Annual performance report for: SUEZ R&R Ltd

Tees Valley – Energy from Waste Facility

Permit Number: EPR/ VP3034SG

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	SUEZ Recycling and Recovery UK Ltd EfW Lines 1-3 Haverton Hill Road, Billingham, Stockton-on-Tees, Cleveland,United Kingdom, TS23 1PY
Description of waste input	Municipal household waste from local councils: Stockton-on-Tees Hartlepool Middlesborough Redcar & Cleveland North Tyneside Northumberland Durham South Tyne and Wear
Operator contact details if members of the public have any questions	Barry Fellows – barry.fellows@suez.com Darren Thomas – Darren.thomas@suez.com

2. Plant description

The Energy from Waste facility operates 24/7 and can receive up to 2,800 tonnes of municipal waste from local councils per week. The plant has five furnace lines with a combined processing capacity of 756,000 tonnes per annum. The heat produced by waste incineration is used to raise superheated steam which is harnessed to turn 3 x single-cylinder turbine linked to an electricity generator producing approx 55 MWh of electricity. Power produced, is sold to the National Grid

The plant has 5 Lines. Incoming waste is delivered to site by refuse collection trucks, it is checked in, weighted, then delivered into the reception hall.
RECEPTION HALL
2 large reception hall allows refuse collection trucks to manoeuvre and tip waste safely. Air needed for combustion is drawn into the furnace from here so that odour and dust do not escape from the building.
BUNKER

Waste vehicles reverse to a wheel stop and tip their loads into a large concrete bunker. Mixing of waste occurs as the crane driver sorts the waste looking for unsuitable wastes to be removed, and to improve the homogeneity of the incinerator feedstock.

CONTROL ROOM
There is 2 plant control rooms which centralises the operation of all equipment, including the grab crane used to mix and load waste into hoppers that feeds the furnace. All on-site functions are monitored automatically and manually. Its systems verify in real time that equipment is functioning properly, continuously monitor the combustion gas, and maximise the efficiency of the entire EfW process.

GRATE AND BOILER
Waste is lifted into the charging hoppers by the crane, from here waste falls into the furnace-charging chute and then onto the grate system for incineration. The thermal energy released from the burning is used to convert water to super-heated steam. At high pressure, this steam drives a turbine to generate electricity.

ELECTRICITY GENERATION
Electricity is generated at 11kv, with an electric capacity of 55 MWh.

BOTTOM ASH
Ash left on the grate after incineration is carried by conveyor to a storage bunker. In the bottom ash recycling facility a magnet above a conveyor extracts ferrous material for recycling. The remaining bottom ash processed for recycling.

AIR-COOLED AND WATER-COOLED CONDENSERS
After exiting the turbine, the air stream is cooled and condensed back into water through air condensers for line 3,4&5 and river water is used as the cooling media for line 1, and 2. This recovered water is treated and reused in the boilers to produce more steam.

EMISSION CONTROL
The gases from the furnace are subject to a rigorous cleaning process involving selective non-catalytic reduction (SNCR), spray absorbers, and active carbon injection. This removes oxides of nitrogen, acidic gases, dioxins, and heavy metals from the gas stream.

AIR POLLUTION CONTROL RESIDUE (APCR)
The cleaned gas is passed through fine-fabric bag filters to remove solid particles before it is emitted through the stack. The resultant APCR residue, or fly-ash, contains particles from the incineration process, lime used in the spray absorbers, salts and carbon dust. It is stored in a sealed silo until it removed from site for disposal.

EMISSIONS MONITORING
As they pass through the stack, the residual flue gases from the process are continuously monitored before release. Each incinerator line has and independent stack and emissions monitoring system. This data is relayed automatically to the control room.

SURFACE WATER
Surface water run-off exits the installation to a pipeline that discharges to the River Tees. Surface water run offs from fuel delivery areas are protected by oil/water interceptors. Periodic boiler blow down during maintenance of the incinerator are also discharged to this pipeline.

3. Summary of Plant Operation

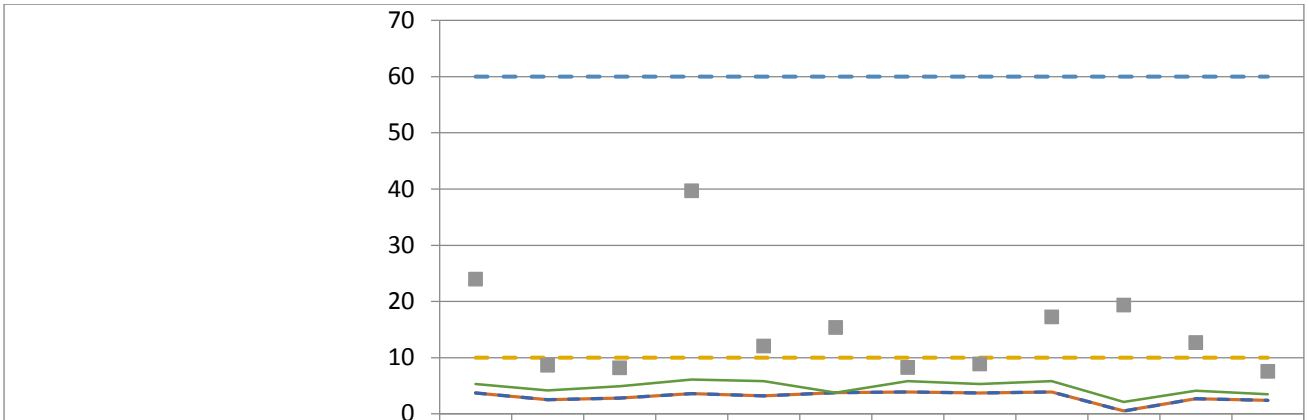
Municipal waste received	617,898.32 tonnes
Commercial and industrial waste received	19,372.00 tonnes
Clinical waste received	4692.1 tonnes
Total waste received	637,270.32 tonnes
Total plant operational hours	38286 hours
Total hours of “abnormal operation” (see permit for definition)	1 hour
Total quantity of incinerator bottom ash (IBA) produced	157,612.40 tonnes
Disposal or recovery route for IBA	Ballast phoenix for further reprocessing
Did any batches of IBA test as hazardous? If yes, state quantity	None
Total quantity of air pollution control (APC) residues produced	23,790.78 tonnes
Disposal or recovery route for APC residues	Augean Landfill
Total electricity generated for export to the National Grid	359,688.50 MWh

4. Summary of Plant Emissions

4.1 Summary of continuous emissions monitoring results for emissions to air

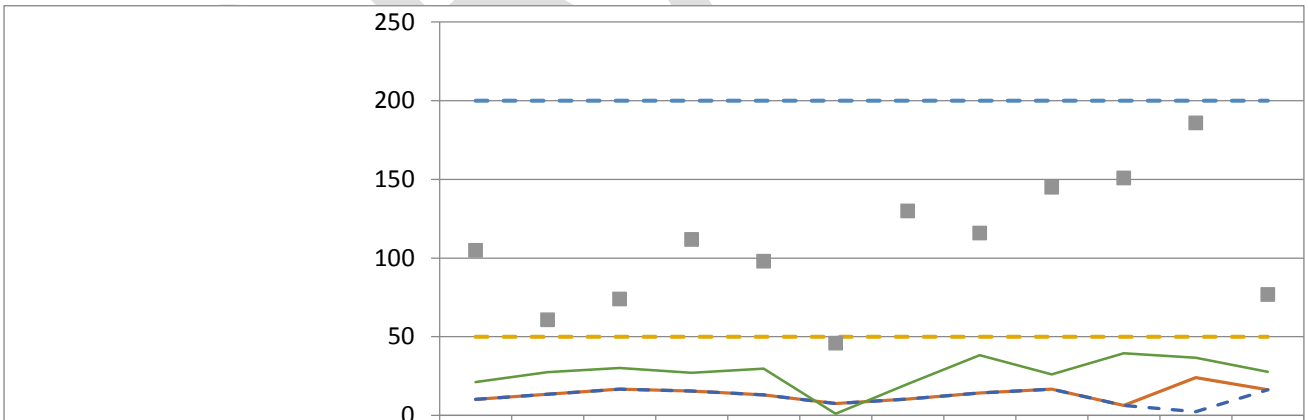
The following charts show the performance of the plant against its emission limit values (ELVs) for substances that are continuously monitored.

Line 1 - Hydrogen chloride



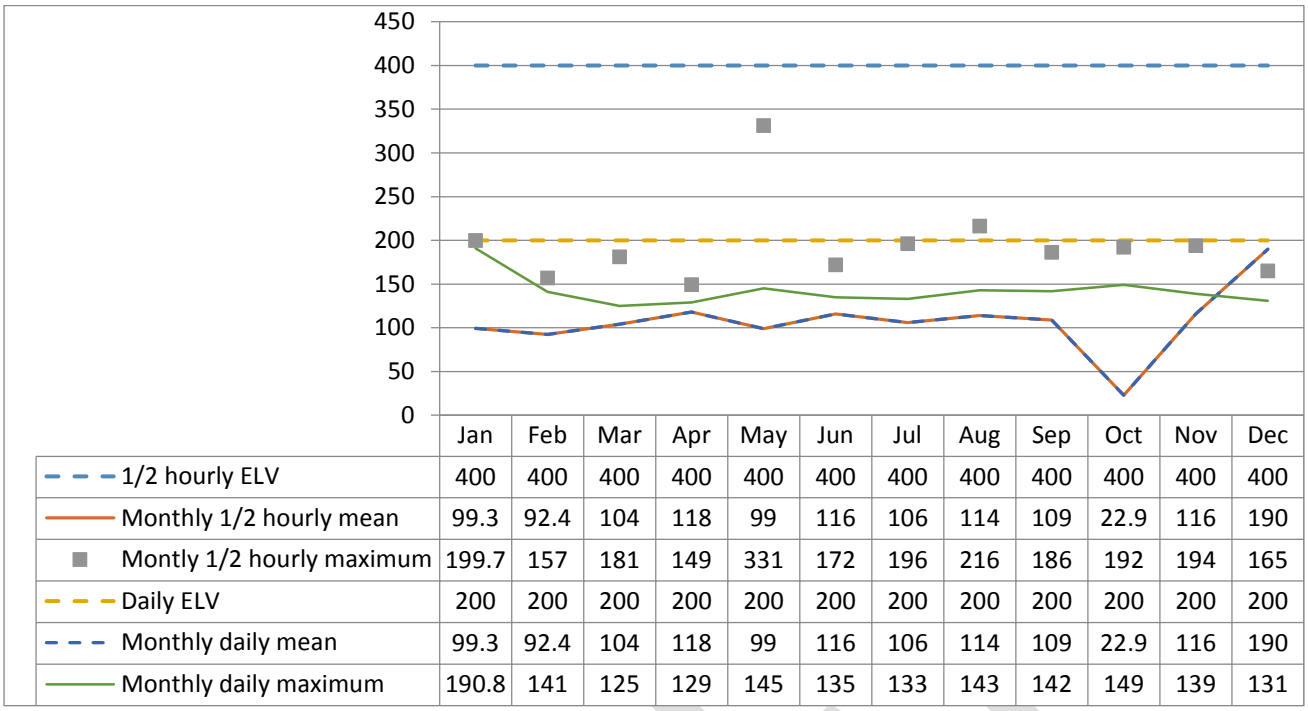
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	60	60	60	60	60	60	60	60	60	60	60	60
Monthly 1/2 hourly mean	3.7	2.5	2.8	3.6	3.2	3.8	3.9	3.7	3.9	0.5	2.7	2.4
Montly 1/2 hourly maximum	24	8.7	8.2	39.7	12.1	15.4	8.3	8.9	17.3	19.4	12.7	7.6
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	3.7	2.5	2.8	3.6	3.2	3.8	3.9	3.7	3.9	0.5	2.7	2.4
Monthly daily maximum	5.3	4.2	4.9	6.1	5.8	3.8	5.8	5.3	5.8	2.1	4.1	3.5

Line 1 – Sulphur dioxide



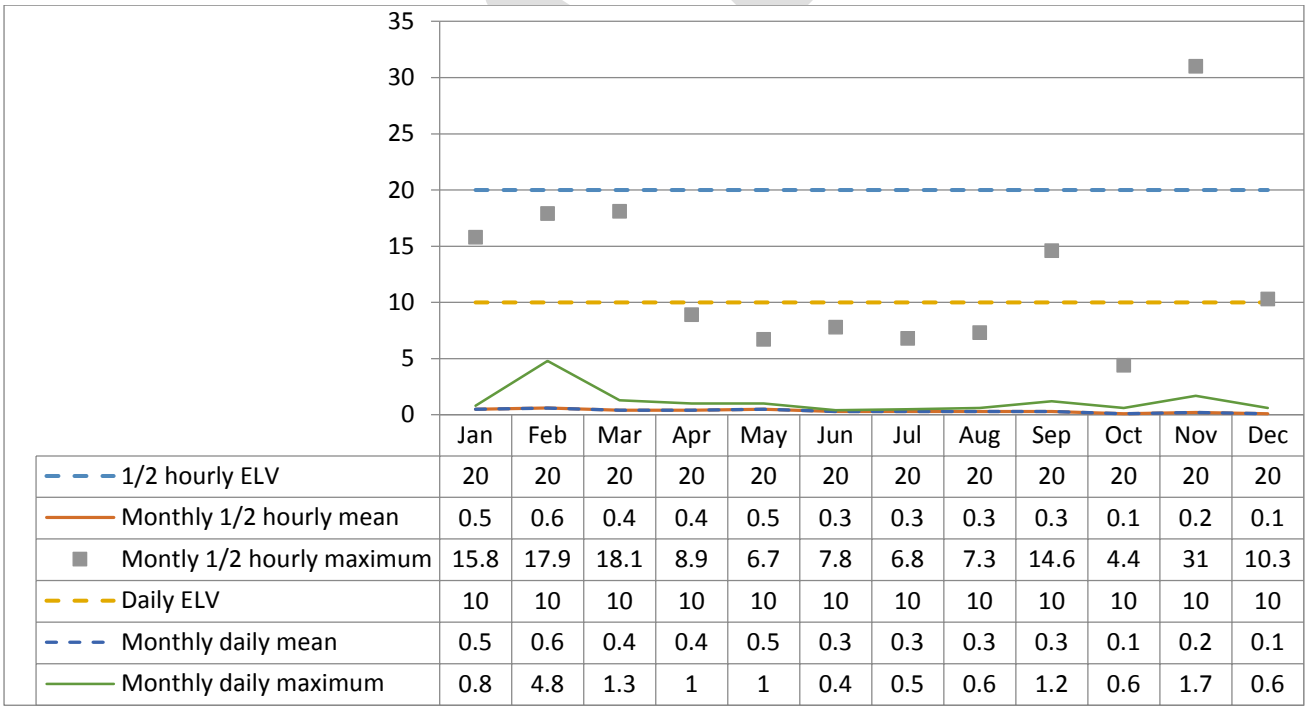
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly 1/2 hourly mean	10.3	13.4	16.7	15.5	13	7.5	10.5	14.4	16.7	6.3	24	16.3
Montly 1/2 hourly maximum	105	60.9	74	112	98	46	130	116	145	151	186	77
Daily ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	10.3	13.4	16.7	15.5	13	7.5	10.5	14.4	16.7	6.3	2.4	16.3
Monthly daily maximum	21.3	27.5	30.2	27.2	29.7	1.1	20	38.4	26	39.6	36.6	27.7

Line 1 – Oxides of nitrogen



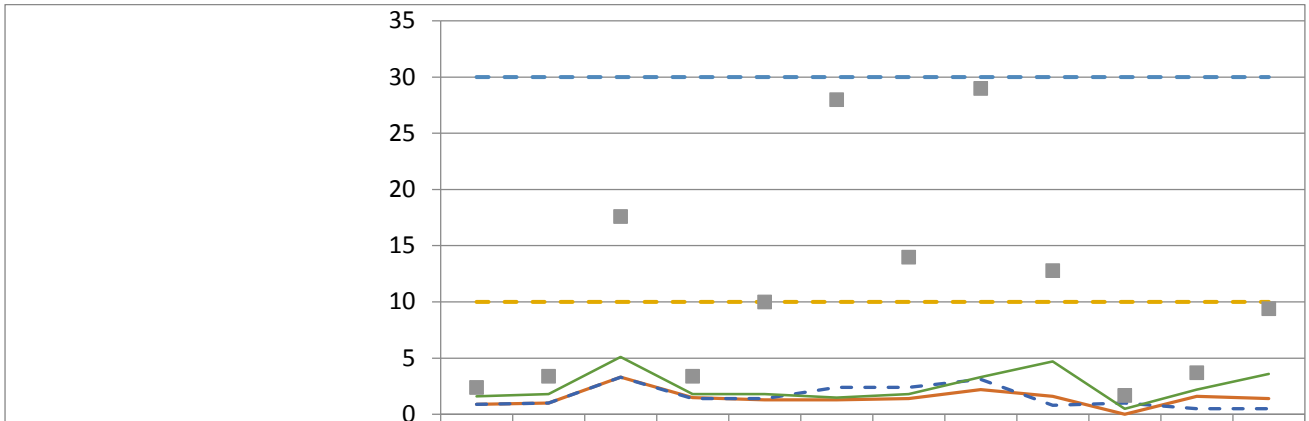
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	400	400	400	400	400	400	400	400	400	400	400	400
Monthly 1/2 hourly mean	99.3	92.4	104	118	99	116	106	114	109	22.9	116	190
Montly 1/2 hourly maximum	199.7	157	181	149	331	172	196	216	186	192	194	165
Daily ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly daily mean	99.3	92.4	104	118	99	116	106	114	109	22.9	116	190
Monthly daily maximum	190.8	141	125	129	145	135	133	143	142	149	139	131

Line 1 – Total organic carbon



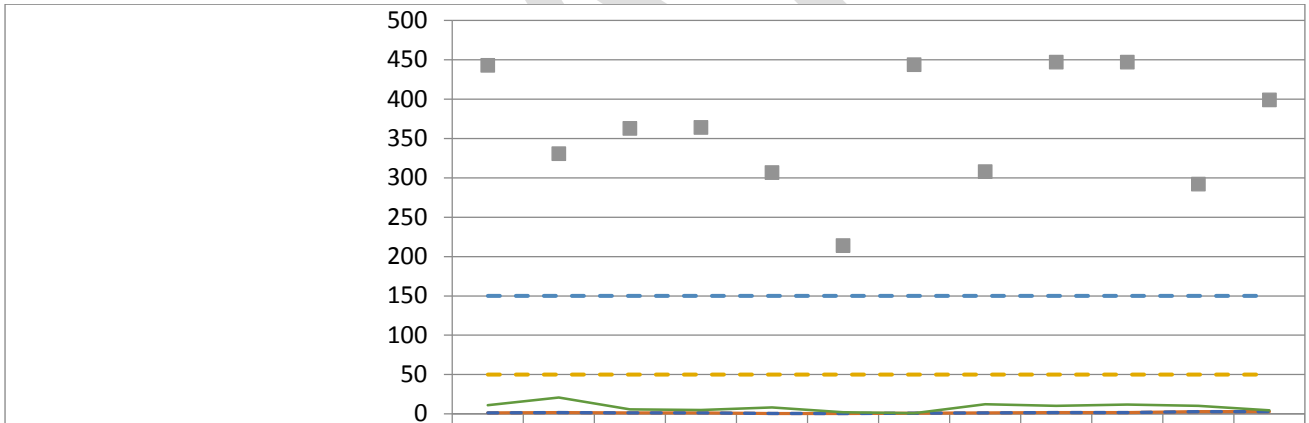
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	20	20	20	20	20	20	20	20	20	20	20	20
Monthly 1/2 hourly mean	0.5	0.6	0.4	0.4	0.5	0.3	0.3	0.3	0.3	0.1	0.2	0.1
Montly 1/2 hourly maximum	15.8	17.9	18.1	8.9	6.7	7.8	6.8	7.3	14.6	4.4	31	10.3
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	0.5	0.6	0.4	0.4	0.5	0.3	0.3	0.3	0.3	0.1	0.2	0.1
Monthly daily maximum	0.8	4.8	1.3	1	1	0.4	0.5	0.6	1.2	0.6	1.7	0.6

Line 1 – Particulates



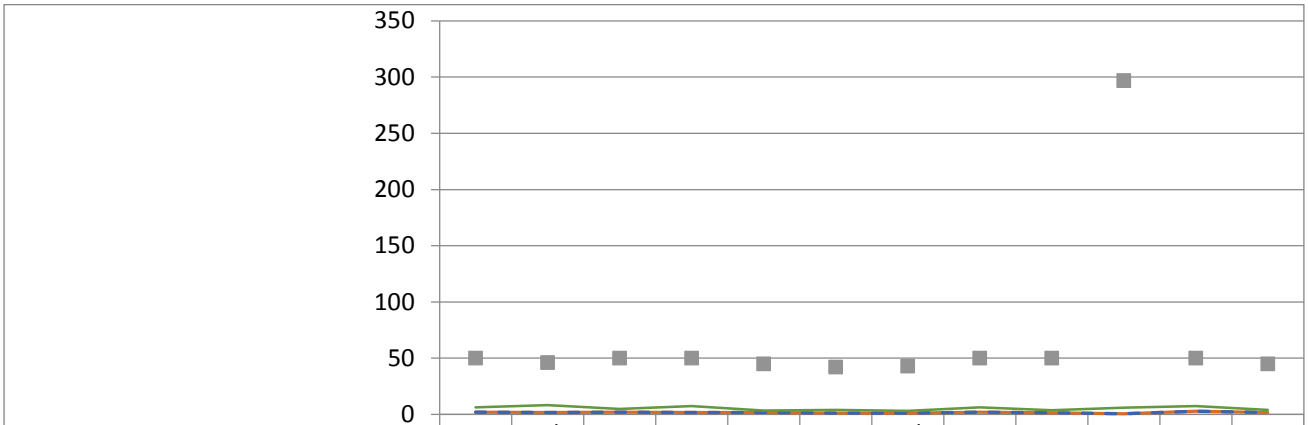
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	30	30	30	30	30	30	30	30	30	30	30	30
Monthly 1/2 hourly mean	0.9	1	3.3	1.5	1.3	1.3	1.4	2.2	1.6	0	1.6	1.4
Montly 1/2 hourly maximum	2.4	3.4	17.6	3.4	10	28	14	29	12.8	1.7	3.7	9.4
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	0.9	1	3.3	1.4	1.4	2.4	2.4	3.1	0.8	1	0.5	0.5
Monthly daily maximum	1.6	1.8	5.1	1.8	1.8	1.5	1.8	3.3	4.7	0.5	2.2	3.6

Line 1 – Carbon monoxide



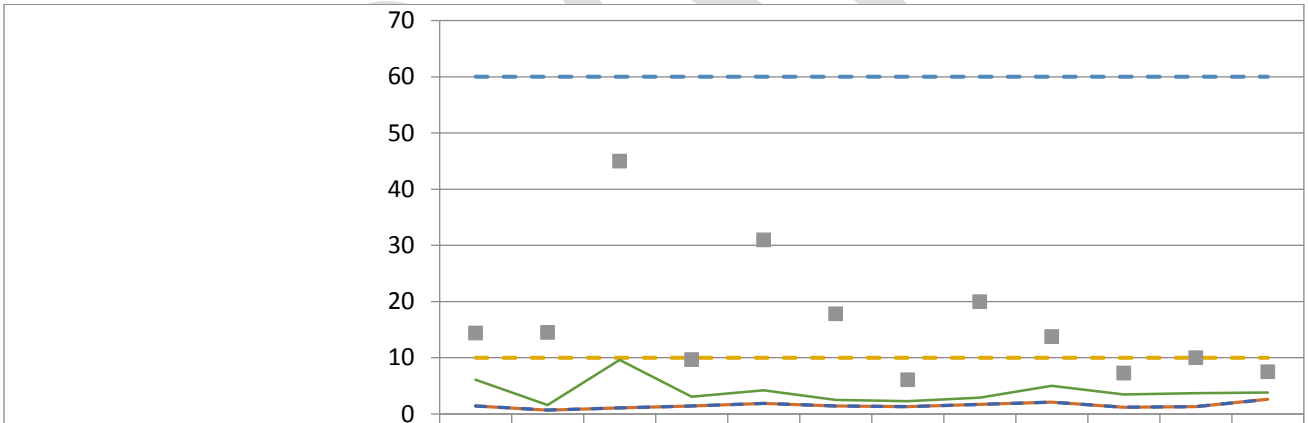
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
10 minute ELV	150	150	150	150	150	150	150	150	150	150	150	150
Monthly 10 minute mean	1.4	1.7	1.2	1.3	0.6	0.7	1	1.5	1.7	1.6	2.9	2.9
Monthly 10 minute maximum	443	331	363	364	307	214	444	308	447	447	292	399
Daily ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	1.4	1.7	1.2	1.3	0.6	0.7	1	1.5	1.7	1.6	2.9	2.9
Monthly daily maximum	10.9	21	5.9	5	8.4	2.2	0.8	12.1	10.2	12	10.1	4.5

Line 1 – Ammonia



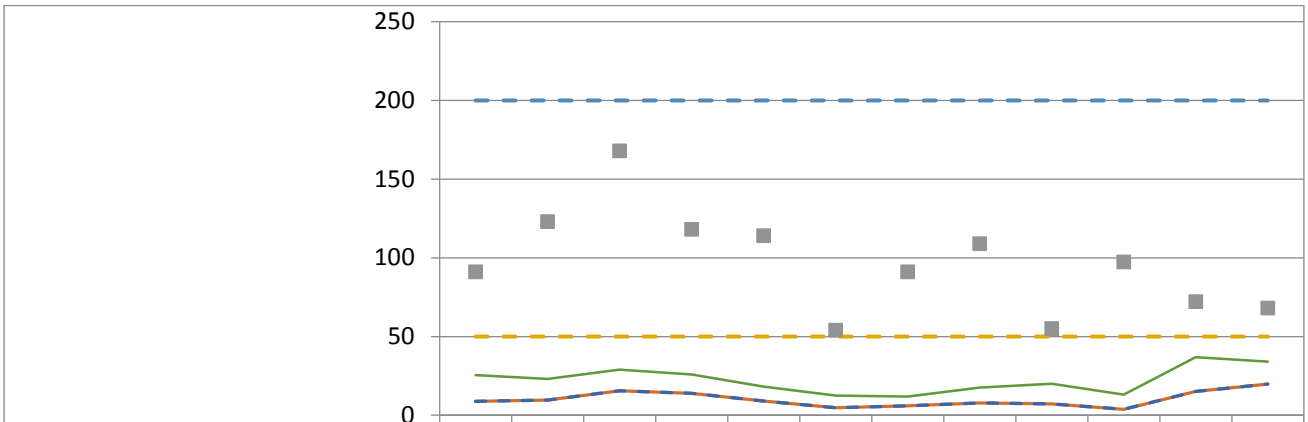
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV												
Monthly 1/2 hourly mean	2	1.8	2	1.7	1.7	1.2	1.1	2	1.4	0.6	2.8	1.6
Montly 1/2 hourly maximum	50	46	50	50	45	42	43	50	50	297	50	45
Daily ELV												
Monthly daily mean	2	1.8	2	1.7	1.7	1.2	1.1	2	1.4	0.6	2.8	1.6
Monthly daily maximum	6.2	8.2	4.7	7.5	3.4	4.1	3	6.3	3.7	5.9	7.5	3.9

Line 2 - Hydrogen chloride



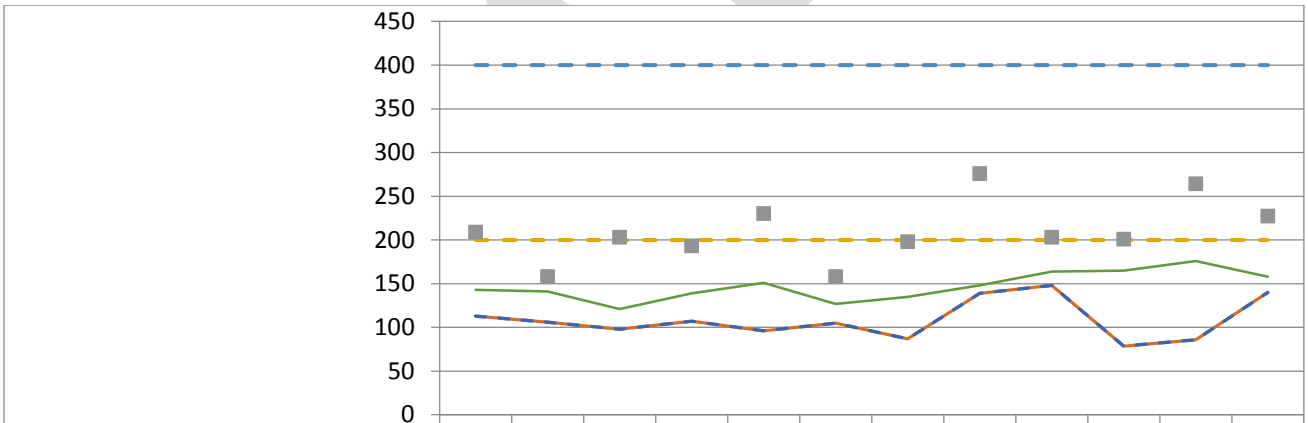
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	60	60	60	60	60	60	60	60	60	60	60	60
Monthly 1/2 hourly mean	1.4	0.7	1.1	1.4	1.9	1.4	1.3	1.7	2.1	1.2	1.3	2.6
Montly 1/2 hourly maximum	14.4	14.5	45	9.7	31	17.8	6.1	20	13.8	7.3	10	7.5
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	1.4	0.7	1.1	1.4	1.9	1.4	1.3	1.7	2.1	1.2	1.3	2.6
Monthly daily maximum	6.1	1.6	9.6	3.1	4.2	2.5	2.3	2.9	5	3.5	3.7	3.8

Line 2 – Sulphur dioxide



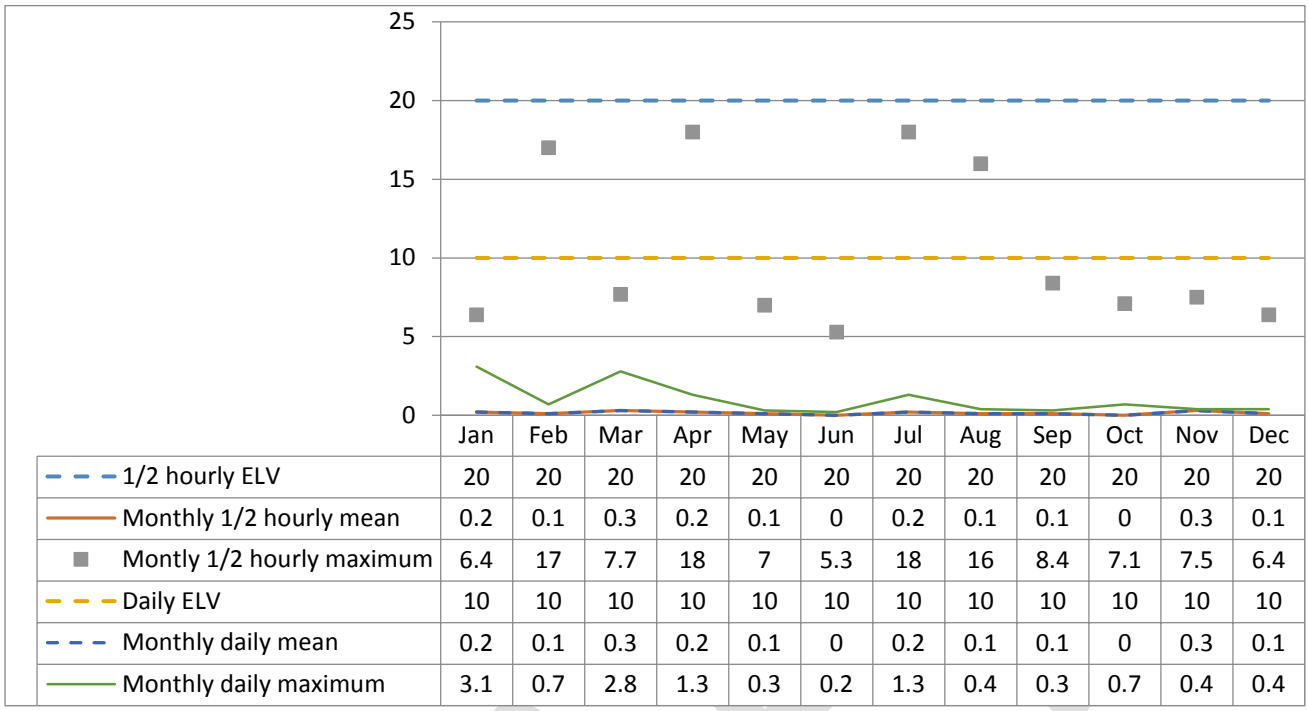
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly 1/2 hourly mean	8.9	9.7	15.6	14	9.1	4.8	6	7.8	7.3	3.8	15.1	19.8
Montly 1/2 hourly maximum	91	123	168	118	114	54	91	109	55	97.4	72	68
Daily ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	8.9	9.7	15.6	14	9.1	4.8	6	7.8	7.3	3.8	15.1	19.8
Monthly daily maximum	25.5	23.1	29	26	18.2	12.4	11.8	17.5	20	13.2	37	34

Line 2 – Oxides of nitrogen



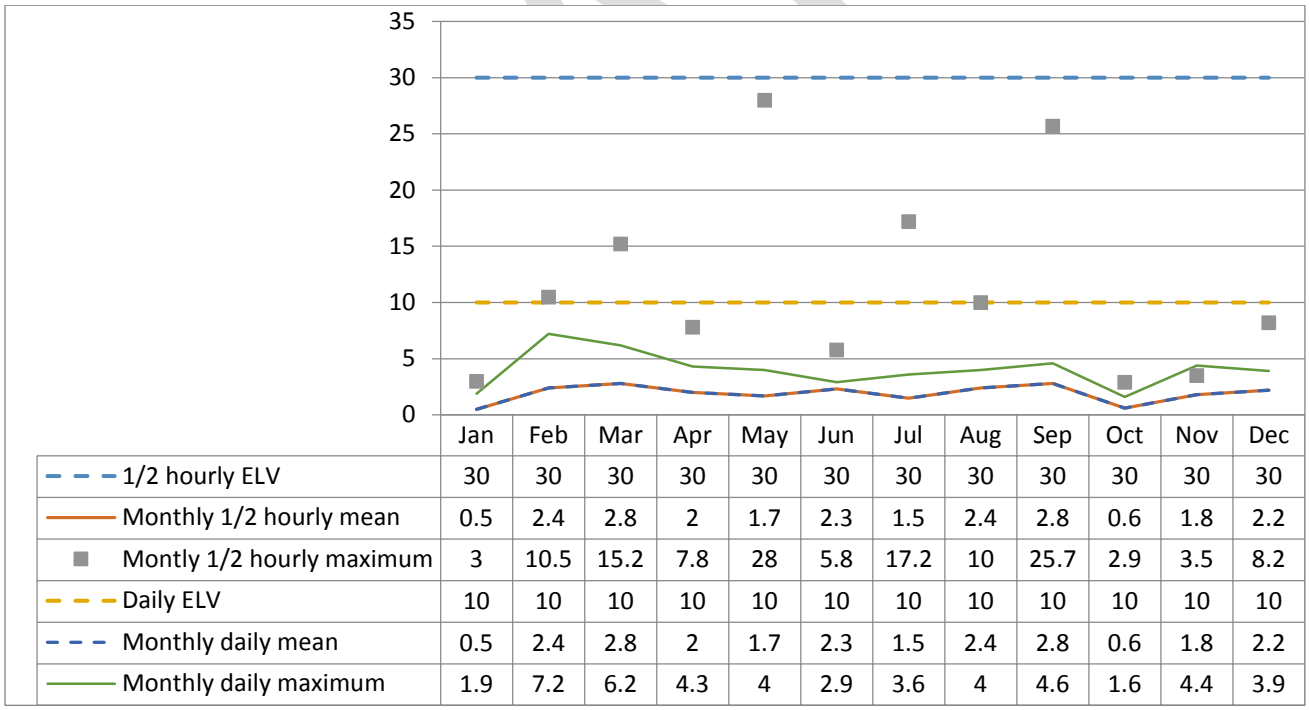
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	400	400	400	400	400	400	400	400	400	400	400	400
Monthly 1/2 hourly mean	113	106	98	107	96	105	87	139	148	78.7	85.8	140
Montly 1/2 hourly maximum	209	158	203	193	230	158	198	276	203	200.9	264	227
Daily ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly daily mean	113	106	98	107	96	105	87	139	148	78.7	85.8	140
Monthly daily maximum	143	141	121	139	151	127	135	148	164	165	176	158

Line 2 – Total organic carbon



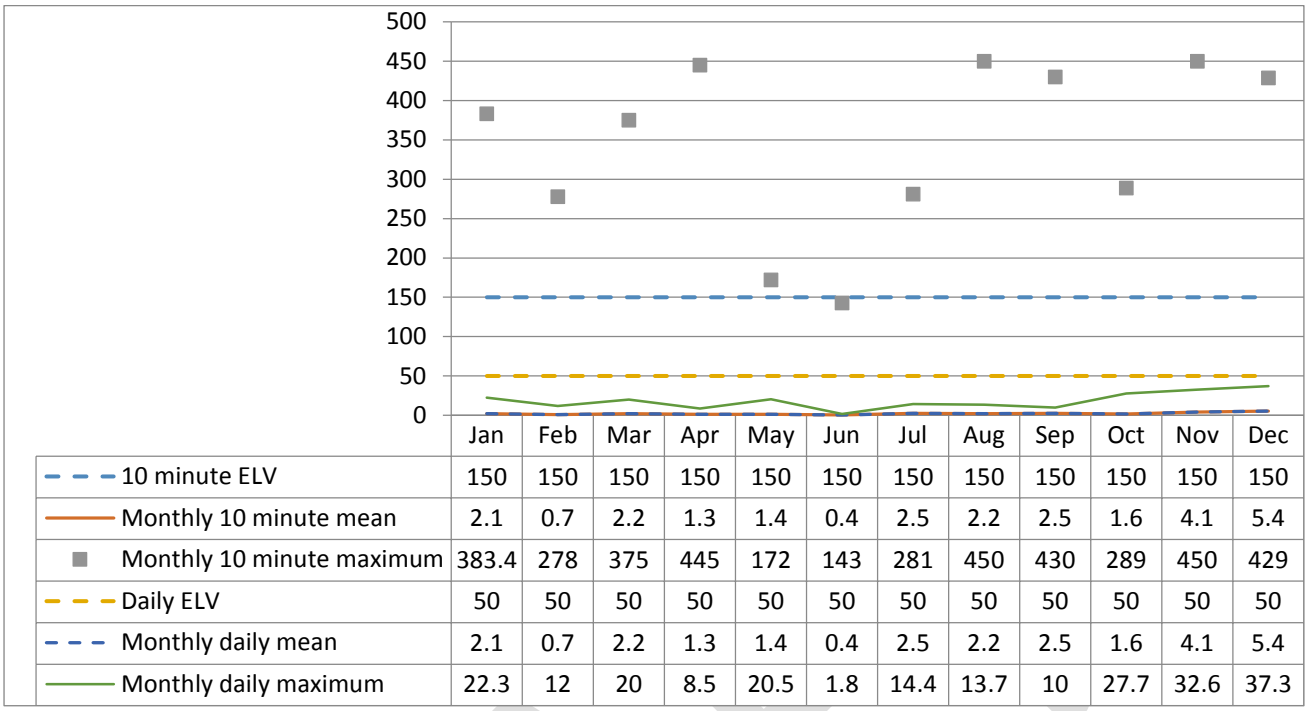
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	20	20	20	20	20	20	20	20	20	20	20	20
Monthly 1/2 hourly mean	0.2	0.1	0.3	0.2	0.1	0	0.2	0.1	0.1	0	0.3	0.1
Montly 1/2 hourly maximum	6.4	17	7.7	18	7	5.3	18	16	8.4	7.1	7.5	6.4
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	0.2	0.1	0.3	0.2	0.1	0	0.2	0.1	0.1	0	0.3	0.1
Monthly daily maximum	3.1	0.7	2.8	1.3	0.3	0.2	1.3	0.4	0.3	0.7	0.4	0.4

Line 2 – Particulates



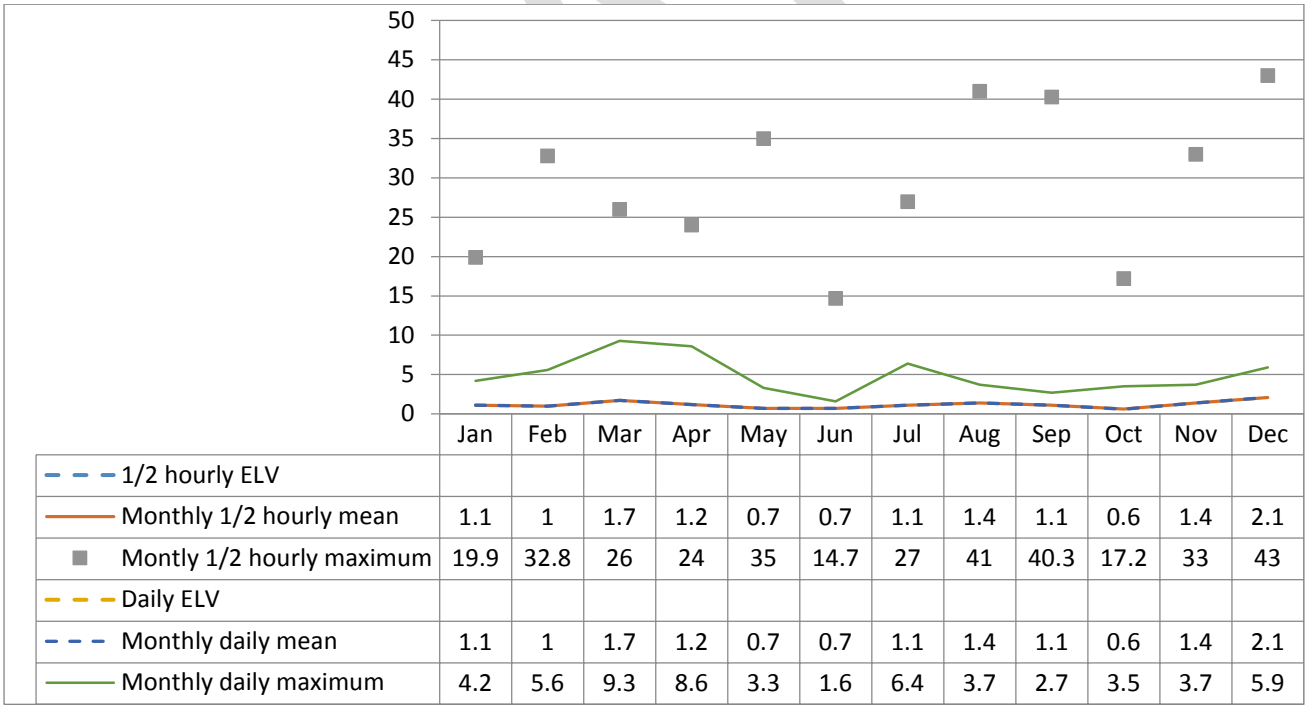
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	30	30	30	30	30	30	30	30	30	30	30	30
Monthly 1/2 hourly mean	0.5	2.4	2.8	2	1.7	2.3	1.5	2.4	2.8	0.6	1.8	2.2
Montly 1/2 hourly maximum	3	10.5	15.2	7.8	28	5.8	17.2	10	25.7	2.9	3.5	8.2
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	0.5	2.4	2.8	2	1.7	2.3	1.5	2.4	2.8	0.6	1.8	2.2
Monthly daily maximum	1.9	7.2	6.2	4.3	4	2.9	3.6	4	4.6	1.6	4.4	3.9

Line 2 – Carbon monoxide



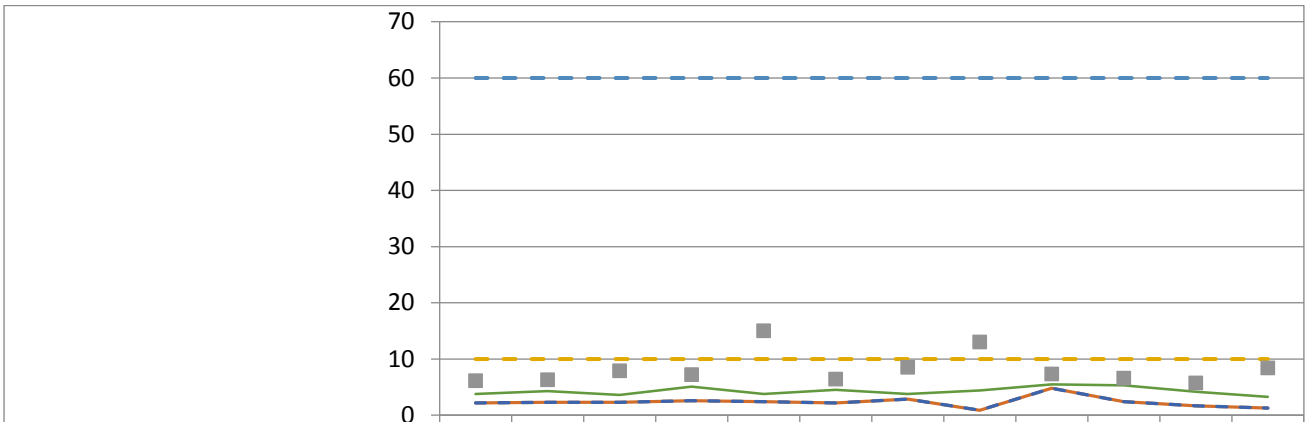
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
10 minute ELV	150	150	150	150	150	150	150	150	150	150	150	150
Monthly 10 minute mean	2.1	0.7	2.2	1.3	1.4	0.4	2.5	2.2	2.5	1.6	4.1	5.4
Monthly 10 minute maximum	383.4	278	375	445	172	143	281	450	430	289	450	429
Daily ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	2.1	0.7	2.2	1.3	1.4	0.4	2.5	2.2	2.5	1.6	4.1	5.4
Monthly daily maximum	22.3	12	20	8.5	20.5	1.8	14.4	13.7	10	27.7	32.6	37.3

Line 2 – Ammonia



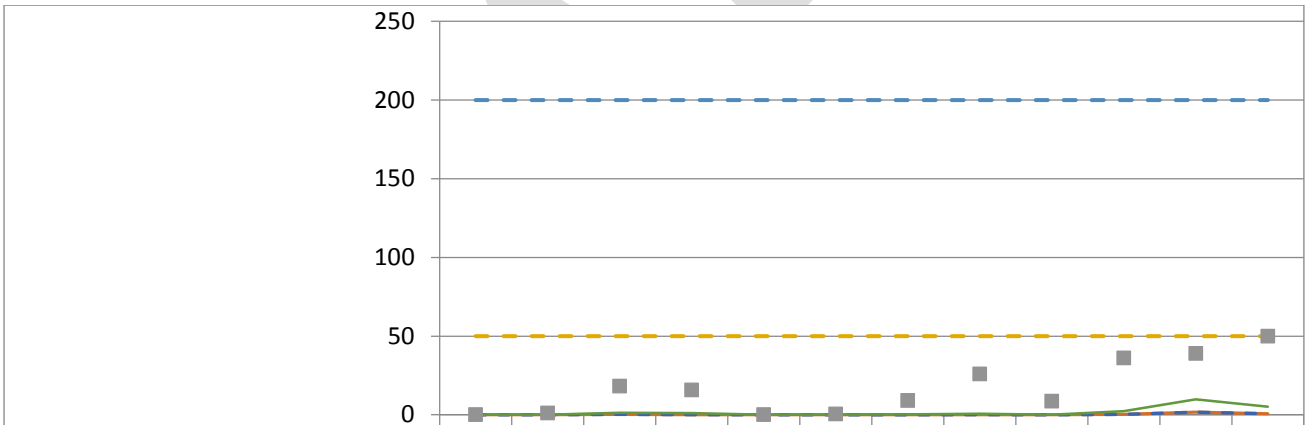
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV												
Monthly 1/2 hourly mean	1.1	1	1.7	1.2	0.7	0.7	1.1	1.4	1.1	0.6	1.4	2.1
Montly 1/2 hourly maximum	19.9	32.8	26	24	35	14.7	27	41	40.3	17.2	33	43
Daily ELV												
Monthly daily mean	1.1	1	1.7	1.2	0.7	0.7	1.1	1.4	1.1	0.6	1.4	2.1
Monthly daily maximum	4.2	5.6	9.3	8.6	3.3	1.6	6.4	3.7	2.7	3.5	3.7	5.9

Line 3 - Hydrogen chloride



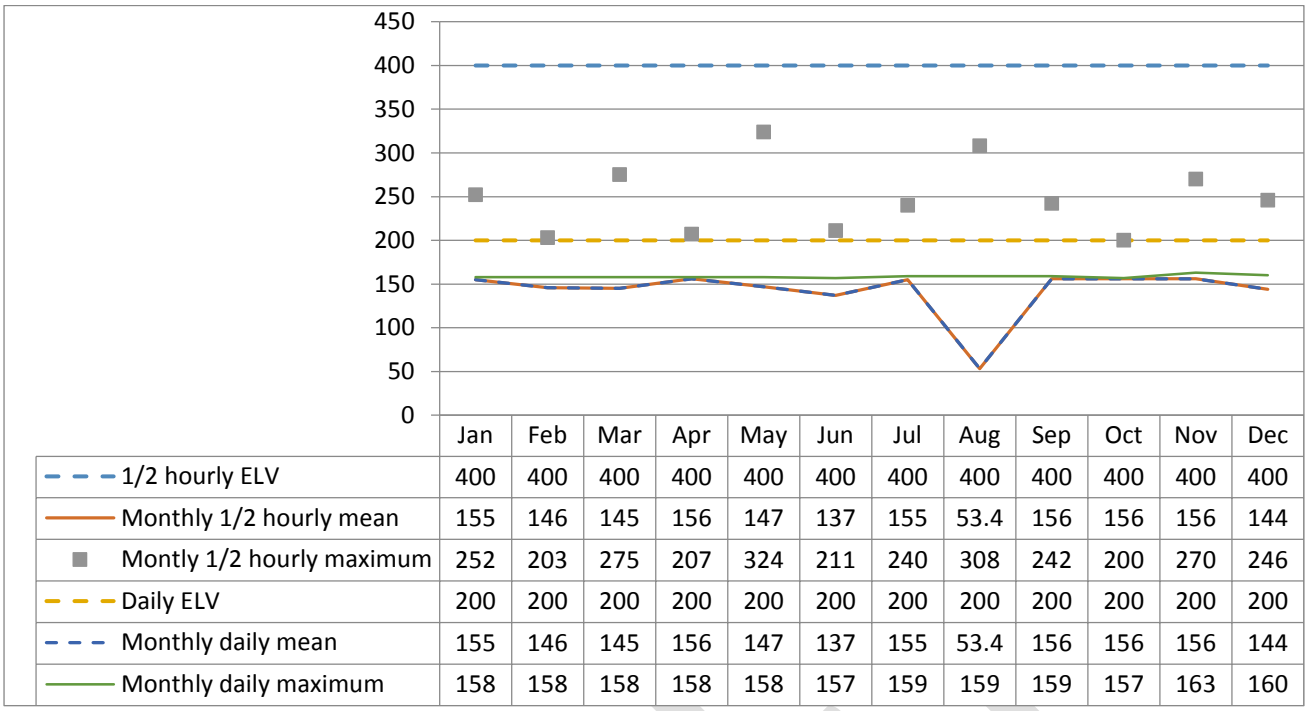
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	60	60	60	60	60	60	60	60	60	60	60	60
Monthly 1/2 hourly mean	2.2	2.3	2.3	2.6	2.4	2.2	2.9	0.9	4.8	2.4	1.7	1.3
Montly 1/2 hourly maximum	6.1	6.3	7.9	7.2	15	6.4	8.5	13	7.3	6.6	5.7	8.4
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	2.2	2.3	2.3	2.6	2.4	2.2	2.9	0.9	4.8	2.4	1.7	1.3
Monthly daily maximum	3.8	4.3	3.6	5.1	3.8	4.5	3.8	4.4	5.5	5.3	4.2	3.3

Line 3 – Sulphur dioxide



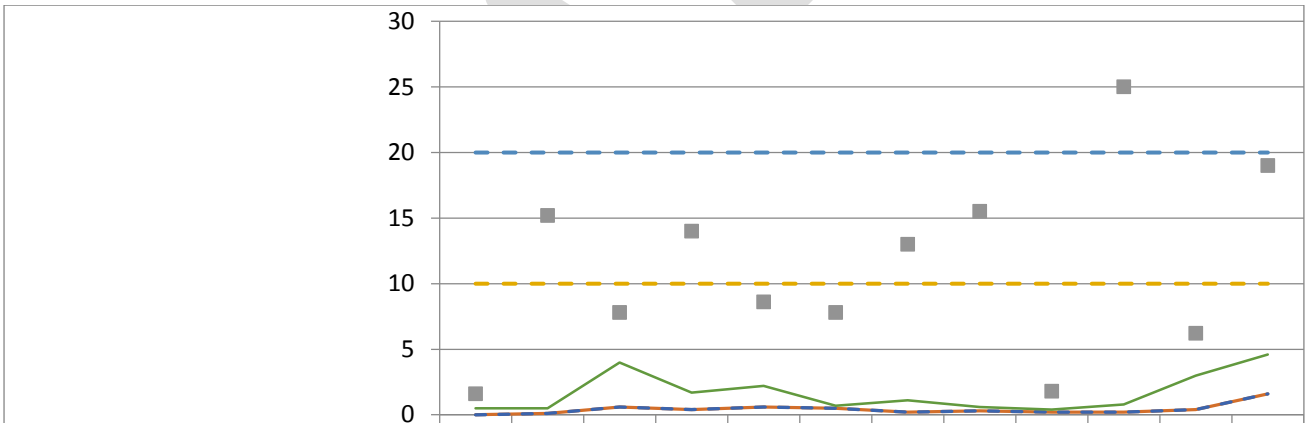
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly 1/2 hourly mean	0	0	0.2	0.1	0	0	0	0.1	0	0.4	1.7	0.7
Montly 1/2 hourly maximum	0	1.2	18.2	15.7	0	0.6	9	26	8.7	36	39	50
Daily ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	0	0	0.2	0.1	0	0	0	0.1	0	0.4	1.7	0.7
Monthly daily maximum	0	0	1.4	1.1	0	0	0.2	0.7	0	2.4	9.8	5.2

Line 3 – Oxides of nitrogen



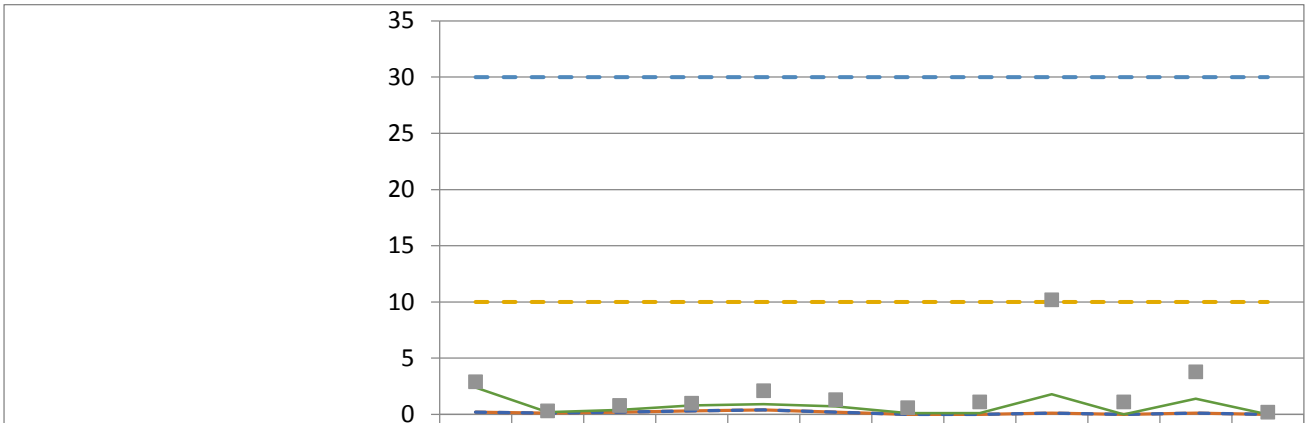
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	400	400	400	400	400	400	400	400	400	400	400	400
Monthly 1/2 hourly mean	155	146	145	156	147	137	155	53.4	156	156	156	144
Montly 1/2 hourly maximum	252	203	275	207	324	211	240	308	242	200	270	246
Daily ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly daily mean	155	146	145	156	147	137	155	53.4	156	156	156	144
Monthly daily maximum	158	158	158	158	158	157	159	159	159	157	163	160

Line 3 – Total organic carbon



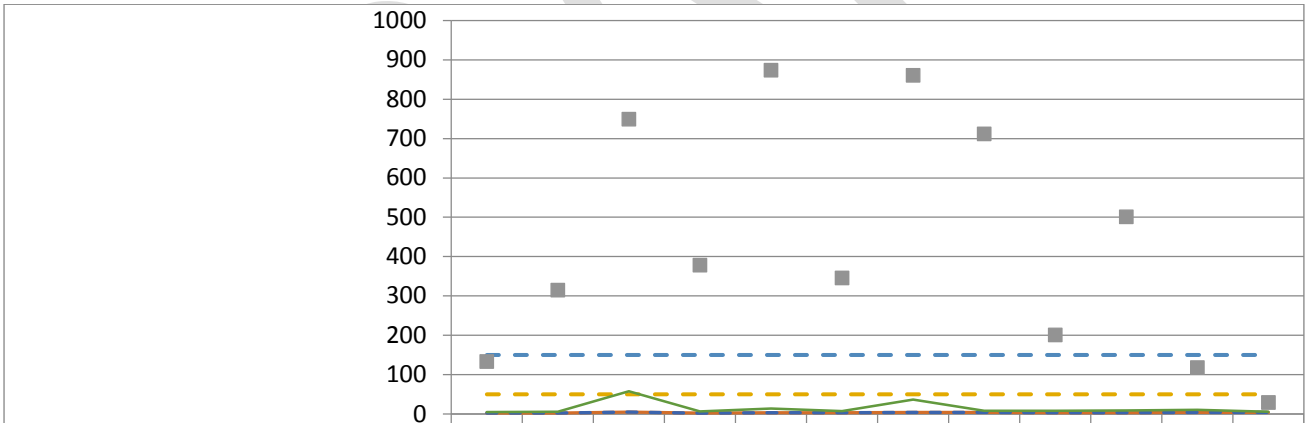
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	20	20	20	20	20	20	20	20	20	20	20	20
Monthly 1/2 hourly mean	0	0.1	0.6	0.4	0.6	0.5	0.2	0.3	0.2	0.2	0.4	1.6
Montly 1/2 hourly maximum	1.6	15.2	7.8	14	8.6	7.8	13	15.5	1.8	25	6.2	19
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	0	0.1	0.6	0.4	0.6	0.5	0.2	0.3	0.2	0.2	0.4	1.6
Monthly daily maximum	0.5	0.5	4	1.7	2.2	0.7	1.1	0.6	0.4	0.8	3	4.6

Line 3 – Particulates



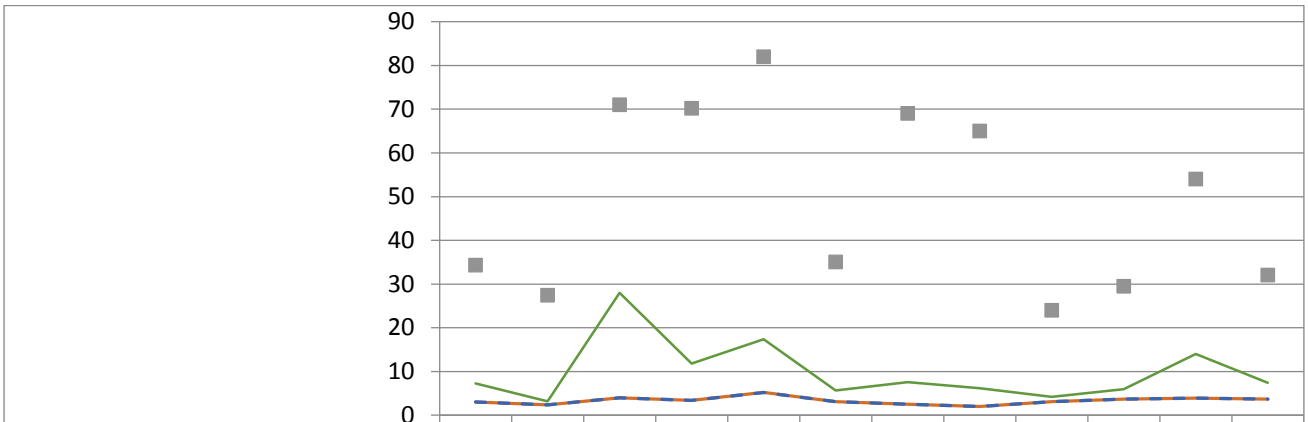
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	30	30	30	30	30	30	30	30	30	30	30	30
Monthly 1/2 hourly mean	0.2	0.1	0.2	0.3	0.4	0.2	0	0	0.1	0	0.1	0
Montly 1/2 hourly maximum	2.9	0.3	0.8	1	2.1	1.3	0.6	1.1	10.2	1.1	3.8	0.2
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	0.2	0.1	0.2	0.3	0.4	0.2	0	0	0.1	0	0.1	0
Monthly daily maximum	2.4	0.2	0.4	0.8	0.9	0.7	0.1	0.1	1.8	0	1.4	0

Line 3 – Carbon monoxide



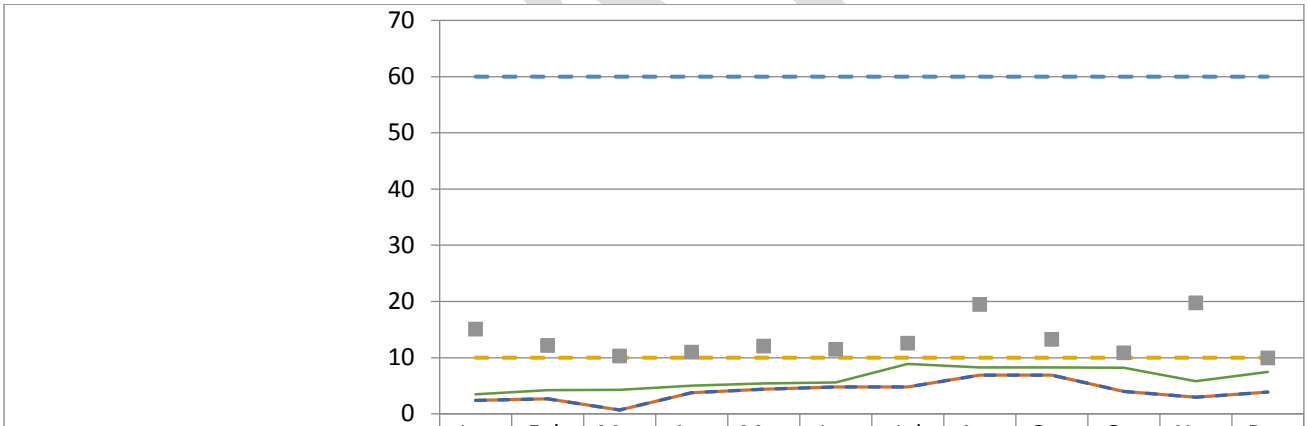
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
10 minute ELV	150	150	150	150	150	150	150	150	150	150	150	150
Monthly 10 minute mean	2.3	2.4	4.9	2.1	3.1	3.2	4.3	3.9	3.2	3.6	4.2	3.8
Monthly 10 minute maximum	133.7	315	749	378	874	346	861	712	201	501	118	29
Daily ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	2.3	2.4	4.9	2.1	3.1	3.2	4.3	3.9	3.2	3.6	4.2	3.8
Monthly daily maximum	4.5	5.5	58	6.8	13.6	7.6	36.7	8	7.8	8.8	10.8	6.1

Line 3 – Ammonia



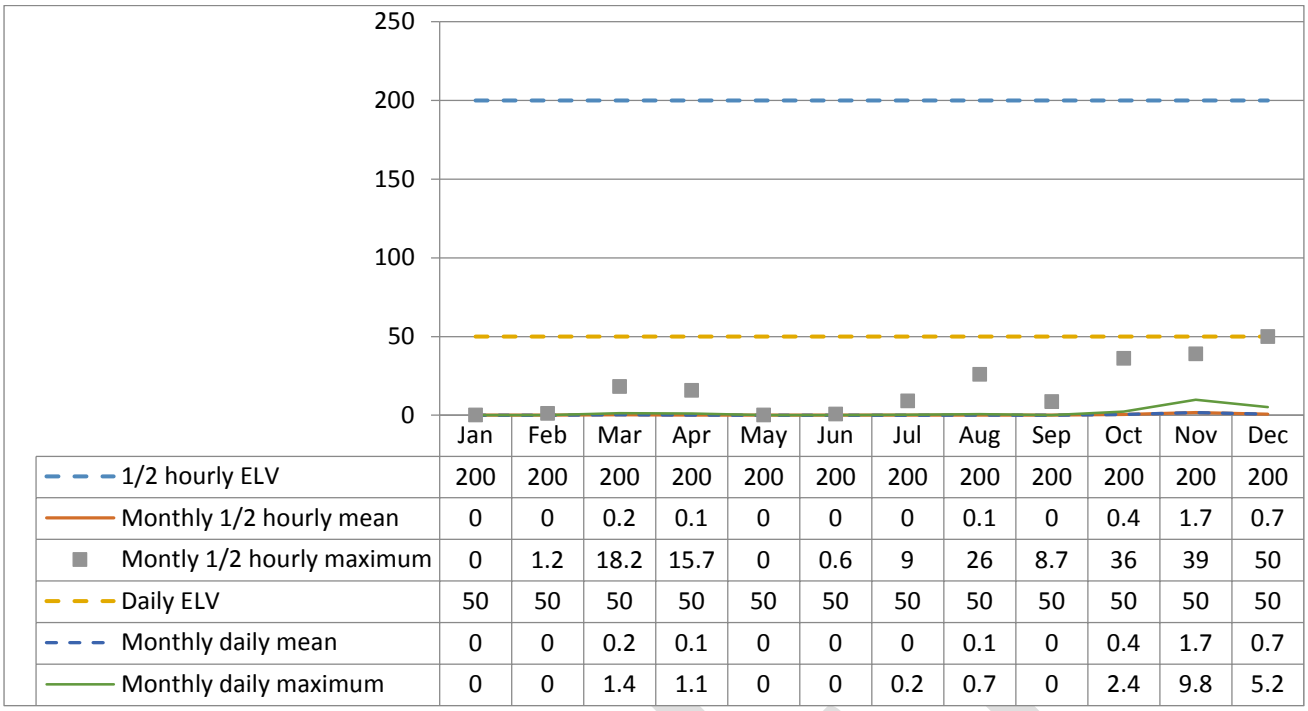
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV												
Monthly 1/2 hourly mean	3	2.4	4	3.4	5.2	3.1	2.5	2	3.1	3.7	3.9	3.7
Montly 1/2 hourly maximum	34.3	27.4	71	70.2	82	35	69	65	24	29.5	54	32
Daily ELV												
Monthly daily mean	3	2.4	4	3.4	5.2	3.1	2.5	2	3.1	3.7	3.9	3.7
Monthly daily maximum	7.3	3.2	28	11.8	17.4	5.7	7.6	6.2	4.2	6	14	7.4

Line 4 - Hydrogen chloride



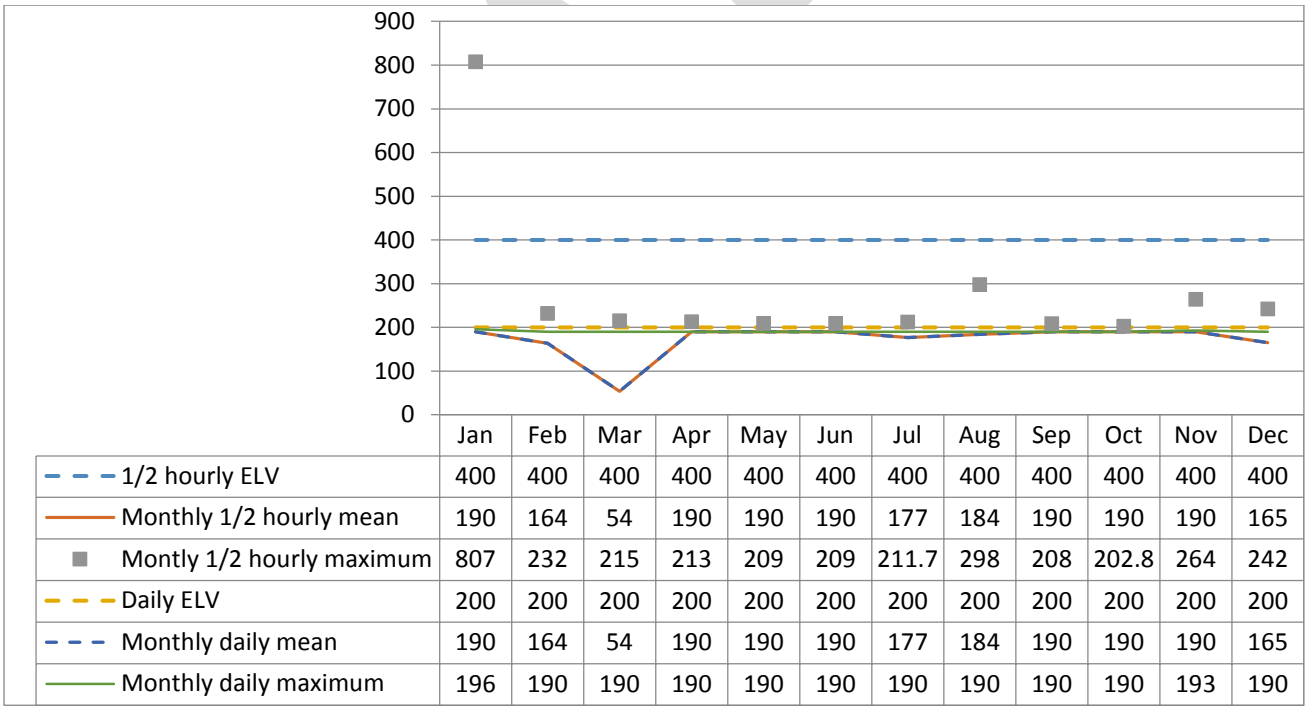
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	60	60	60	60	60	60	60	60	60	60	60	60
Monthly 1/2 hourly mean	2.4	2.7	0.7	3.8	4.4	4.8	4.8	6.9	6.9	4	3	3.9
Montly 1/2 hourly maximum	15.1	12.2	10.3	11	12.1	11.5	12.6	19.5	13.3	10.9	19.8	10
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	2.4	2.7	0.7	3.8	4.4	4.8	4.8	6.9	6.9	4	3	3.9
Monthly daily maximum	3.5	4.2	4.3	5	5.4	5.6	8.9	8.3	8.3	8.2	5.8	7.5

Line 4 – Sulphur dioxide



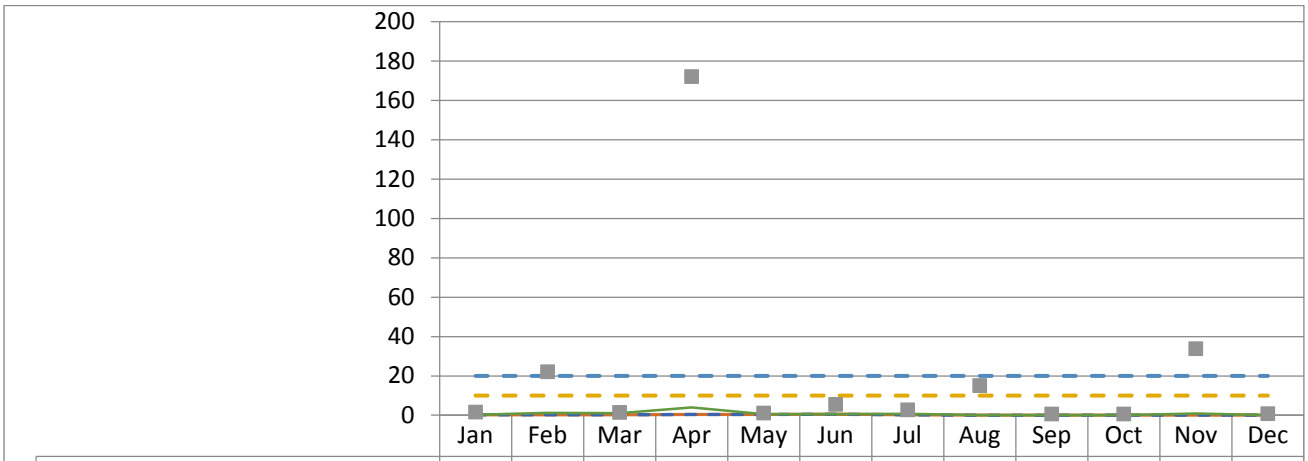
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly 1/2 hourly mean	0	0	0.2	0.1	0	0	0	0.1	0	0.4	1.7	0.7
Montly 1/2 hourly maximum	0	1.2	18.2	15.7	0	0.6	9	26	8.7	36	39	50
Daily ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	0	0	0.2	0.1	0	0	0	0.1	0	0.4	1.7	0.7
Monthly daily maximum	0	0	1.4	1.1	0	0	0.2	0.7	0	2.4	9.8	5.2

Line 4 – Oxides of nitrogen



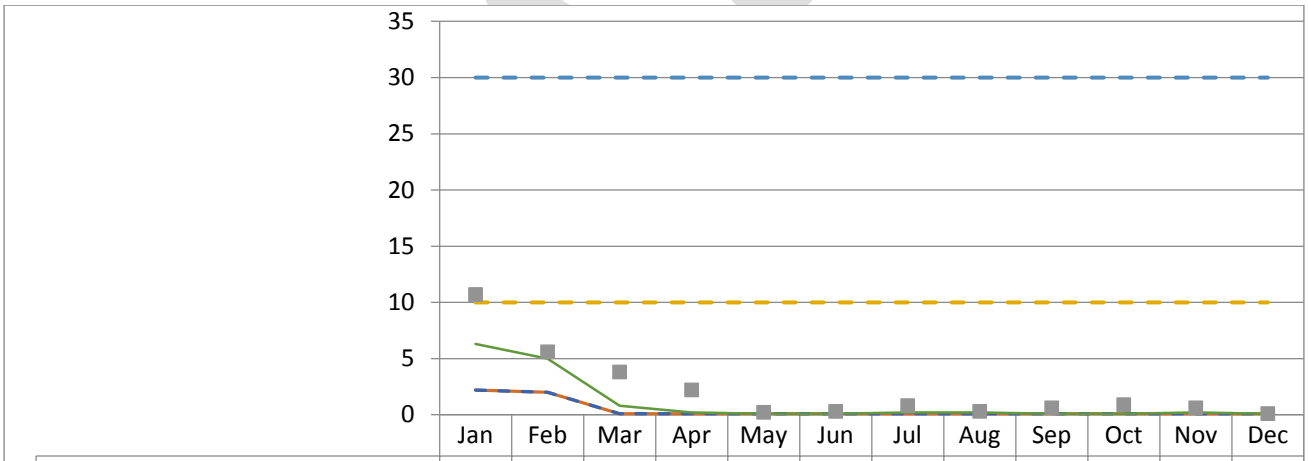
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	400	400	400	400	400	400	400	400	400	400	400	400
Monthly 1/2 hourly mean	190	164	54	190	190	190	177	184	190	190	190	165
Montly 1/2 hourly maximum	807	232	215	213	209	209	211.7	298	208	202.8	264	242
Daily ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly daily mean	190	164	54	190	190	190	177	184	190	190	190	165
Monthly daily maximum	196	190	190	190	190	190	190	190	190	190	193	190

Line 4 – Total organic carbon



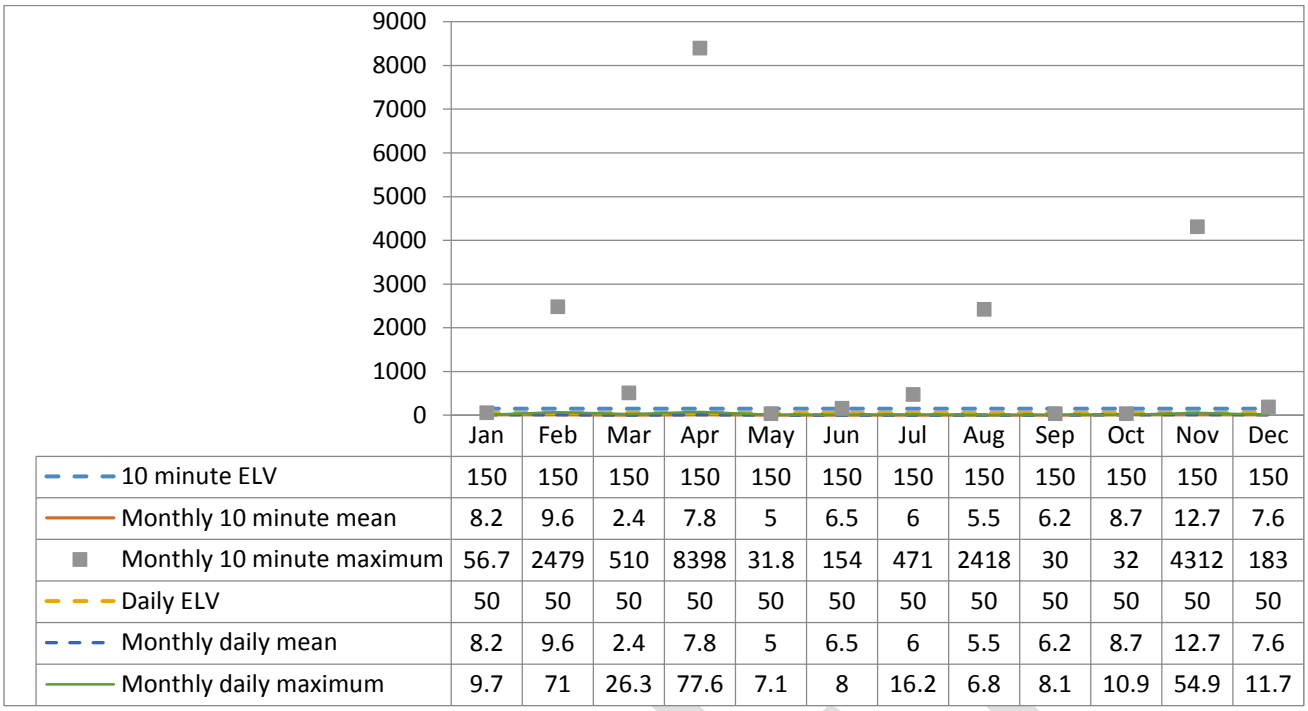
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	20	20	20	20	20	20	20	20	20	20	20	20
Monthly 1/2 hourly mean	0.3	0.3	0.2	0.4	0.4	0.5	0.3	0	0	0.1	0.1	0.1
Montly 1/2 hourly maximum	1.5	22	1.3	172	1	5.4	2.6	15	0.6	0.5	33.8	0.7
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	0.3	0.3	0.2	0.4	0.4	0.5	0.3	0	0	0.1	0.1	0.1
Monthly daily maximum	0.3	1.2	1.1	3.9	0.5	0.5	0.7	0	0.1	0.1	0.9	0.1

Line 4 – Particulates



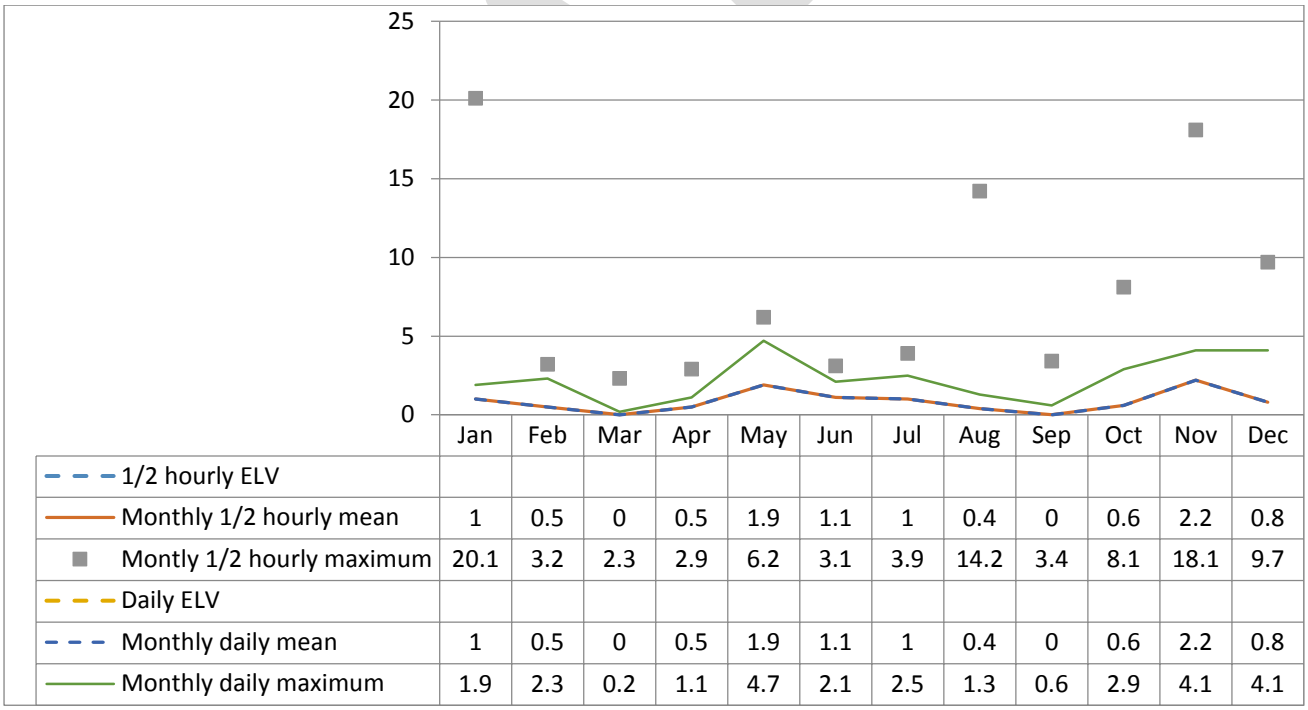
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	30	30	30	30	30	30	30	30	30	30	30	30
Monthly 1/2 hourly mean	2.2	2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Montly 1/2 hourly maximum	10.7	5.6	3.8	2.2	0.2	0.3	0.8	0.3	0.6	0.9	0.6	0.1
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	2.2	2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Monthly daily maximum	6.3	5	0.8	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.1

Line 4 – Carbon monoxide



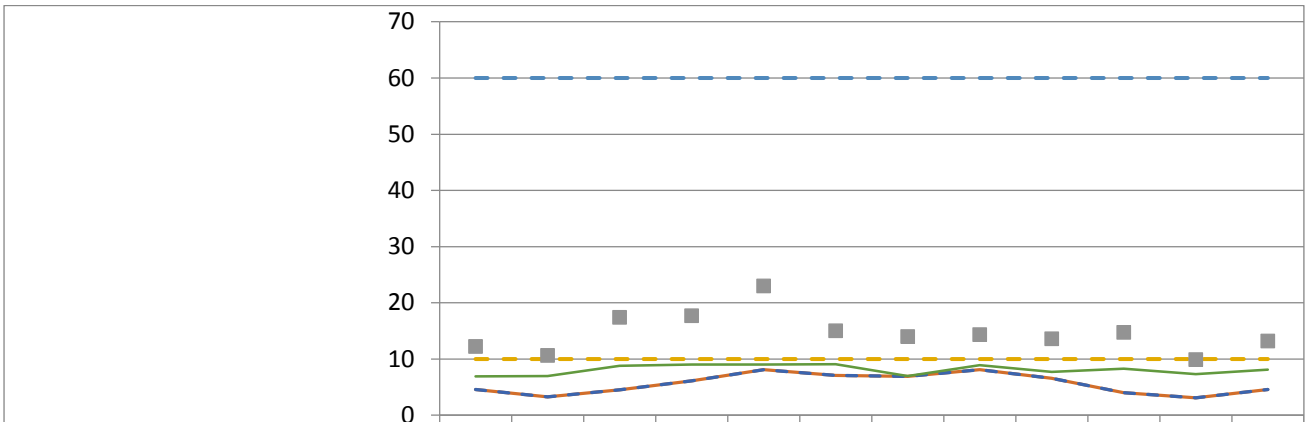
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
10 minute ELV	150	150	150	150	150	150	150	150	150	150	150	150
Monthly 10 minute mean	8.2	9.6	2.4	7.8	5	6.5	6	5.5	6.2	8.7	12.7	7.6
Monthly 10 minute maximum	56.7	2479	510	8398	31.8	154	471	2418	30	32	4312	183
Daily ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	8.2	9.6	2.4	7.8	5	6.5	6	5.5	6.2	8.7	12.7	7.6
Monthly daily maximum	9.7	71	26.3	77.6	7.1	8	16.2	6.8	8.1	10.9	54.9	11.7

Line 4 – Ammonia



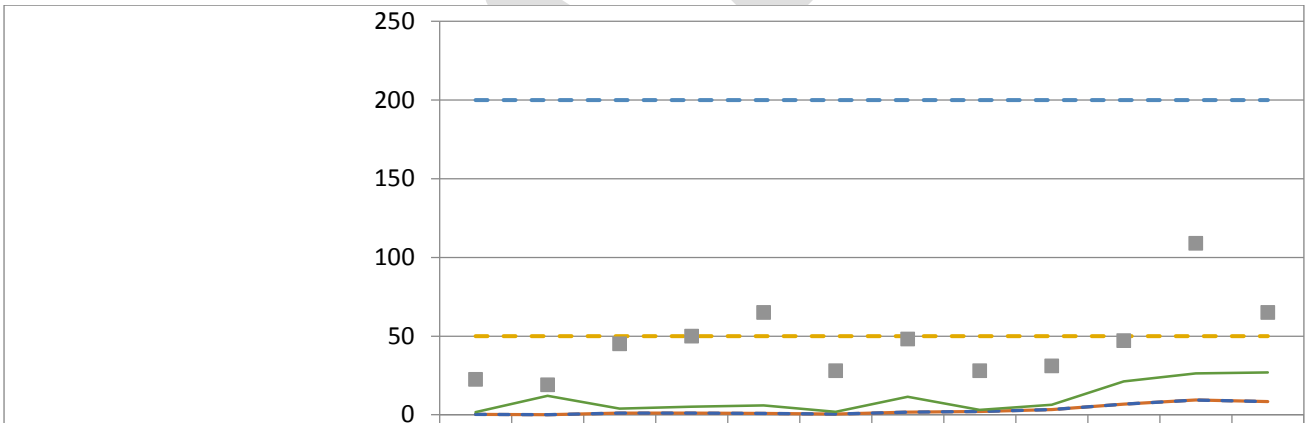
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV												
Monthly 1/2 hourly mean	1	0.5	0	0.5	1.9	1.1	1	0.4	0	0.6	2.2	0.8
Montly 1/2 hourly maximum	20.1	3.2	2.3	2.9	6.2	3.1	3.9	14.2	3.4	8.1	18.1	9.7
Daily ELV												
Monthly daily mean	1	0.5	0	0.5	1.9	1.1	1	0.4	0	0.6	2.2	0.8
Monthly daily maximum	1.9	2.3	0.2	1.1	4.7	2.1	2.5	1.3	0.6	2.9	4.1	4.1

Line 5 - Hydrogen chloride



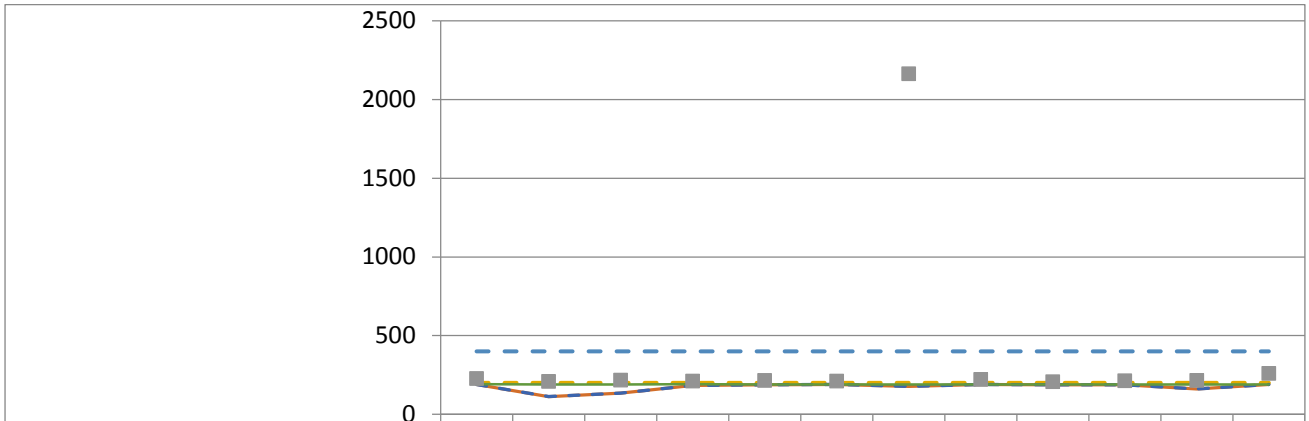
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	60	60	60	60	60	60	60	60	60	60	60	60
Monthly 1/2 hourly mean	4.6	3.3	4.5	6.1	8.1	7.1	6.9	8.1	6.6	4	3.1	4.6
Montly 1/2 hourly maximum	12.2	10.6	17.4	17.7	23	15	14	14.3	13.6	14.7	9.9	13.2
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	4.6	3.3	4.5	6.1	8.1	7.1	6.9	8.1	6.6	4	3.1	4.6
Monthly daily maximum	6.9	7	8.8	9	9	9.1	7	8.9	7.7	8.3	7.3	8.1

Line 5 – Sulphur dioxide



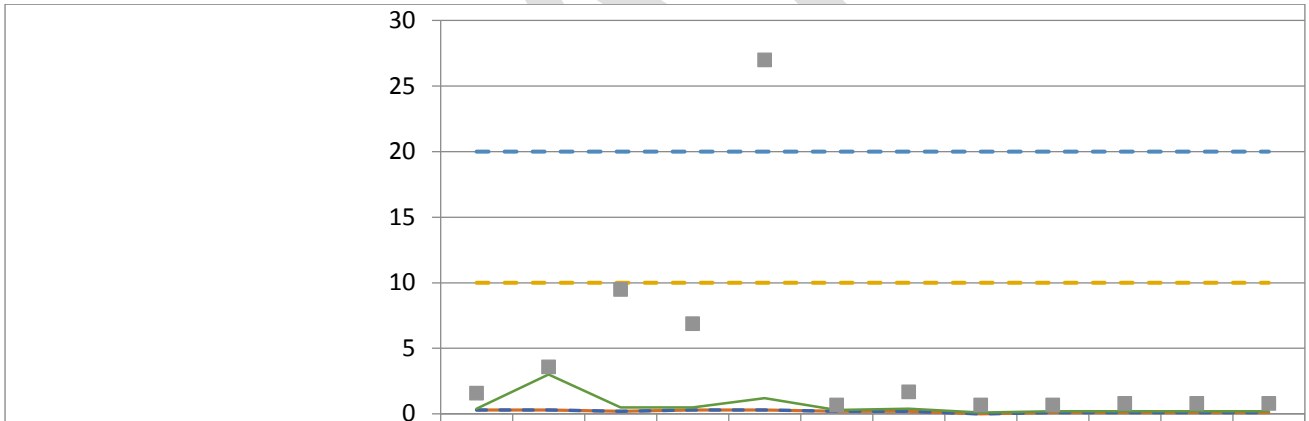
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly 1/2 hourly mean	0.2	0.1	1.2	1.2	1	0.6	1.7	2.1	3.4	6.9	9.4	8.4
Montly 1/2 hourly maximum	22.4	19	45	50	65	28	48	28	31	47	109	65
Daily ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	0.2	0.1	1.2	1.2	1	0.6	1.7	2.1	3.4	6.9	9.4	8.4
Monthly daily maximum	1.7	12	3.9	5.2	6	2	11.4	3.2	6.5	21.2	26.3	27

Line 5 – Oxides of nitrogen



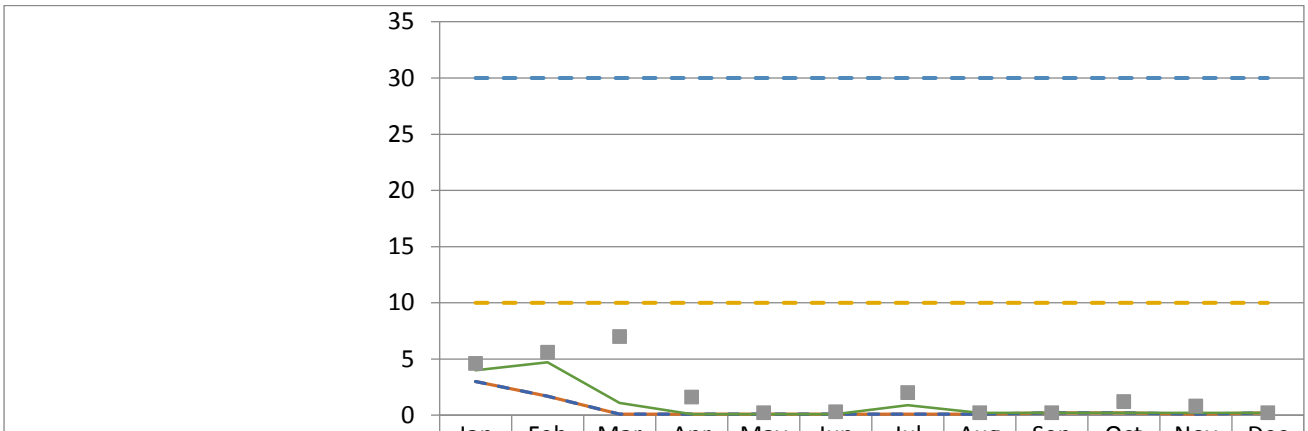
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	400	400	400	400	400	400	400	400	400	400	400	400
Monthly 1/2 hourly mean	189	113	134	183	188	190	177	189	188	187	162	189
Montly 1/2 hourly maximum	229	209	218	211	216	211	2165	222	207	213	216	261
Daily ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly daily mean	189	113	134	183	188	190	177	189	188	187	162	189
Monthly daily maximum	191	190	190	191	190	190	190	190	190	190	190	190

Line 5 – Total organic carbon



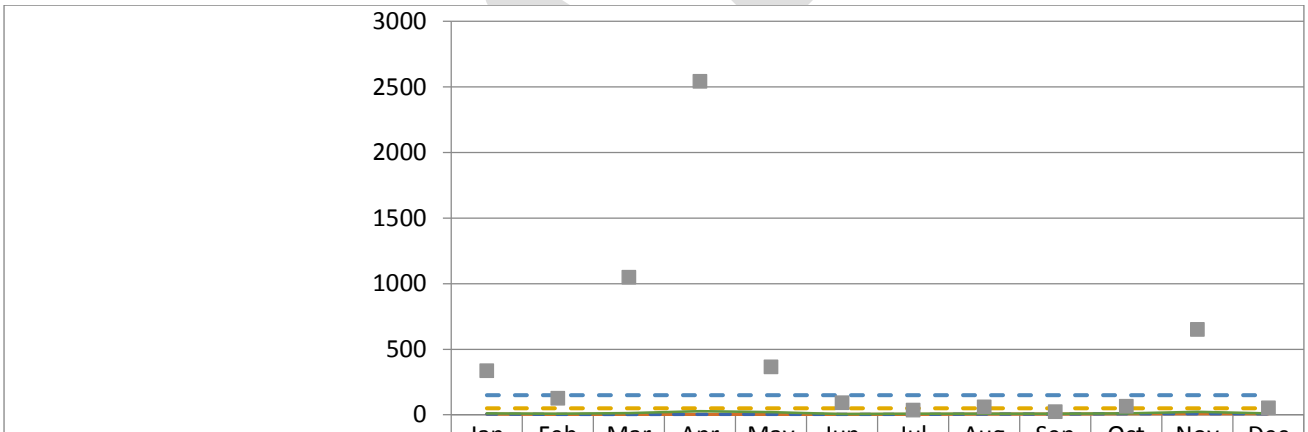
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	20	20	20	20	20	20	20	20	20	20	20	20
Monthly 1/2 hourly mean	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0	0.1	0.1	0.1	0.1
Montly 1/2 hourly maximum	1.6	3.6	9.5	6.9	27	0.7	1.7	0.7	0.7	0.8	0.8	0.8
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0	0.1	0.1	0.1	0.1
Monthly daily maximum	0.4	3	0.5	0.5	1.2	0.3	0.4	0.1	0.2	0.2	0.2	0.2

Line 5 – Particulates



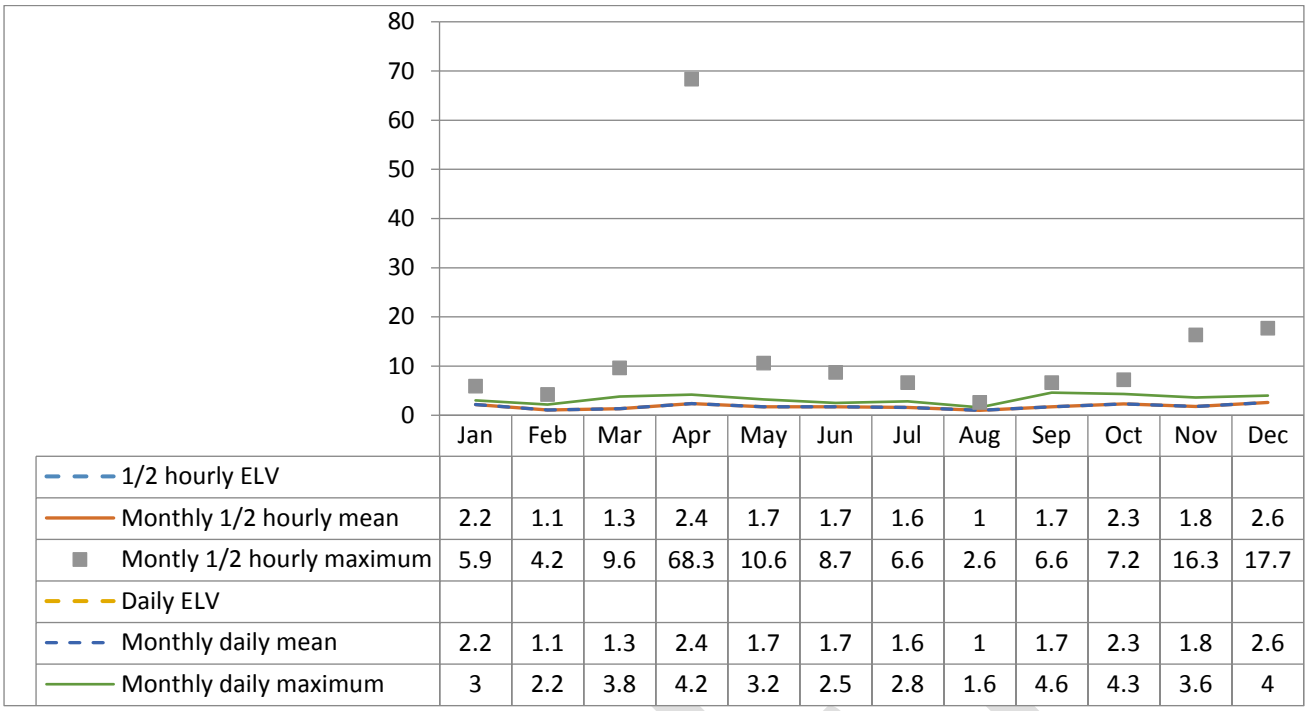
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV	30	30	30	30	30	30	30	30	30	30	30	30
Monthly 1/2 hourly mean	3	1.7	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2
Montly 1/2 hourly maximum	4.6	5.6	7	1.6	0.2	0.3	2	0.2	0.2	1.2	0.8	0.2
Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	3	1.7	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2
Monthly daily maximum	4	4.7	1.1	0.1	0.1	0.1	0.9	0.2	0.2	0.2	0.2	0.2

Line 5 – Carbon monoxide



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
10 minute ELV	150	150	150	150	150	150	150	150	150	150	150	150
Monthly 10 minute mean	6.8	4.2	2.9	4.2	4.6	3.6	4.5	6.7	7.1	7.3	8.2	8.2
Monthly 10 minute maximum	336	125	1049	2541	366	91	35	59	24	64	650	53
Daily ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	6.8	4.2	2.9	4.2	4.6	3.6	4.5	6.7	7.1	7.3	8.2	8.2
Monthly daily maximum	11.4	9.3	12.5	29.2	21	5.7	7.4	8.5	9.1	10	22.7	10.1

Line 5 – Ammonia



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly ELV												
Monthly 1/2 hourly mean	2.2	1.1	1.3	2.4	1.7	1.7	1.6	1	1.7	2.3	1.8	2.6
Montly 1/2 hourly maximum	5.9	4.2	9.6	68.3	10.6	8.7	6.6	2.6	6.6	7.2	16.3	17.7
Daily ELV												
Monthly daily mean	2.2	1.1	1.3	2.4	1.7	1.7	1.6	1	1.7	2.3	1.8	2.6
Monthly daily maximum	3	2.2	3.8	4.2	3.2	2.5	2.8	1.6	4.6	4.3	3.6	4

4.2 Summary of periodic monitoring results for emissions to air

The table below shows the results of periodically monitored substances.

Testing was carried out March 18 for Lines 1-5 1st Biannual, September Lines 1-3 and October Lines 4&5 2nd Biannual

Substance	Emission limit value	Results				
		Line 1	Line 2	Line 3	Line 4	Line 5
Mercury and its compounds	0.05 mg/m^3	0.001 mg/m^3 0.0005 mg/m^3	0.001 mg/m^3 0.0004 mg/m^3	0.0005 mg/m^3 0.001 mg/m^3	0.0009 mg/m^3 0.00081 mg/m^3	0.0025 mg/m^3 0.00086 mg/m^3
Cadmium & thallium and their compounds (total)	0.05 mg/m^3	0.002 mg/m^3 0.0012 mg/m^3	0.002 mg/m^3 0.002 mg/m^3	0.006 mg/m^3 0.001 mg/m^3	0.002 mg/m^3 0.0035 mg/m^3	0.0016 mg/m^3 0.00077 mg/m^3
Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg/m^3	0.067 mg/m^3 0.0400 mg/m^3	0.074 mg/m^3 0.016 mg/m^3	0.067 mg/m^3 0.017 mg/m^3	0.030 mg/m^3 0.11 mg/m^3	0.030 mg/m^3 0.013 mg/m^3

Dioxins and furans (I-TEQ)	0.1 ng/m^3	0.0035 mg/m^3 0.0017 mg/m^3	0.0020 mg/m^3 0.0045 mg/m^3	0.011 mg/m^3 0.0050 mg/m^3	0.00082 mg/m^3 0.0055 mg/m^3	0.0039 mg/m^3 0.0026 mg/m^3
Hydrogen Fluoride	2 mg/m^3	0.03 mg/m^3 0.04 mg/m^3	0.03 mg/m^3 0.04 mg/m^3	0.03 mg/m^3 0.03 mg/m^3	0.05 mg/m^3 0.04 mg/m^3	0.06 mg/m^3 0.04 mg/m^3

4.3 Summary of monitoring results for emissions to water

Total suspended solids

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly ELV (mg/m^3)	50mg/m3											
Monthly average	7	14	11	5.5	3.0	3.0	3.0	3.0	3.0	3.	5	13

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	99.98 %	99.99 %
Total organic carbon	99.99 %	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
22/01/2018 – TV001/18	Failed CEMS redundant analyser	Duty analysers came back into operations	e.g. increased maintenance schedule

		after daily calibration. NOX measurement increased incorrectly to 807.5 because of the failed analyser	
16/02/2018 – TV002/18	22 mg/Nm3 ELV = 20mg/Nm3	Furnace trip due to an overpressure in the furnace whilst explosive cleaning was carried out. We couldn't get the air fans to restart and couldn't get any combustion air to the furnace, due to the ID fan trundle motor starting, stopped the trundle motor and restarted the main ID fan and air fans, we were requested to purge the burners on the DCS which we did, we now know that the burners would not be required once the air fans were back in service and furnace temperature raised.	Review and update plant trip start up procedure to include burners are not required once air fans are back in service
15/03/2018 TV003/18	Failure of CEMS	At the start of the shift we were experiencing poor furnace conditions and unstable fire, duty analyser went into fault, there was numerous ID Fan trips. As we were unable to demonstrate compliance we made the decision to come off line so the analyser could be fixed.	Stopped feeding waste All other lines were operating within the ELV's Technician was called out and CEMS system was repaired. Waste feed restarted on confirmation of repair
20/04/2018-TV004/18	TOC 172.3mg/Nm3 ELV = 20mg/Nm3 CO 76mg/Nm3 Daily = 50mg/Nm3	Low level sensors within feed hopper failed to trigger alarms, feed flap opened and fire detection sensors triggered from flames showing on furnace. Fire deluge activated and soaked waste on grate causing	Sensor levels adjusted, visual management of hoppers improved. Communication of findings to all operators

		incomplete combustion.	
07/05/2018 TV005/18	TOC 27.1mg/Nm3 ELV = 20mg/Nm3	Explosion on the grate caused an overpressure trip of the furnace.	-Communication to all waste transfer stations and local authorities about the consequence of non-conforming waste entering furnace. -Working group established for the standardisation of waste streams -Plant parameters are being checked
06/05/2018 TV006/18	CO 315.7 mg/Nm3 – 2418.5 mg/Nm3 (ELV 150mg x10)	Empty pipe test carried out which caused a rise in furnace pressure thus causing the ID fan speed to increase. Reactor cleared which tripped ID fan which was running on negative pressure while ID fan was at high speed.	Review of plant trip procedure and recommunicate while looking at interlock settings on burner. The ID fan trundle motor control logic sequence will be investigated.
07/10/2018 TV007/18	25 mg/Nm3 1/2hourly ELV 20 mg/Nm3	Just after 13.00hrs the ID Fan tripped due to explosion in furnace which led to Turbine tripping. Most likely cause of explosion is from a gas cylinder in the waste stream. ID fan reset and furnace conditions stabilised prior to Turbine restart.	Continue random waste inspections on deliveries and reporting via Love Clean Street (LCS). Continue waste transfer station audits.
22/11/2018 TV008/18	TOC 33.8mg/Nm3 ELV = 20mg/Nm3 CO 54.9mg/Nm3 Daily = 50mg/Nm3	Procedure was already written, communicated and trained to employees, however the operative at the time failed to start a function group as set out in the procedure which caused the breach of ELV.	Operative re-trained on procedure and memo sent to all shift managers and shift operatives on the cause of the breach

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
16/07/2018	Complaint describes a red dust falling on vehicle and has been happening for approximately 2 months	Reported to be getting inside property and causing respiratory issues.	Would appreciate a review of site emissions concerning dust releases. EA note that wind direction is WSW today could you confirm local direction please. I have had discussions with site and the Plant Manager has walked round and we have not identified any red brick dust. We have checked our emission reports and are not having any dust issues

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.

- Line 3 planned boiler ash to Bottom Ash for 2019 (as per BREF)
- Synthetic fuel oil Lines 1&2
- Hydraulic RAMS on Line to minimise downtime therefore reduction in fuel oil usage
- Discharge boiler water off site outside of shutdown periods, which will significantly reduce the quantity of contaminated water that is removed off site via tanker for further treatment and disposal
- Conducting emissions trials against the new BREF limits (HCL&SO2) in conjunction with HZI in Q1 2019
- Commencement of Line 6 construction