

## Annual performance report for: Allerton Waste Recovery Park

**Permit Number: EPR/NP3034CG**

**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	Allerton Waste Recovery Park Allerton Park Quarry Knaresborough North Yorkshire HG5 0SD
Description of waste input	Residual municipal solid waste (MSW) and commercial & industrial (C&I) waste
Operator contact details if members of the public have any questions	01423 447832 AWRP.Enquiries@amey.co.uk

### 2. Plant description

The main features of the Regulated Facility are as follows:

**Mechanical Treatment (MT):** will process up to 262,080 tonnes per annum (tpa) of municipal solid waste (MSW). It will enable recyclates to be extracted from the residual MSW, it will feed the incinerator and it will extract up to 40,000 tonnes of organic waste per annum which will be transferred to the anaerobic digestion (AD) plant. It will utilise a series of physical separation techniques: Waste reception; bulky trommel; sorting cabin; shredder; organic trommel; densimetric; ballistic; magnetic and eddy current separators.

The tipping and MT halls will be maintained under a slight negative pressure to control odour, dust and litter. This will generally be achieved by drawing air for combustion in the incineration plant. During periods when the incineration plant is not operational the negative pressure will be achieved by an air extraction system in the MT building which will be released via a bag filter system and a 28-metre stack.

**Incineration (EFW)** with a capacity of up to 320,000 tpa. It will operate two lines, employ a mechanical moving grate and combust the residual waste from the MT and AD plants along with commercial and industrial (C&I) waste. Approximately 27.3 MWe of electricity will be generated by a steam turbine (DAA) which is fed by the steam generating boilers located at the exit of the flue gas from the main combustion chamber. The electricity will be used at the facility and exported to the national grid.

Exhaust gases from incineration will be treated by an air pollution control system that will consist of Selective Non-Catalytic Reduction (SNCR) for oxides of nitrogen, dry lime (for acid gases), activated carbon (for dioxins, furans and mercury) and a multi-compartment fabric filter (for particulate matter, which will include metals and dioxins and furans).

Emissions from the incineration process will be released via a 70 metre-high stack. The emissions to air will comply with the emission limits in Annex VI of the Industrial Emissions Directive (IED).

Continuous and periodic monitoring will be undertaken for the flue gases in the stack as required by Chapter IV and Annex VI of the IED.

Solid residues will be sampled on a regular basis to assess incinerator bottom ash (IBA) burnout and to monitor the levels of specified pollutants.

**Anaerobic Digestion (AD)** will primarily process the organic fraction of the incoming MSW from the MT plant. The biogas from the anaerobic digesters will be combusted in two gas engines (DAA) to generate approximately 1.1 MWe of electricity, which will be exported to the national grid. Digestate from the AD plant will be combusted in the incinerator.

Exhaust gases from the two AD gas engines will be released via two 26-metre-high stacks. The emissions to air will comply with the emission standards normally applied to landfill gas engines. There will be a flare for use in emergency situations and at start up and shut down, which has been designed to meet the same emissions standards. However, emissions from the flare will not be routinely monitored.

Overall the Regulated Facility will recover 28.4 MW of electrical energy from waste and is expected to require approximately 3.7 MWe of electricity to operate with the remaining 24.7 MWe being available for export to the national grid.

There will be no releases of process effluents to water from the Regulated Facility. Uncontaminated surface water runoff will be collected in the attenuation pond for use at the facility with any excess being discharged via local tertiary and secondary watercourses to the Little Ouse.

### 3. Summary of Plant Operation

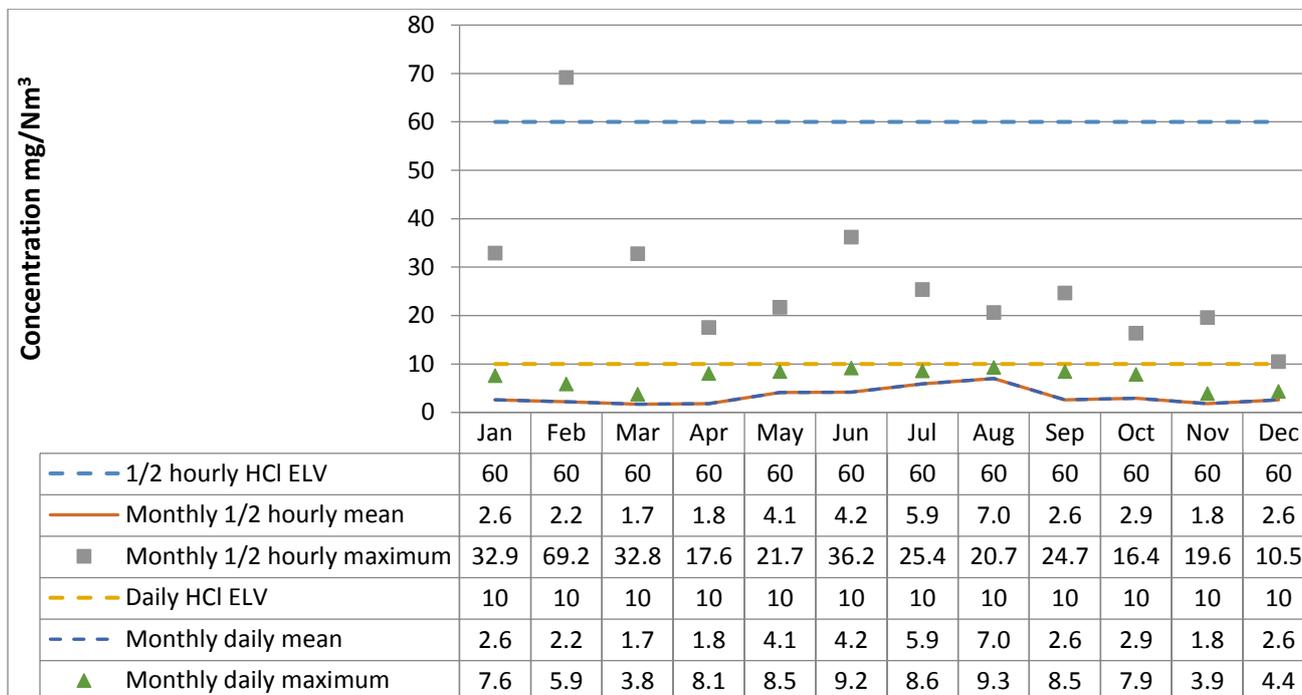
Municipal waste received (20 03 01)	222,732.68 tonnes
Refuse-derived fuel received (19 12 12)	6,693.00 tonnes
Bulky waste received (20 03 07)	14,095.10 tonnes
Total waste received	243,520.84 tonnes
Total plant operational hours	Line 1 = 6700 hours Line 2 = 7045 hours
Total hours of "abnormal operation"	34 hours (total for all lines)
Total quantity of IBA produced	55,464.84 tonnes
Disposal or recovery route for IBA	R05
Did any batches of IBA test as hazardous?	No
Total quantity of air pollution control (APC) residues produced	8,274.35 tonnes
Disposal or recovery route for APC residues	D09
Total electricity generated for export to the National Grid	135,516.58 MWh

## 4. Summary of Plant Emissions

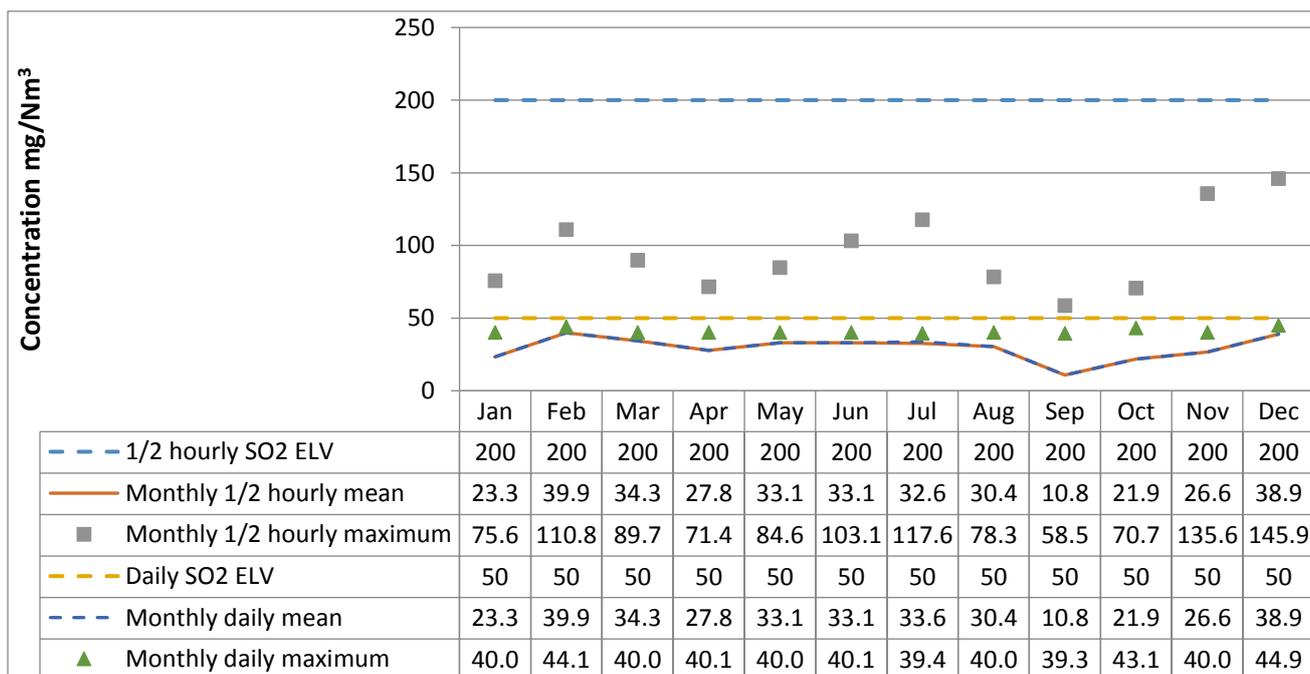
### 4.1 Summary of continuous emissions monitoring results for emissions to air

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

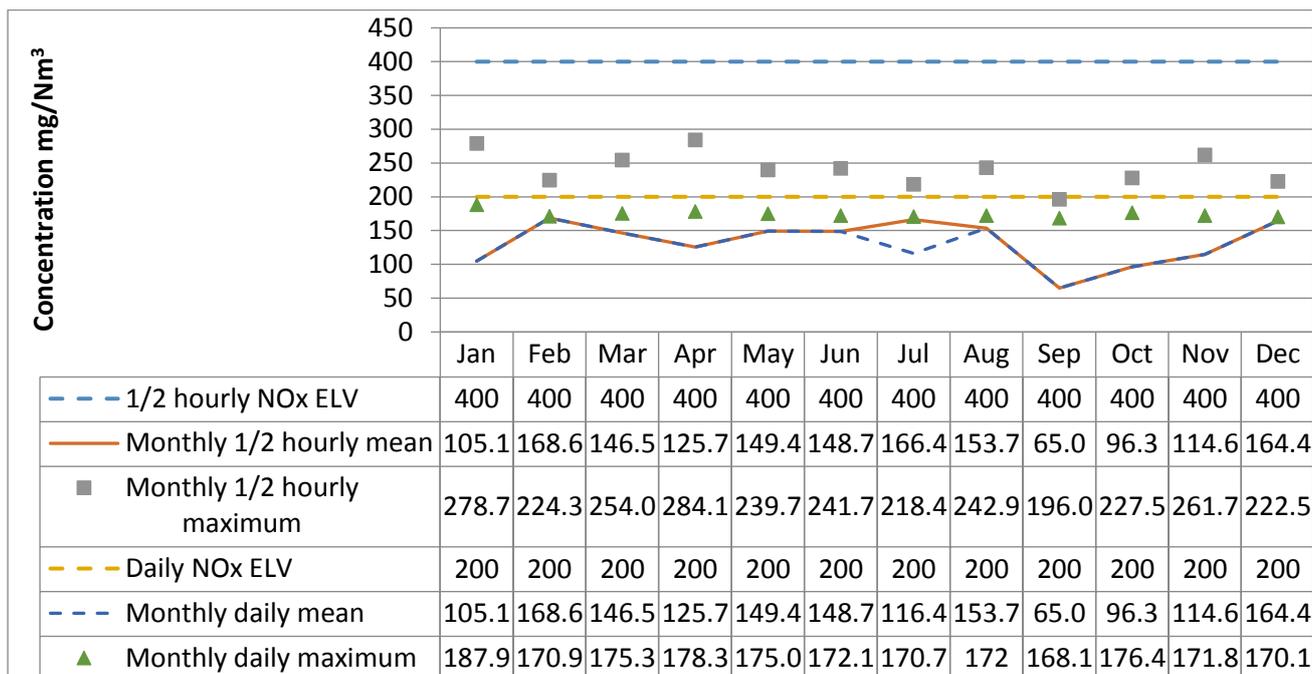
Line 1 - Hydrogen chloride



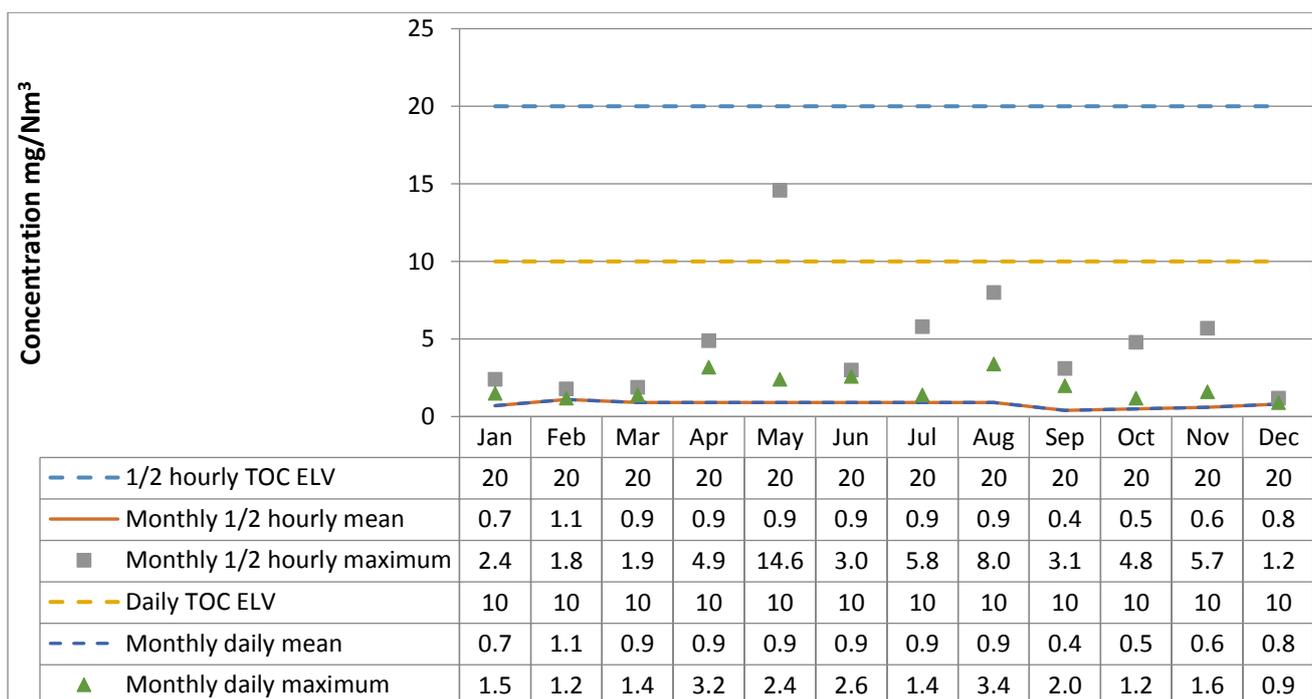
Line 1 – Sulphur dioxide



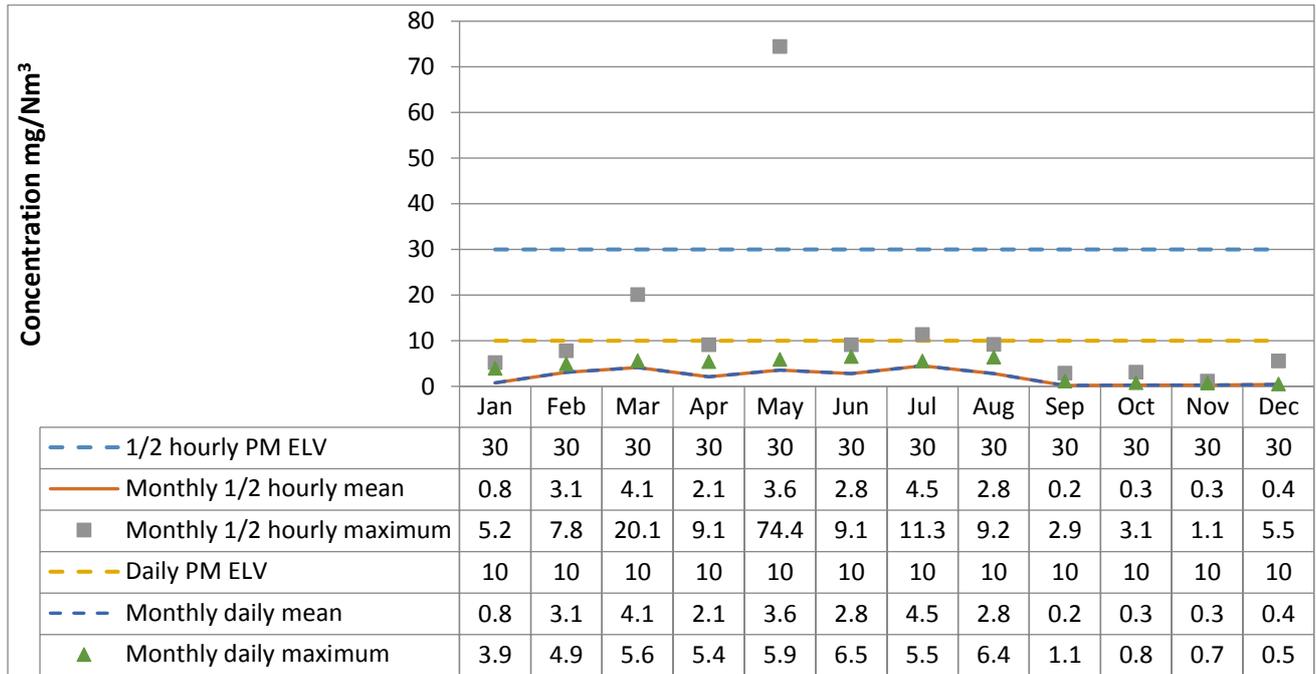
### Line 1 – Oxides of nitrogen



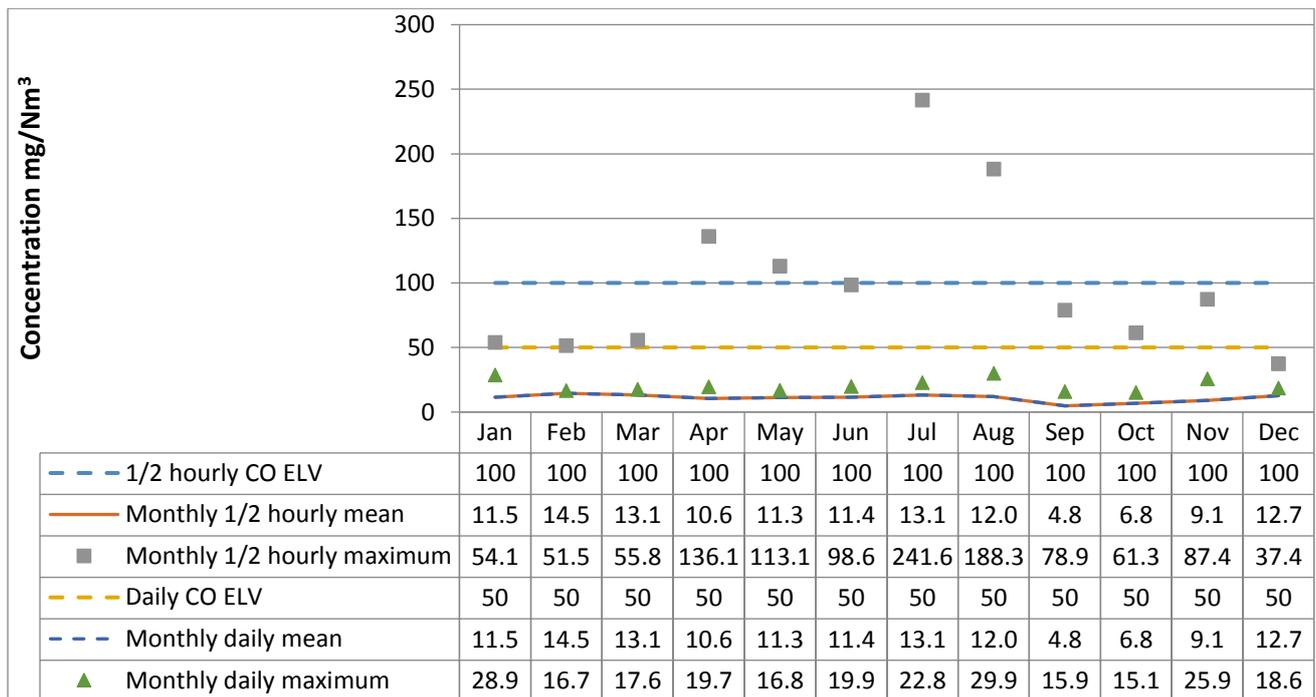
### Line 1 – Total organic carbon



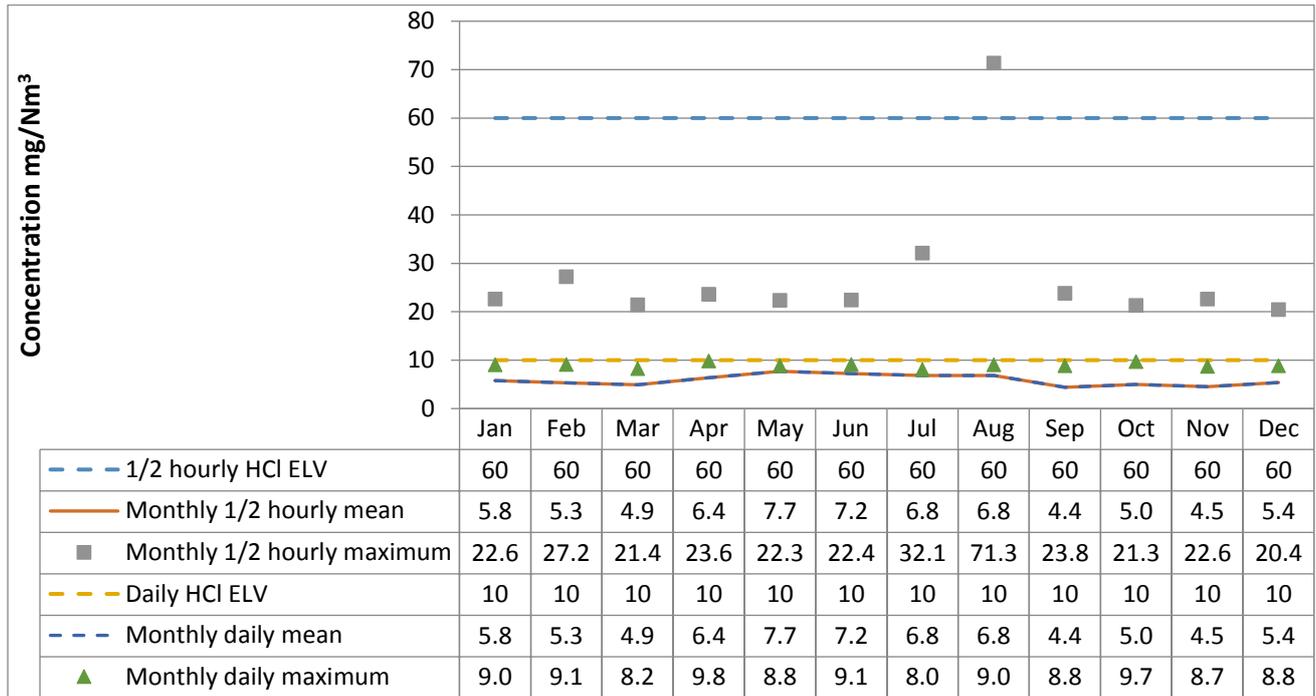
## Line 1 – Particulates



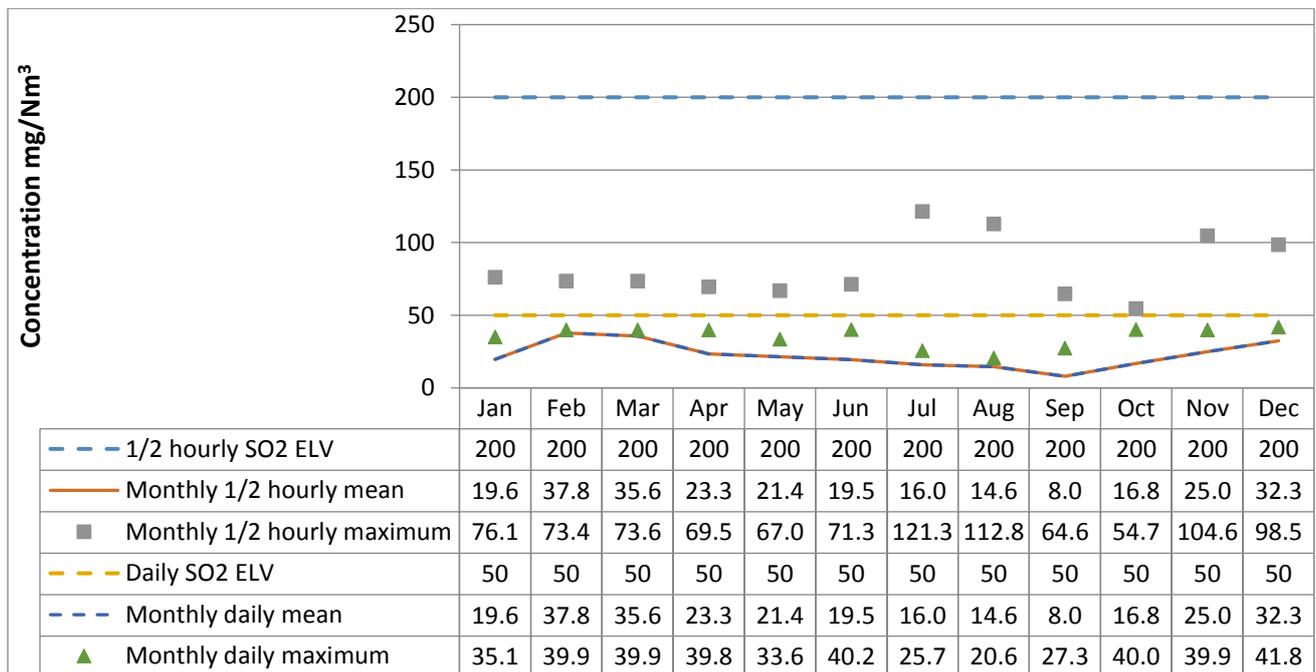
## Line 1 – Carbon monoxide



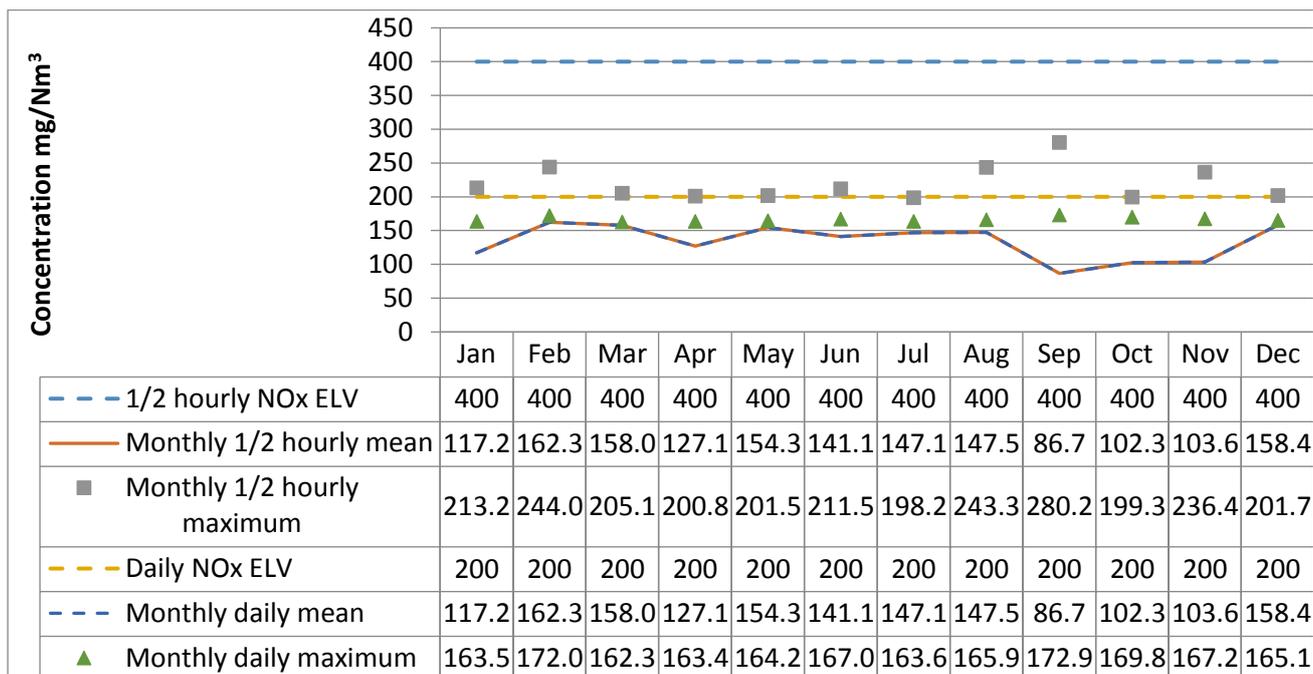
## Line 2 - Hydrogen chloride



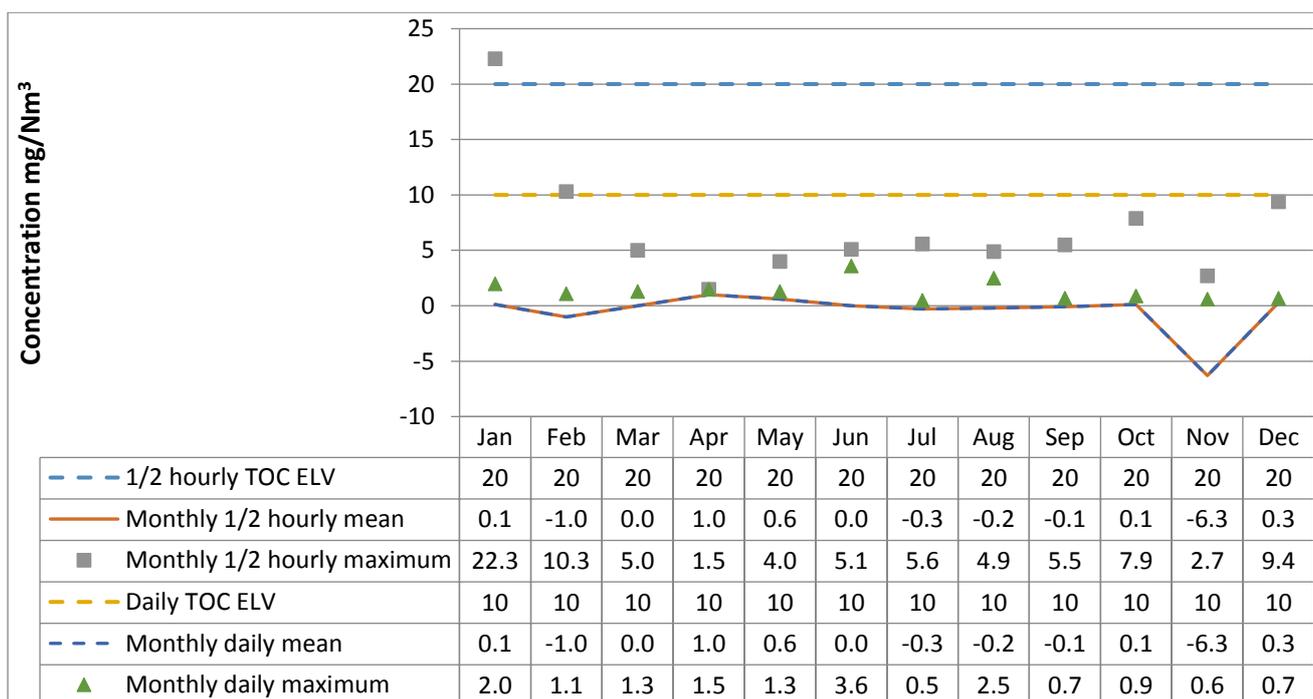
## Line 2 – Sulphur dioxide



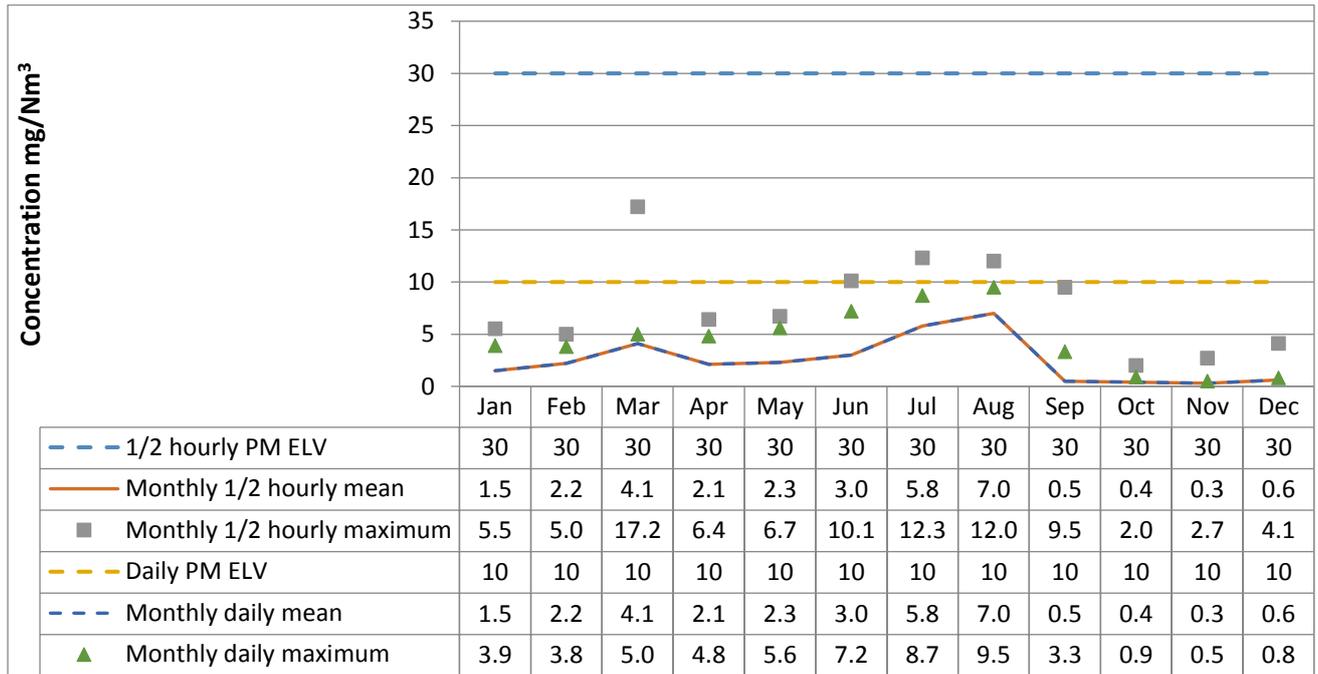
### Line 2 – Oxides of nitrogen



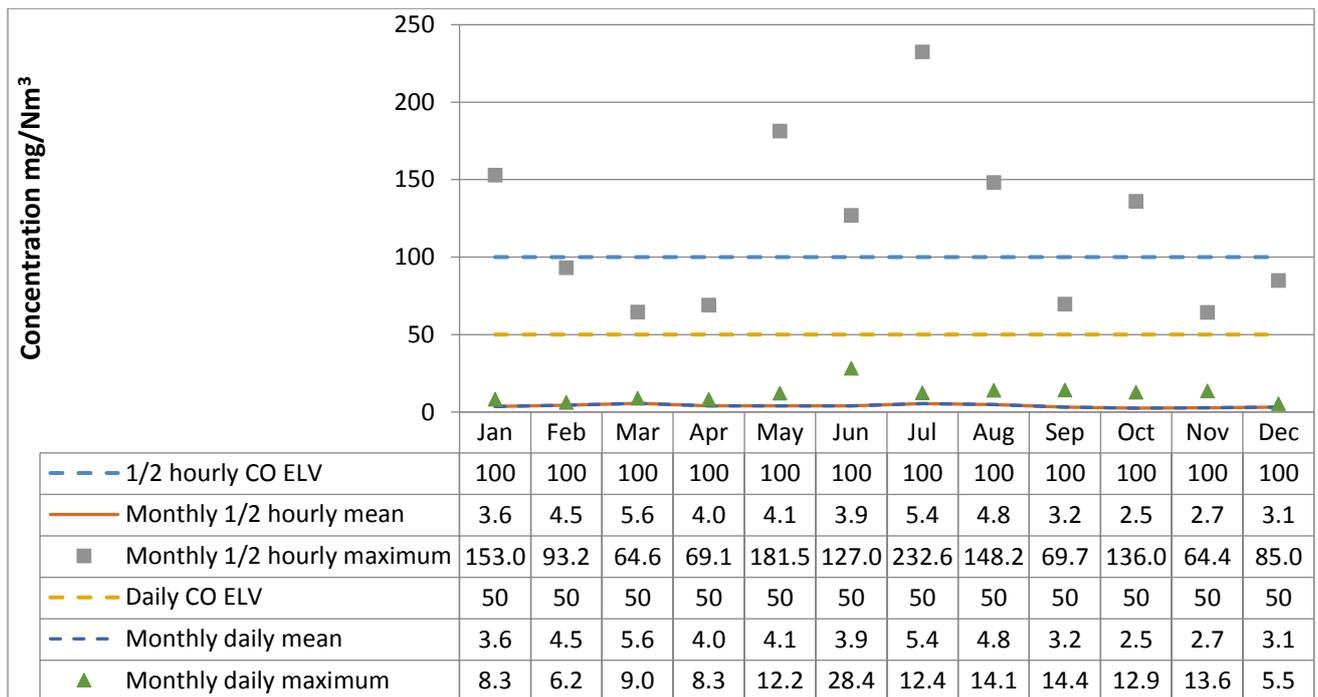
### Line 2 – Total organic carbon



## Line 2 – Particulates



## Line 2 – Carbon monoxide



## 4.2 Summary of periodic monitoring results for emissions to air

The table below shows the results of periodically monitored substances.

### Line 1

Substance	Emission limit value	Results			
		10/07/18 – 12/07/18	22/10/18- 26/10/18	26/11/18- 28/11/18	17/12/18- 19/12/18
Mercury and its compounds	0.05 mg/m <sup>3</sup>	0.001 mg/m <sup>3</sup>	0.0004 mg/m <sup>3</sup>	0.0004 mg/m <sup>3</sup>	<0.0004 mg/m <sup>3</sup>
Cadmium & thallium and their compounds (total)	0.05 mg/m <sup>3</sup>	0.005 mg/m <sup>3</sup>	0.06 mg/m <sup>3</sup>	< 0.001 mg/m <sup>3</sup>	<0.0011 mg/m <sup>3</sup>
Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg/m <sup>3</sup>	0.26 mg/m <sup>3</sup>	0.16 mg/m <sup>3</sup>	0.026 mg/m <sup>3</sup>	0.0098 mg/m <sup>3</sup>
Dioxins and furans (I-TEQ)	0.1 ng/m <sup>3</sup>	0.0032 ng/m <sup>3</sup>	0.004 ng/m <sup>3</sup>	0.026 ng/m <sup>3</sup>	0.0025 ng/m <sup>3</sup>
Hydrogen Fluoride	2 mg/m <sup>3</sup>	<0.03 mg/m <sup>3</sup>	0.07 mg/m <sup>3</sup>	< 0.03 mg/m <sup>3</sup>	0.28 mg/m <sup>3</sup>

### Line 2

Substance	Emission limit value	Results			
		10/07/18 – 11/07/18	22/10/18- 25/10/18	26/11/18- 28/11/18	17/12/18- 16/01/19
Mercury and its compounds	0.05 mg/m <sup>3</sup>	0.001 mg/m <sup>3</sup>	0.001 mg/m <sup>3</sup>	0.001 mg/m <sup>3</sup>	<0.0003 mg/m <sup>3</sup>
Cadmium & thallium and their compounds (total)	0.05 mg/m <sup>3</sup>	0.007 mg/m <sup>3</sup>	0.002 mg/m <sup>3</sup>	<0.001 mg/m <sup>3</sup>	<0.0010 mg/m <sup>3</sup>
Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg/m <sup>3</sup>	0.18 mg/m <sup>3</sup>	0.09 mg/m <sup>3</sup>	0.015 mg/m <sup>3</sup>	0.0410 mg/m <sup>3</sup>
Dioxins and furans (I-TEQ)	0.1 ng/m <sup>3</sup>	0.0104 ng/m <sup>3</sup>	0.0012 ng/m <sup>3</sup>	0.066 ng/m <sup>3</sup>	0.0006 ng/m <sup>3</sup>
Hydrogen Fluoride	2 mg/m <sup>3</sup>	<0.02 mg/m <sup>3</sup>	0.10 mg/m <sup>3</sup>	<0.03 mg/m <sup>3</sup>	<0.03 mg/m <sup>3</sup>

### 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 Line 1	Half hourly Line 2	Daily Line 1	Daily Line 2
Particulates	100%	100%	100%	100%
Oxides of nitrogen	100%	100%	100%	100%
Sulphur dioxide	100%	100%	100%	100%
Carbon monoxide	99.99%+	99.99%+	100%	100%
Total organic carbon	100%	100%	100%	99.9%+
Hydrogen chloride	99.9%+	99.9%+	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
06/01/2018	Loss of Biogas	Technical failure of the gas bag level sensor.	HAZOP was revisited by technology provider (OWS) and modifications were made.
23/01/2018	EfW Stack CO Emission	CO exceedance due to unauthorised VEF operator incorrectly introducing excess waste following shutdown.	Formal letter issued to VEH and increased contractor supervision.
06/02/2018	EfW Stack HCl Emission	HCl breach due to lime silo blockage.	Air choc system installed on both lime silos
27/03/2018	CEMS Failure	VOC monitoring issue due to gas bottle leakage.	System leak checks carried out. New bottles installed. OEM called to site to service and certify.
04/04/2018	EfW Stack CO Emission	CO spike – Change in operating configuration due to defect in MT	Revised procedures and briefings to MT/AD to highlight impact of operational changes.
09/04/2018	EfW Stack CO Emission	CO spike due to blockage in ash extractor chute.	Waste input review. Increased auditing.
23/04/2018	CEMS Failure	CEMS failure	Briefing issued and further CEMS training undertaken.
24/04/2018	CEMS Failure	CEMS failure	Briefing issued and further CEMS training undertaken.
01/05/2018	Failure to Notify (Waste Returns)	Administrative	Responsibility assigned to specific role.
22/05/2018	EfW Stack CO Emission	CO spike due to blockage in ash extractor system.	Discussions with authority regarding oversized waste. Increased auditing.

23/05/2018	CEMS Failure	Dust analyser spike.	Faulty analyser – rectification implemented.
25/06/2018	EfW Stack CO Emission	CO spike due to blocked ash extraction system.	Increased waste audit schedule.
01/07/2018	Loss of Biogas	Flare failed to ignite on controlled shutdown	Operators briefed on reset requirements. Review current operational procedures.
02/07/2018	EfW Stack CO Emission	CO spike – unable to rectify within hh	Briefing to Operation Shift Teams to increase vigilance on monitoring parameters.
10/07/2018	EfW Stack CO Emission	CO spike due to wet material restricting gas pass	Alterations made to hybrid lime recirculation system.
31/07/2018	EfW Stack CO Emission	CO spike – nonconforming waste	Communicate/review/audit waste streams in line with DOC.
02/08/2018	EfW Stack HCl Emission	HCl spike – large volume of plastics	Review/optimisation of the control logic of the lime dosing system.
03/08/2018	EfW Stack CO Emission	CO spike due to flash burning causing hole in furnace grate.	Seeking Industry best practice advice.
06/08/2018	EfW Stack CO Emission	CO spike due to burner issue.	Review/audit waste streams in line with DOC. Burner preventative maintenance routine reviewed.
17/08/2018	EfW Stack CO Emission	CO spike due to gas canister release	Continuous auditing
31/08/2018	EfW Stack CO Emission	CO spike due to technical fault relating to the furnace roller torque converter.	Full defect investigation carried out, component replaced (instrumentation).
31/10/2018	EfW Stack CO Emission	CO spike during start up.	Technical review to be undertaken involving EA officer and site team.

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

<b>Date of complaint</b>	<b>Summary of complaint</b>	<b>Reason for complaint including whether substantiated by the operator or the EA</b>	<b>If substantiated, measures to prevent reoccurrence</b>
08/01/18	Litter	Call regarding waste on A168 in vicinity of AWRP. Not substantiated by EA.	Continued monitoring litter management plan.
10/01/2018 and 11/01/2018	Odour	Email from EA informing of two complaints of odour in Marton cum Grafton. After investigation, neither complaints substantiated by EA.	Continued monitoring through odour management plan.
09/03/2018	Odour	Email from EA informing of two complaints of odour in Whixley. After investigation, neither complaints substantiated by AWRP.	Continued monitoring through odour management plan.
22/10/2018	Odour	Email and face to face discussion regarding odour in neighbouring village (Arkendale). After investigation, complaint was not substantiated by AWRP.	Continued monitoring through odour management plan.
10/12/2018	Odour	Email from Boroughbridge resident regarding odour. After investigation, complaint was not substantiated by AWRP.	Continued monitoring through odour management plan.

## 6. Summary of plant improvements

<b>Summary of any permit improvement conditions that have been completed within the year and the resulting environmental benefits.</b>
Improvement Condition 1 - Completed and submitted by Amey - Approved by EA Improvement Condition 2 - Completed and submitted by Amey - Approved by EA Improvement Condition 3 - Completed and submitted by Amey - Approved by EA Improvement Condition 4 - Completed and submitted by Amey - Approved by EA Improvement Condition 5 - Completed and submitted by Amey - Approved by EA Improvement Condition 6 - Target date extended to 15/03/2019 Improvement Condition 7 - Target date extended to 15/03/2019
<b>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.</b>
None
<b>Summary of any other improvements made to the plant or planned to be made and a summary of the resulting environmental benefits.</b>
No improvements finalised

## 7. Details of any public liaison planned for 2019:

<b>Date and time</b>	<b>Description</b>	<b>Location</b>
April (TBC)	Local Liaison Committee	Allerton Waste Recovery Park Visitor Centre

If you wish to be involved in the public liaison programme, please contact Deborah Yewdall or Allison Darling - [AWRP.Enquiries@amey.co.uk](mailto:AWRP.Enquiries@amey.co.uk)