Annual performance report for:

Grundon Waste Management Ltd. Clinical Waste Incinerator

Permit Number:

EPR/BT2866IG V003

Year: 2022

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	Clinical Waste Incinerator Lakeside Road Colnbrook SL3 0EG
Description of waste input	Clinical waste
Operator contact details if members of the public have any questions	Grundon Waste Management Ltd. Clinical Waste Incinerator 01753 686777

2. Plant description

The incinerator plant consists of the following major components.

1. Incinerator waste loading system. This consists of two separate loading systems, namely a conveyor infeed section fed by two self-contained bin loaders and a semi-automatic bin loader (Lodematic) that loads directly into the primary chamber loader box.
2. The primary chamber that burns the waste. The chamber is initially gas fired but as the waste volume burned comes up to the required temperature so the volume of gas burned falls away. Primary and under fire air is introduced into the chamber to support combustion. The gaseous product of combustion passes onto the secondary chamber and the ash is released into a bin under the chamber. Water is sprayed into the primary chamber to reduce over-temperature.
3. A waste fuel system allows waste fuel to be burnt in the primary chamber.
4. A gas fired secondary chamber ensures complete combustion and that the products of combustion reach a temperature greater than 1100oC for 2 seconds with oxygen content of greater than 6%. Secondary air is introduced into the crossover between the primary and secondary chambers.
5. Ash is released from the PCC on a batch wise basis.
6. The gas from the secondary chamber passes into the boiler where it is cooled down by producing steam. The steam is either sent to the EfW plant or the air blast coolers where it is condensed.
7. Gas from the boiler passes into the Flue Gas Treatment plant. Here the gas is cooled

and passed through the reactor, filter units.
8. On leaving the treatment plant the flue gas is passed through the Induced Draft Fan and then sent to atmosphere via the stack.
9. The plant incorporates CEMS (Continuous Emission Monitoring System).
10. The plant uses gas, electricity, water, compressed air and hydraulic services.

3. Summary of Plant Operation

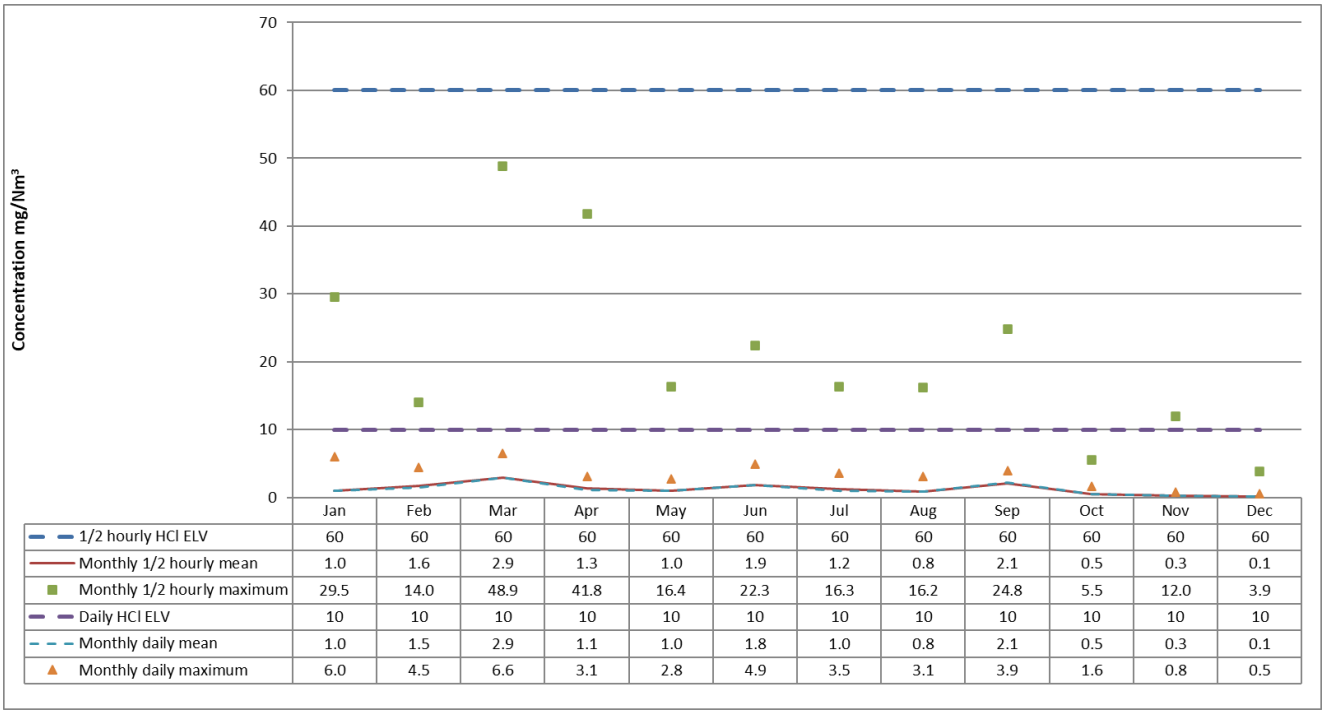
Hazardous waste received	3681.21 tonnes including hazardous clinical
Total waste received	4489.49 tonnes
Total plant operational hours	6877 hours
Total hours of “abnormal operation” (see permit for definition)	2.5 hours
Total quantity of incinerator bottom ash (IBA) produced	603.59 tonnes
Disposal or recovery route for IBA	Disposal
Did any batches of IBA test as hazardous? If yes, state quantity	None
Total quantity of air pollution control (APC) residues produced	526.38 tonnes
Disposal or recovery route for APC residues	Disposal

4. Summary of Plant Emissions

4.1 Summary of continuous emissions monitoring results for emissions to air

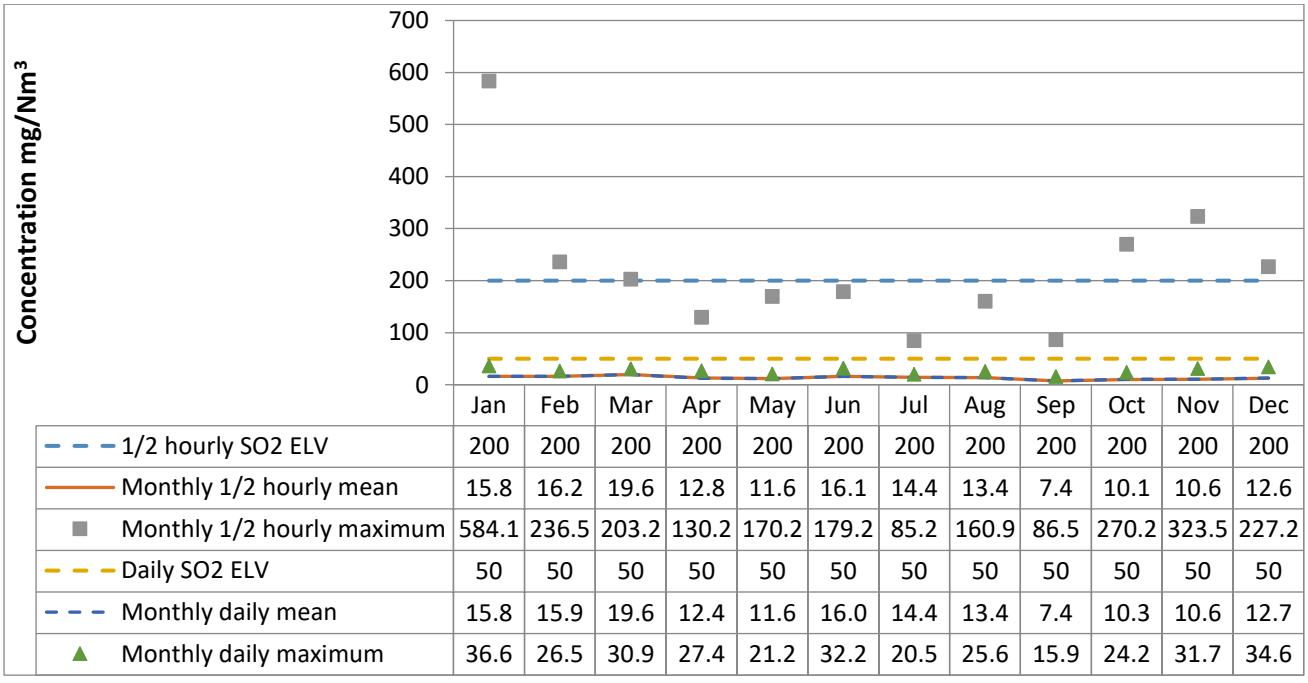
The following charts show the performance of the plant against its emission limit values (ELVs) for substances that are continuously monitored.

Hydrogen chloride



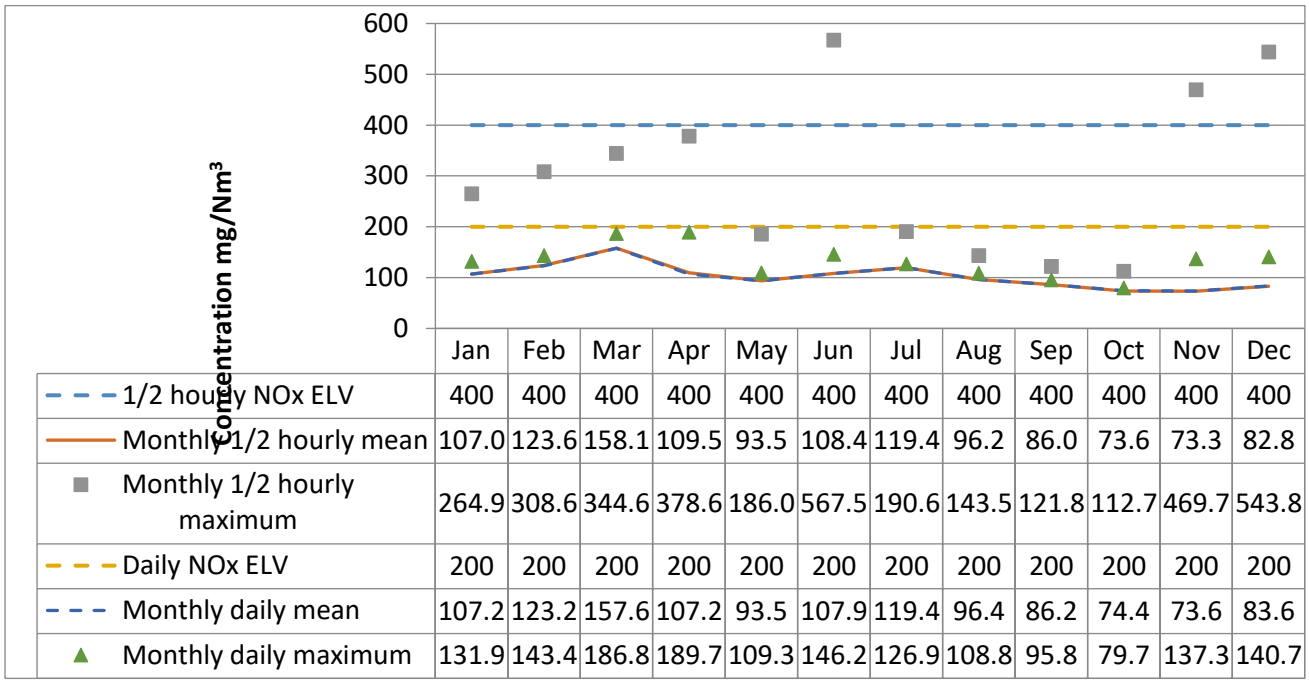
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly HCl ELV	60	60	60	60	60	60	60	60	60	60	60	60
Monthly 1/2 hourly mean	1.0	1.6	2.9	1.3	1.0	1.9	1.2	0.8	2.1	0.5	0.3	0.1
Monthly 1/2 hourly maximum	29.5	14.0	48.9	41.8	16.4	22.3	16.3	16.2	24.8	5.5	12.0	3.9
Daily HCl ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	1.0	1.5	2.9	1.1	1.0	1.8	1.0	0.8	2.1	0.5	0.3	0.1
Monthly daily maximum	6.0	4.5	6.6	3.1	2.8	4.9	3.5	3.1	3.9	1.6	0.8	0.5

Sulphur dioxide



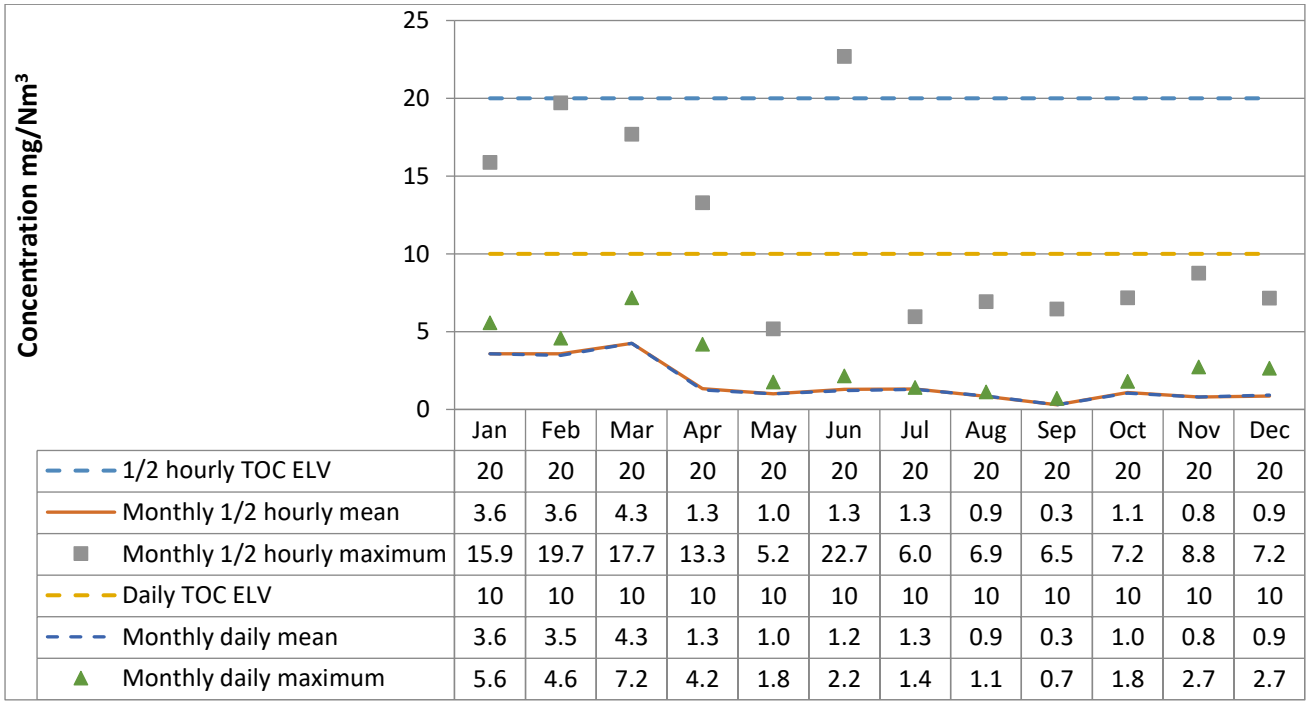
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly SO2 ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly 1/2 hourly mean	15.8	16.2	19.6	12.8	11.6	16.1	14.4	13.4	7.4	10.1	10.6	12.6
Monthly 1/2 hourly maximum	584.1	236.5	203.2	130.2	170.2	179.2	85.2	160.9	86.5	270.2	323.5	227.2
Daily SO2 ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	15.8	15.9	19.6	12.4	11.6	16.0	14.4	13.4	7.4	10.3	10.6	12.7
Monthly daily maximum	36.6	26.5	30.9	27.4	21.2	32.2	20.5	25.6	15.9	24.2	31.7	34.6

Oxides of nitrogen



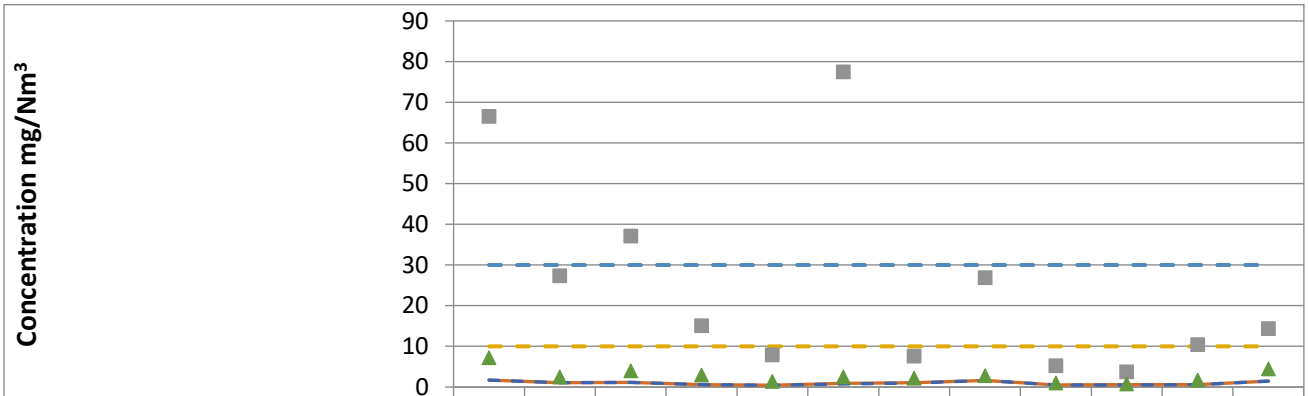
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly NOx ELV	400	400	400	400	400	400	400	400	400	400	400	400
Monthly 1/2 hourly mean	107.0	123.6	158.1	109.5	93.5	108.4	119.4	96.2	86.0	73.6	73.3	82.8
Monthly 1/2 hourly maximum	264.9	308.6	344.6	378.6	186.0	567.5	190.6	143.5	121.8	112.7	469.7	543.8
Daily NOx ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly daily mean	107.2	123.2	157.6	107.2	93.5	107.9	119.4	96.4	86.2	74.4	73.6	83.6
Monthly daily maximum	131.9	143.4	186.8	189.7	109.3	146.2	126.9	108.8	95.8	79.7	137.3	140.7

Total organic carbon



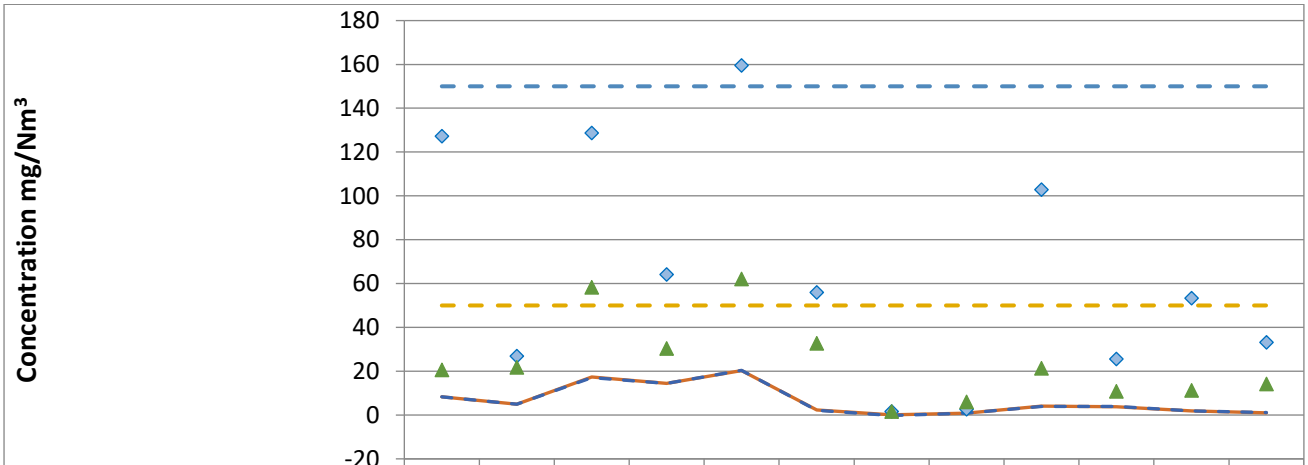
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly TOC ELV	20	20	20	20	20	20	20	20	20	20	20	20
Monthly 1/2 hourly mean	3.6	3.6	4.3	1.3	1.0	1.3	1.3	0.9	0.3	1.1	0.8	0.9
Monthly 1/2 hourly maximum	15.9	19.7	17.7	13.3	5.2	22.7	6.0	6.9	6.5	7.2	8.8	7.2
Daily TOC ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	3.6	3.5	4.3	1.3	1.0	1.2	1.3	0.9	0.3	1.0	0.8	0.9
Monthly daily maximum	5.6	4.6	7.2	4.2	1.8	2.2	1.4	1.1	0.7	1.8	2.7	2.7

Particulates



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly PM ELV	30	30	30	30	30	30	30	30	30	30	30	30
Monthly 1/2 hourly mean	1.71	1.08	1.13	0.63	0.45	0.87	1.05	1.63	0.49	0.57	0.59	1.48
Monthly 1/2 hourly maximum	66.57	27.35	37.13	15.07	7.94	77.47	7.61	26.9	5.27	3.75	10.46	14.37
Daily PM ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	1.71	1.06	1.14	0.61	0.45	0.73	0.98	1.64	0.49	0.54	0.59	1.45
Monthly daily maximum	7.18	2.51	3.94	2.99	1.42	2.49	2.16	2.82	1.02	0.79	1.72	4.42

Carbon monoxide



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
10 minute CO ELV (95%)	150	150	150	150	150	150	150	150	150	150	150	150
Monthly 95% 10 minute maximum	127.2	26.9	128.6	64.2	159.5	55.9	1.7	2.7	102.8	25.5	53.4	33.1
Monthly 10 minute mean	8.3	4.9	17.3	14.4	20.3	2.3	0.1	0.9	4.1	3.8	1.9	1.1
Daily CO ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	8.3	5.0	17.1	14.5	20.4	2.1	-0.2	0.9	3.9	4.0	1.9	1.1
Monthly daily maximum	20.6	21.7	58.3	30.4	62.1	32.6	1.5	5.9	21.3	10.9	11.2	14.1

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	
		First half of the year	Second half of the year
Mercury and its compounds	0.05 mg/m^3	0.15 mg/m^3	0.0196 mg/m^3
Cadmium & thallium and their compounds (total)	0.05 mg/m^3	< 0.0019 mg/m^3	0.0019 mg/m^3
Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg/m^3	0.020 mg/m^3	0.044 mg/m^3
Dioxins and furans (I-TEQ)	0.1 ng/m^3	0.0054 ng/m^3	0.0336 ng/m^3
Hydrogen Fluoride	2 mg/m^3	< 0.047 mg/m^3	0.012 mg/m^3

4.3 Summary of monitoring results for emissions to water

N/A

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	99.9%	100%
Oxides of nitrogen	99.9%	100%
Sulphur dioxide	99.9%	100%
Carbon monoxide	99.9%	99.9%
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
03/01/22	Dust	De-ash (ID fans raised to maximum)	Weekly changeover ordered from operatives
07/01/22	SO2	High concentration sulphur waste	More details to be given in waste descriptions
12/01/22	SO2	Heavy drum causing flaring during movement down the hearths	High sulphur bearings waste not loading whilst metal 205 drums also being processed
14/01/22	SO2	High concentration sulphur waste	Packing at transfer station improved
28/01/22	Dust	ID fan change-over	Weekly changeover to be followed
20/02/22	SO2	High concentration sulphur waste – Burn list wasn't followed	TBT given on importance of following burn lists
05/03/22	SO2	CEMs false reading	Regular service and maintenance
08/03/22	Dust	Drop box change over (ID fan speed raised to maximum)	Investigation during next shutdown, routine vacuuming of bag house / id fan housing instigated.
14/03/22	Dust	CEMs false reading - NOx / VOC also spiked	Interlinked to 05/03/22 Regular service and maintenance Seals around bag house improved as leaks were a source of false air ingress.
25/03/22	CO	Two large spikes caused daily limit exceedance	A1 CBISS Investigation

02/05/22	CO	Couple of large spikes caused daily limit exceedance	A1 CBISS Investigation
03/05/22	CO	Couple of large spikes caused daily limit exceedance	A1 CBISS Investigation
04/05/22	CO	Couple of large spikes caused daily limit exceedance	A1 CBISS Investigation
10/05/22	CO	8 x individual CO exceedances – CEMS false readings (High O2 and VOC at the same time)	Interlinked to previous CO exceedances. Dust and O2 probe to be replaced.
27/10/22	SO2	High concentration sulphur bearing waste (DMSO)	Packing process changed at transfer station
01/11/22	SO2	High concentration sulphur bearing waste, incorrect labelling	Packing at transfer station improved
30/11/22	NOx	CEMS fault after QAL 3	A1 CBISS Investigation
17/12/22	SO2	High concentration sulphur bearing waste (DMSO)	Same customer waste as 27/10. Waste no longer accepted at this facility.
21/12/22	NOx	CEMS fault after QAL 3	Interlinked to 30/11. CEMS manifold to be replaced

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.
Improved air supply to zone 1 area, reduced the gaps in the air bricks to increase the pressure and reduce blockage. Changed the design of the ram face of zone 1 to aid waste turn over. Changed the logic to loading times and sequencing of ram movements. Making the loading adjust to temperature controls rather than timed sequence. Site saw an increase of 2% in waste throughput but as a result of the changes; 3% reduction in IBA generation, 10% reduction of APCr generation for a total of 77T reduction of material that would have gone to non-haz and haz landfill. 8% reduction of electricity consumption and 10% reduction in gas consumption to previous year.