approximately half the level shown during 2017. Increased half hourly peaks were detected on two occasions, one of which resulted in an exceedance of the ELV and was due to multiple a power failure stopping the ID fan temporarily a schedule five notification was submitted to the Environment Agency in respect of this incident. On the second occasion an elevated level of VOC was reported by the duty CEM but not on the standby. There were no indications of any abnormal activity affecting any other plant monitor and it appears likely that the higher reading was the result of contamination of the analysis flame in the CEM.
- NH3**
 NH3 while not controlled by an emission limit value NH3 can be used in conjunction with the NOX values to indicate whether the DeNOX system is working efficiently. Emissions of Ammonia have been generally higher during 2018 than previously. No definitive reason for this increase has been identified however total Urea consumption has fallen suggesting overdosing of the DENOX system is unlikely to be the root cause. During this time period bulky household waste has been excluded from the facility which has resulted in a reduction of the CV. There may be a connection between this change infeed stock and an increase in ammonia emission, With an average emission value of 0.3 mg/m³ current emission levels are not thought to be a cause for concern.
- HCl & SO2**
 HCL & SO2 emissions remain significantly below both daily and half hourly ELV during 2018 Lime consumption has been reduced by approximately 1.5 kg per tonne of waste this year without producing emission exceedances.
- CO**
 The plant experienced a single exceedance of the half hourly CO limit a This was a result of interruptions to the external power supply. Improvements to the operation of the site have greatly reduced the incidences when an external power failure can cause a plant stoppage however on this occasion two phase variations occurred in a short time period preventing the usual automatic switch between local and main electricity functioning. Overall average CO emissions have reduced compared to 2017.

NOX

NOX emissions are well controlled with no exceedances of the half hourly or daily emission limits. Emissions remain consistent with previous year's operations

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	
		01/05/18	17/10/18
Mercury and its compounds	0.05 mg/m ³	0.0004 mg/m ³	<0.00036 mg/m ³
Cadmium & thallium and their compounds (total)	0.05 mg/m ³	0.00092 mg/m ³	<0.001mg/m ³
Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg/m ³	0.042 mg/m ³	0.019 mg/m ³
Dioxins and furans (I-TEQ)	0.1 ng/m ³	0.0085 ng/m ³	0.00056 ng/m ³
Hydrogen Fluoride (2 mg/m ³	<0.037 mg/m ³	<0.049 mg/m ³

4.2.2 Review of Extractive Monitoring Results

Extractive monitoring was undertaken in May and October. This analysis continues to show all emissions remain consistent with those obtained during previous years. Where emission limit values have been set. Measured emissions have been within these limits by a considerable margin. Dioxin has been particularly notable as having reduced when compared with the long term average. Cyclerval I not aware of any particular circumstances which may have led to this reduction.

4.3 Summary of monitoring results for emissions to water

There are no emissions to water from the process other than clean surface water.

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	99.993 %	100 %
Total organic carbon	99.993 %	100 %
Hydrogen chloride	100 %	100 %
Hydrogen fluoride	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
23/06/18	Exceedance of half hourly ELV in respect of VOC and CO. lasting one half hour period	Multiple interruptions to mains electricity supply caused stoppage of induced draft fan and starving the combustion process of oxygen.	Plant's ability to operate in isolation from mains normally prevents variation in mains supply from interrupting plant operations however where multiple interruptions occur in stoppage may be unavoidable. Operators trained to restore plant operation asap to avoid accumulation of part combusted gasses.

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
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.
None
Summary of any other improvements made to the plant or planned to be made and a summary of the resulting environmental benefits.
None

7. Details of any public liaison planned for 2019:

Date and time	Description	Location
9/4/19	Twice yearly meeting of the public liaison group consisting of representatives of Cyclerval, Tiru, Clients, District and County Council and representatives of nearby residential areas and business. (note: attendance of this meeting is by invitation only)	Exeter Energy from Waste Plant. Grace Road South Exeter
September? 2019		

If you wish to be involved in the public liaison programme, please contact Jonathan Lewis JLewis@viridor.co.uk