Annual performance report for:

South East London Combined Heat & Power (SELCHP)

Permit Number: EPR/NP3738SY

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	South East London Combined Heat and Power (SELCHP) The Kennels Site Landmann Way Lewisham London Se14 5RS
Description of waste input	Residual domestic and commercial & industrial waste. Residual waste form waste management facilities. non-hazardous non-infectious low grade clinical & offensive waste.
Operator contact details if members of the public have any questions	enquiries@selchp.com

2. Plant description

The main purpose of the activity at SELCHP is to burn non-hazardous municipal waste and to recover energy in the form of steam for both; the export of heat via a district heating network and as electricity for export to the national grid.

SELCHP is a consortium of Local Authorities and private enterprise that operates a 464,000 tonne per year, mass burn, municipal waste incinerator in Deptford in the London Borough of Lewisham.

Waste is delivered both; directly to site by refuse collection vehicles and various other waste vehicles. Waste delivered to site is discharged into the waste storage bunker. Oversized and unsuitable wastes are rejected and removed. The waste is then charged into one of two furnaces by dedicated grab cranes. Hydraulic ram feeders control the charging rate of the waste to the furnace grate. Waste is burnt on a reverse acting stoker grate with combustion air supplied in a controlled manner to ensure efficient combustion. The production on Oxides of Nitrogen (NO_x) by combustion is mitigated by the injection of ammonia solution into the furnace by a process of Selective Non-Catalytic Reduction (SNCR). Bottom ash from the grate is quenched in a water bath to prevent the release of dust and provide a gas seal, at the ash discharger outlet. Ferrous metal is recovered from

the ash by a drum magnet. Residual ash is recovered and sent to a recycling facility in Greenwich, London.

The hot gases from the combustion process are passed through a boiler to raise steam, which is then forwarded to a steam turbine to generate upto 32 MW of electricity for export to the national grid. Excess steam, of too low an enthalpy to generate electricity, is taken off the turbine, allowing for the export of heat via the District Heating network to local residents. This heat would otherwise be lost to atmosphere,as waste heat, via the Air Cooled Condenser (ACC).

Exhaust gasses from the boiler are sent to the flue gas treatment plant. Firstly activated carbon is injected to adsorb mercury, heavy metals, dioxins and dioxin like compounds. Secondly, a semi-dry lime scrubbing plant removes acid gasses, predominantly hydrogen chloride (HCl) and sulphur dioxide (SO_2). Lastly, the flue gases pass through a series of bad filters to control particulate emissions. The cleaned gasses are discharged from a 100 meter, twin flue (one for each furnace) chimney.

SELCHP operates an Environmental Management system accredited to ISO 14001.

There are no European sites within 10 km. Air dispersion modeling has established that the site has minimal impact on sites of special scientific interest (SSSI) within that radius. All emissions from the plant have been modelled, demonstrating that it is unlikely to have a significant impact on local air quality, due to it urban setting.

There are no releases to controlled waters as part of the process. Process effluents are reused within the process. Residual effluents are released to sewer as trade effluent.

A Household, commercial and industrial waste transfer station may also be operated within the permit boundary, under conditions set out in ‘Standard Rules Permit SR2008No1’ when required.

3. Summary of Plant Operation

Municipal waste received	403,969 tonnes
Commercial and industrial waste received	30,577 tonnes
Hazardous waste received	0 tonnes
Clinical waste received	84 tonnes
Refuse-derived fuel received	0 tonnes
Solid recovered fuel received	0 tonnes
Total waste received	434,630 tonnes
Total plant operational hours	16,389 hours
Total hours of “abnormal operation” (see permit for definition)	None
Total quantity of incinerator bottom ash (IBA) produced	85,947 tonnes

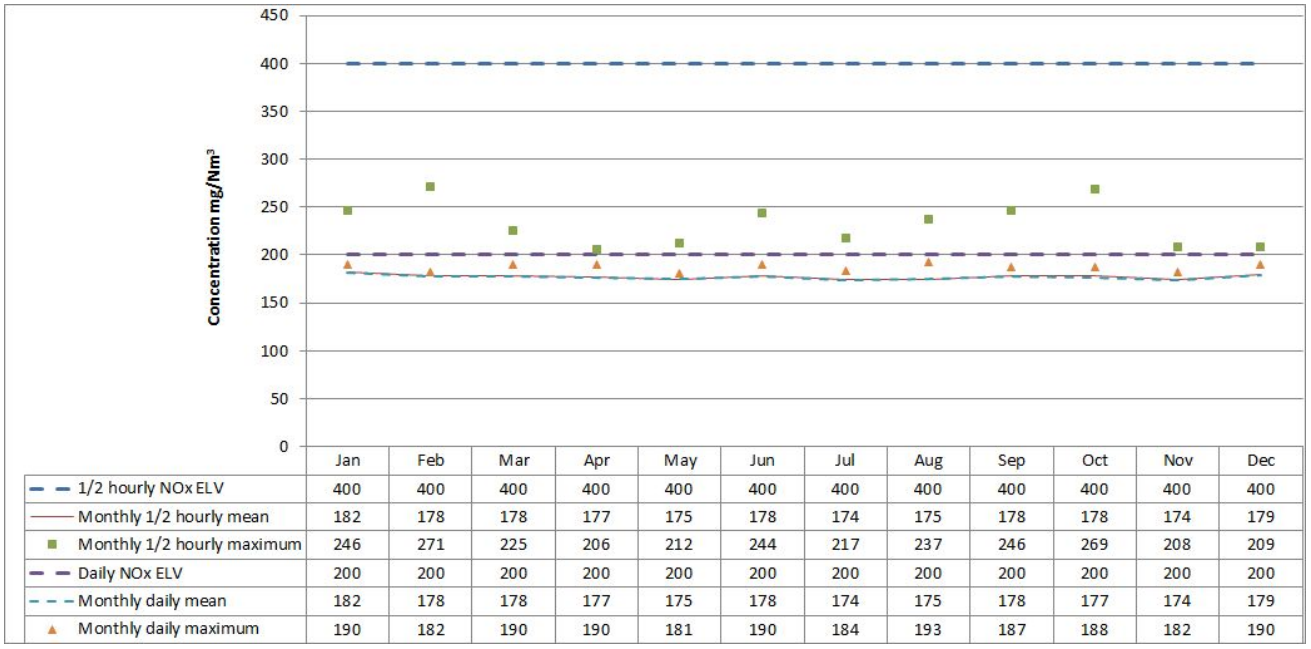
Disposal or recovery route for IBA	R5
Did any batches of IBA test as hazardous? If yes, state quantity	None
Total quantity of air pollution control (APC) residues produced	12,043 tonnes
Disposal or recovery route for APC residues	11,927.82 tonnes via D9 and 115.52 tonnes via D12
Total electricity generated for export to the National Grid	219,436 MWh
Total heat produced for export (e.g. to hospital or district heating scheme)	37,877 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 – Oxides of nitrogen

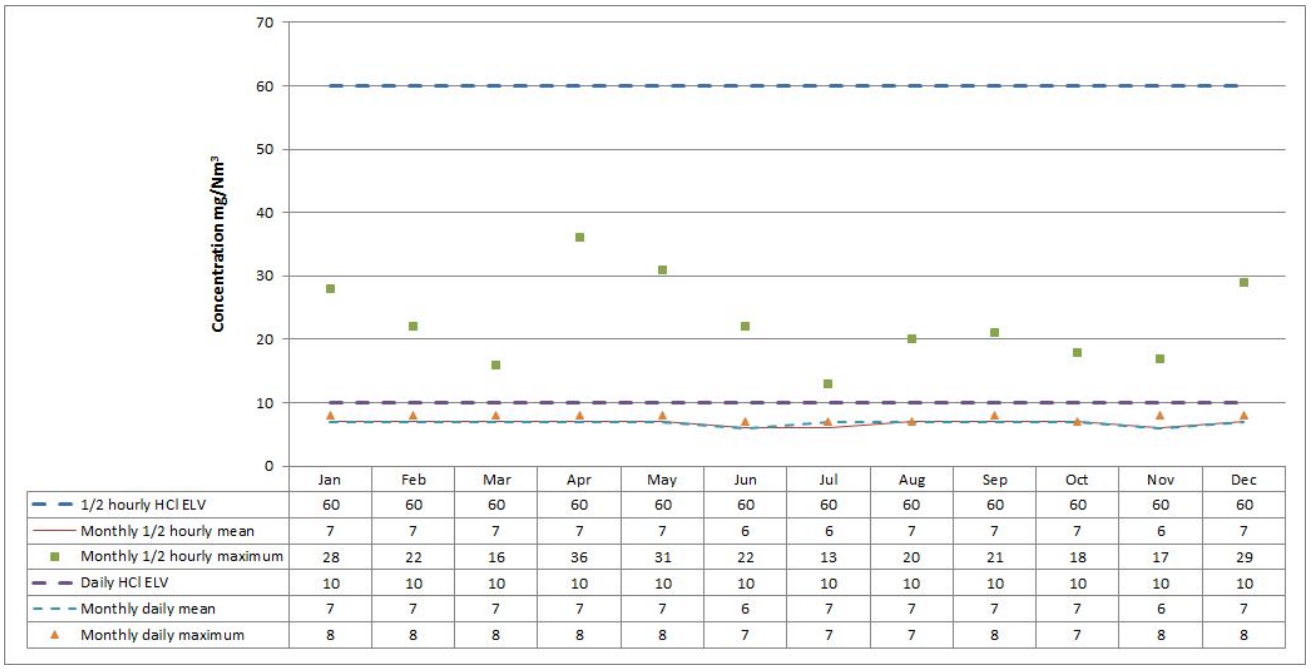


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly NOx ELV	400	400	400	400	400	400	400	400	400	400	400	400
Monthly 1/2 hourly mean	182	178	178	177	175	178	174	175	178	178	174	179
Monthly 1/2 hourly maximum	246	271	225	206	212	244	217	237	246	269	208	209
Daily NOx ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly daily mean	182	178	178	177	175	178	174	175	178	177	174	179
Monthly daily maximum	190	182	190	190	181	190	184	193	187	188	182	190

Line 1 – Sulphur dioxide

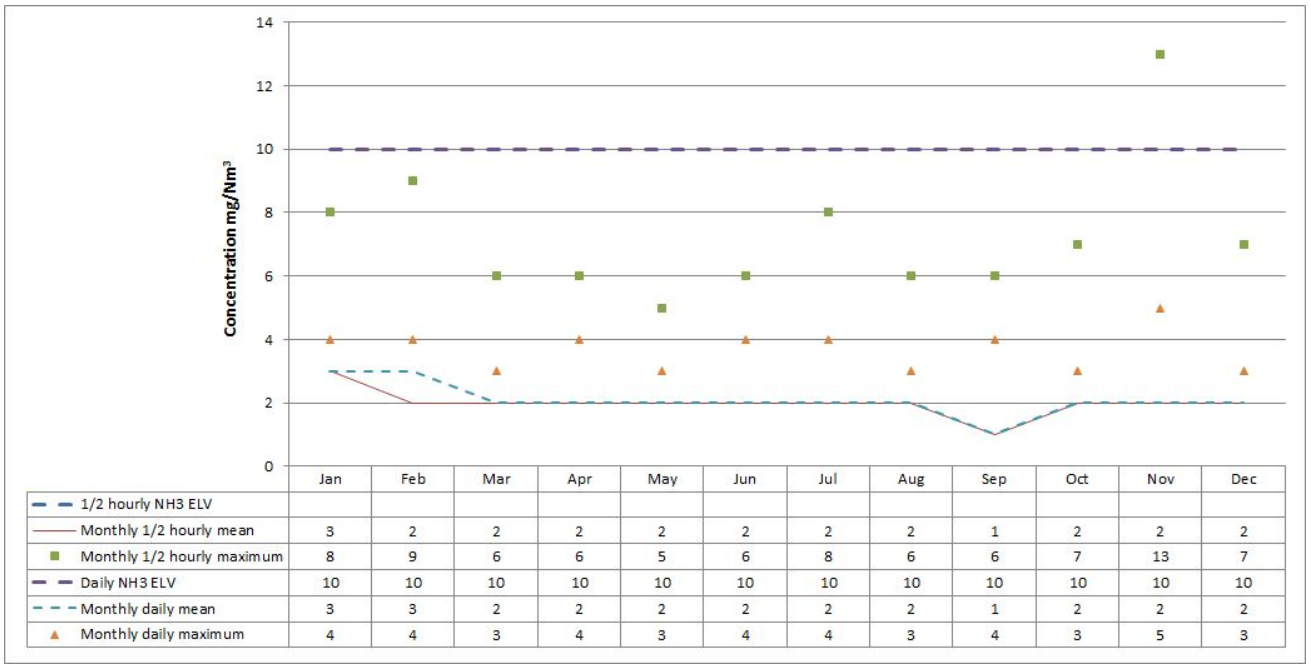
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly SO2 ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly 1/2 hourly mean	12	13	12	12	12	11	16	14	12	10	10	8
Monthly 1/2 hourly maximum	34	29	35	146	32	30	40	33	34	28	40	27
Daily SO2 ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	12	13	12	12	12	11	16	14	12	10	10	8
Monthly daily maximum	15	15	14	15	14	13	22	16	15	14	18	12

Line 1 - Hydrogen chloride



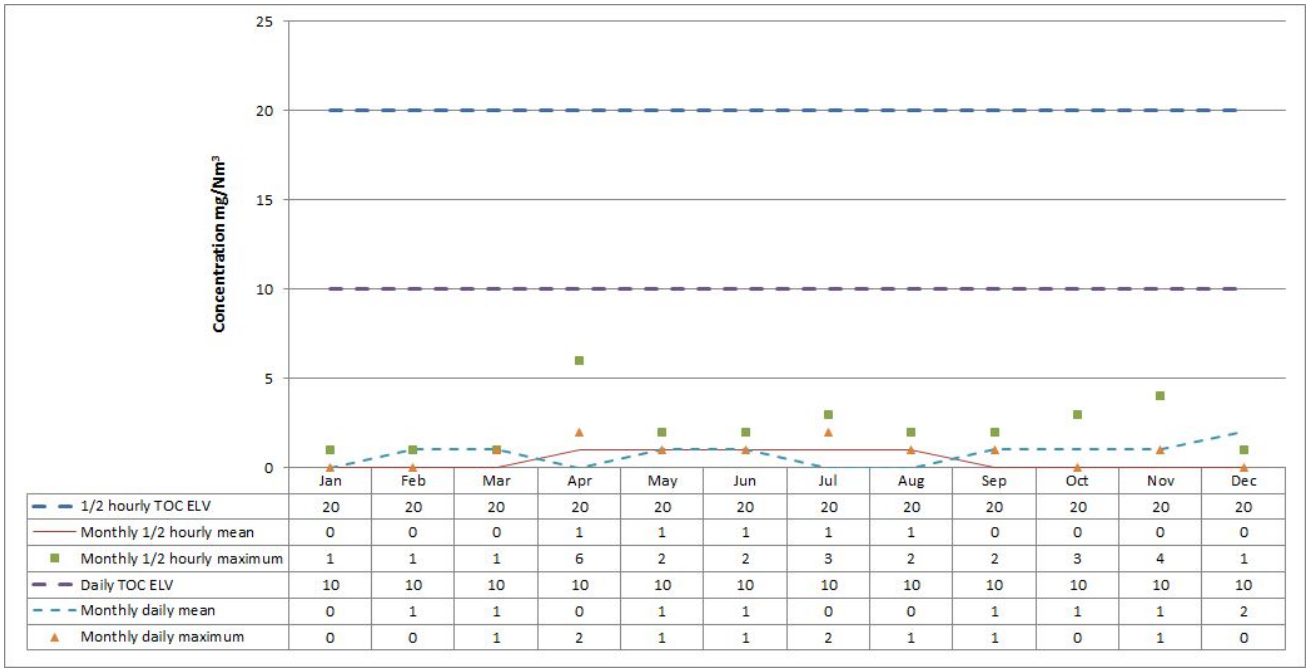
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly HCl ELV	60	60	60	60	60	60	60	60	60	60	60	60
Monthly 1/2 hourly mean	7	7	7	7	7	6	6	7	7	7	6	7
Monthly 1/2 hourly maximum	28	22	16	36	31	22	13	20	21	18	17	29
Daily HCl ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	7	7	7	7	7	6	7	7	7	7	6	7
Monthly daily maximum	8	8	8	8	8	7	7	7	8	7	8	8

Line 1 – Ammonia



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly NH3 ELV												
Monthly 1/2 hourly mean	3	2	2	2	2	2	2	2	1	2	2	2
Monthly 1/2 hourly maximum	8	9	6	6	5	6	8	6	6	7	13	7
Daily NH3 ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	3	3	2	2	2	2	2	2	1	2	2	2
Monthly daily maximum	4	4	3	4	3	4	4	3	4	3	5	3

Line 1 – Total organic carbon

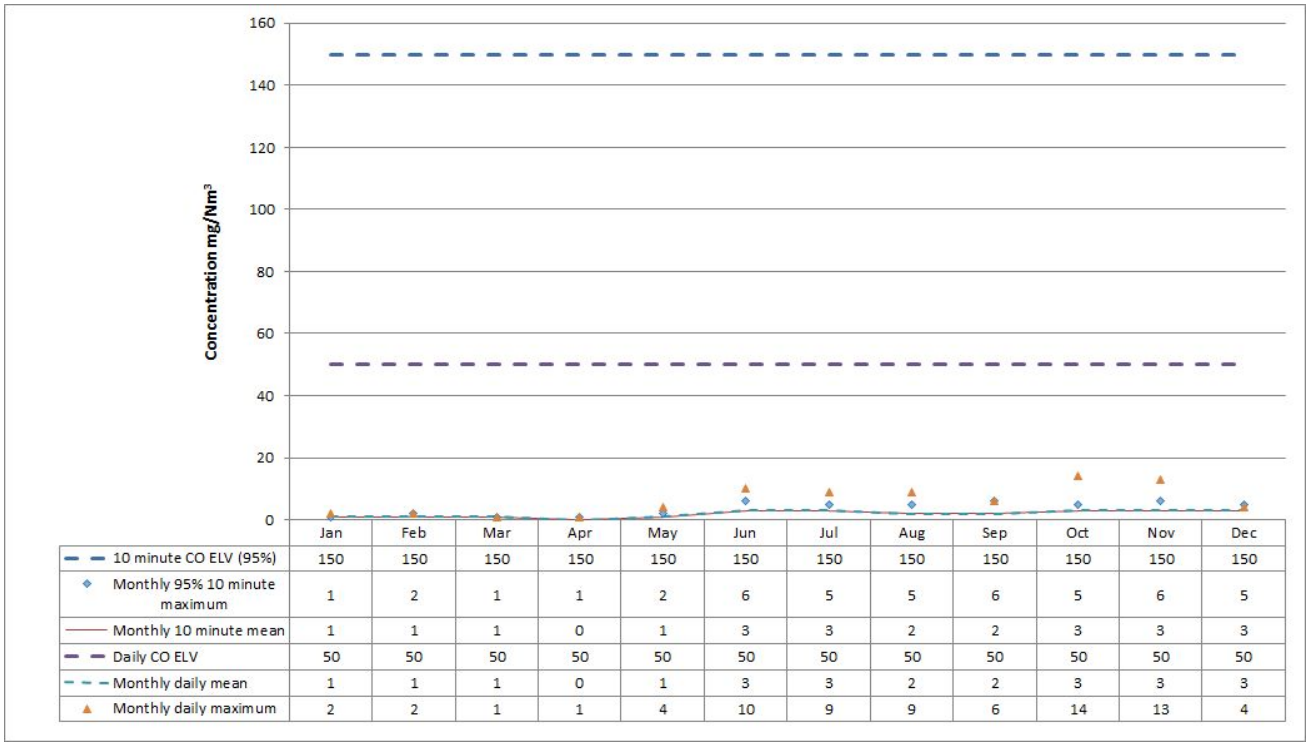


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly TOC ELV	20	20	20	20	20	20	20	20	20	20	20	20
Monthly 1/2 hourly mean	0	0	0	1	1	1	1	1	0	0	0	0
Monthly 1/2 hourly maximum	1	1	1	6	2	2	3	2	2	3	4	1
Daily TOC ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	0	1	1	0	1	1	0	0	1	1	1	2
Monthly daily maximum	0	0	1	2	1	1	2	1	1	0	1	0

Line 1 – Particulates

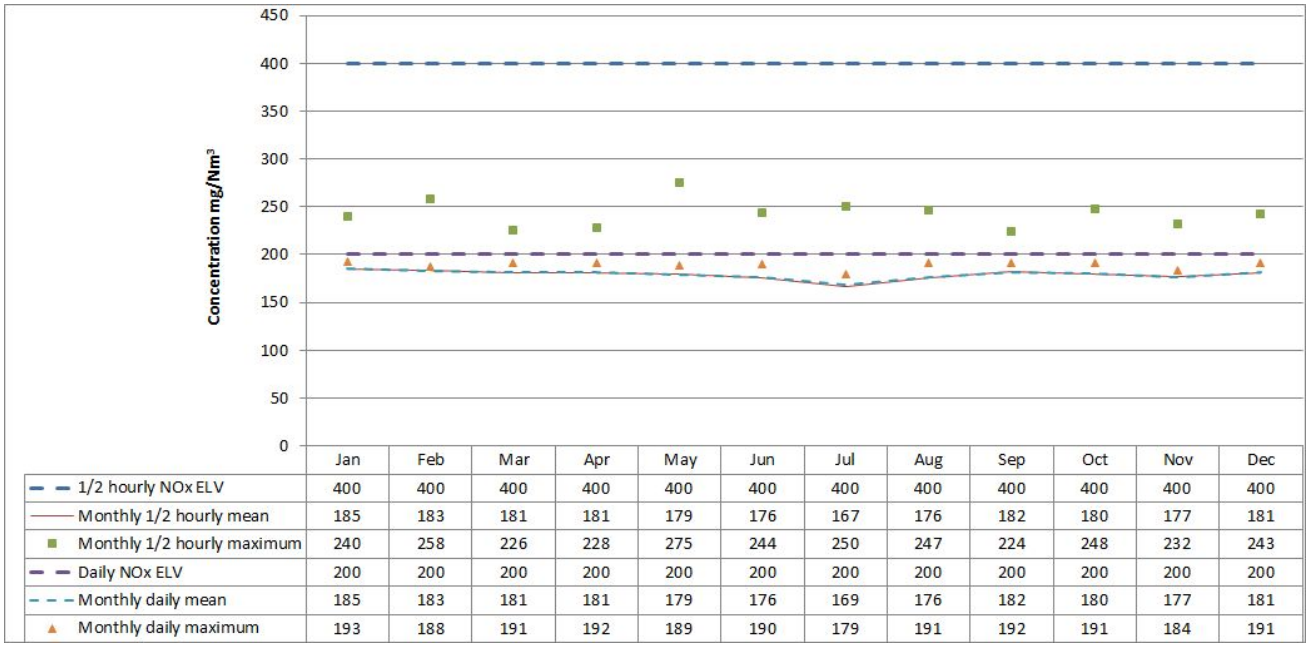
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly PM ELV	30	30	30	30	30	30	30	30	30	30	30	30
Monthly 1/2 hourly mean	0	1	1	0	0	1	1	0	1	1	1	2
Monthly 1/2 hourly maximum	3	5	2	2	10	4	13	6	3	2	3	3
Daily PM ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean												
Monthly daily maximum	1	1	1	1	1	1	2	1	1	1	1	2

Line 1 – Carbon monoxide



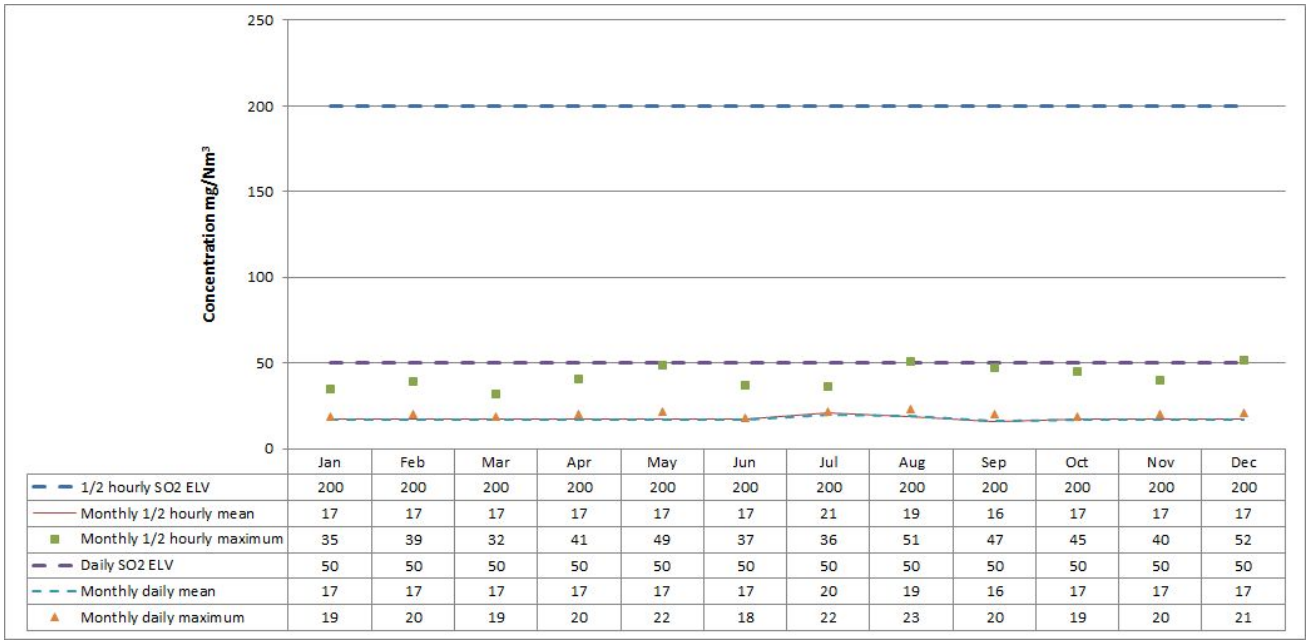
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
10 minute CO ELV (95%)	150	150	150	150	150	150	150	150	150	150	150	150
Monthly 95% 10 minute maximum	1	2	1	1	2	6	5	5	6	5	6	5
Monthly 10 minute mean	1	1	1	0	1	3	3	2	2	3	3	3
Daily CO ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	1	1	1	0	1	3	3	2	2	3	3	3
Monthly daily maximum	2	2	1	1	4	10	9	9	6	14	13	4

Line 2 – Oxides of nitrogen



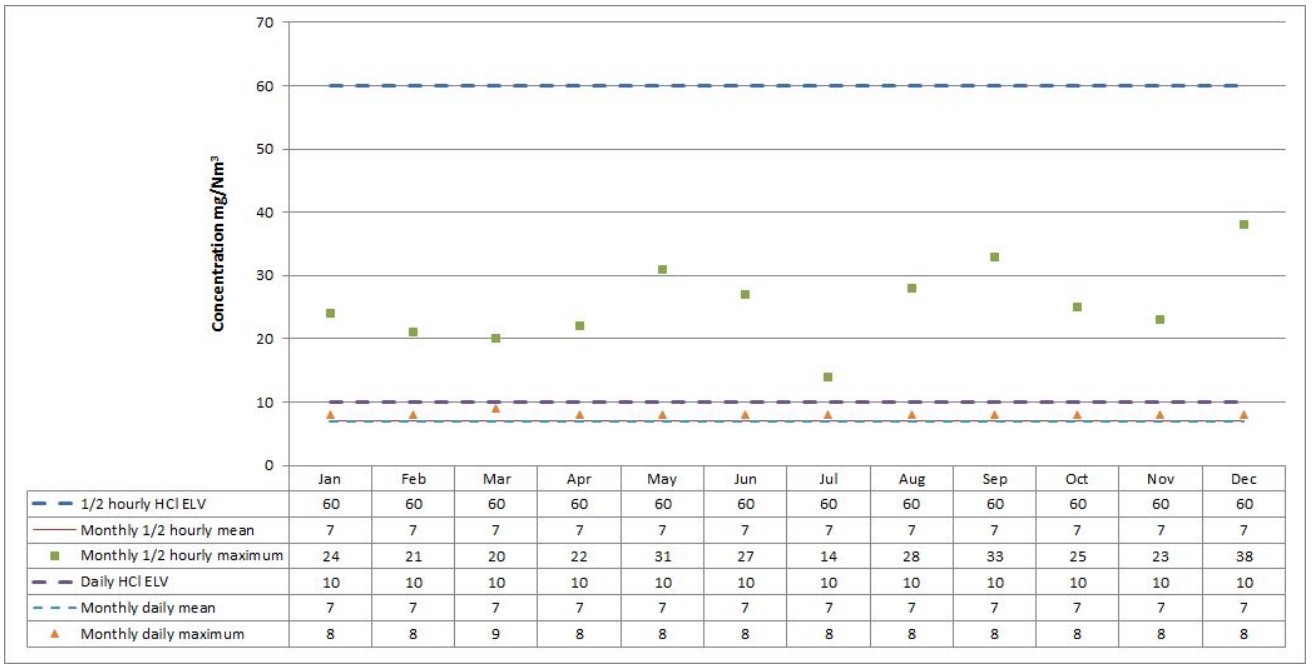
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly NOx ELV	400	400	400	400	400	400	400	400	400	400	400	400
Monthly 1/2 hourly mean	185	183	181	181	179	176	167	176	182	180	177	181
Monthly 1/2 hourly maximum	240	258	226	228	275	244	250	247	224	248	232	243
Daily NOx ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly daily mean	185	183	181	181	179	176	169	176	182	180	177	181
Monthly daily maximum	193	188	191	192	189	190	179	191	192	191	184	191

Line 2 – Sulphur dioxide



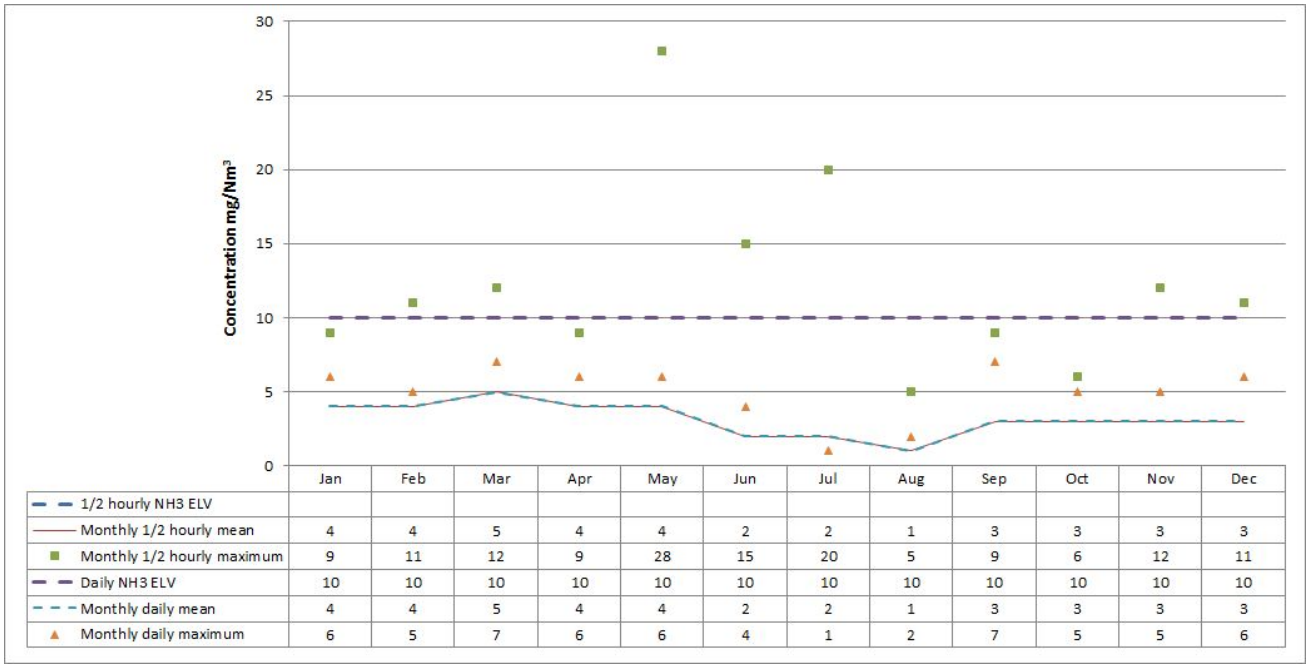
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly SO2 ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly 1/2 hourly mean	17	17	17	17	17	17	21	19	16	17	17	17
Monthly 1/2 hourly maximum	35	39	32	41	49	37	36	51	47	45	40	52
Daily SO2 ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	17	17	17	17	17	17	20	19	16	17	17	17
Monthly daily maximum	19	20	19	20	22	18	22	23	20	19	20	21

Line 2 - Hydrogen chloride



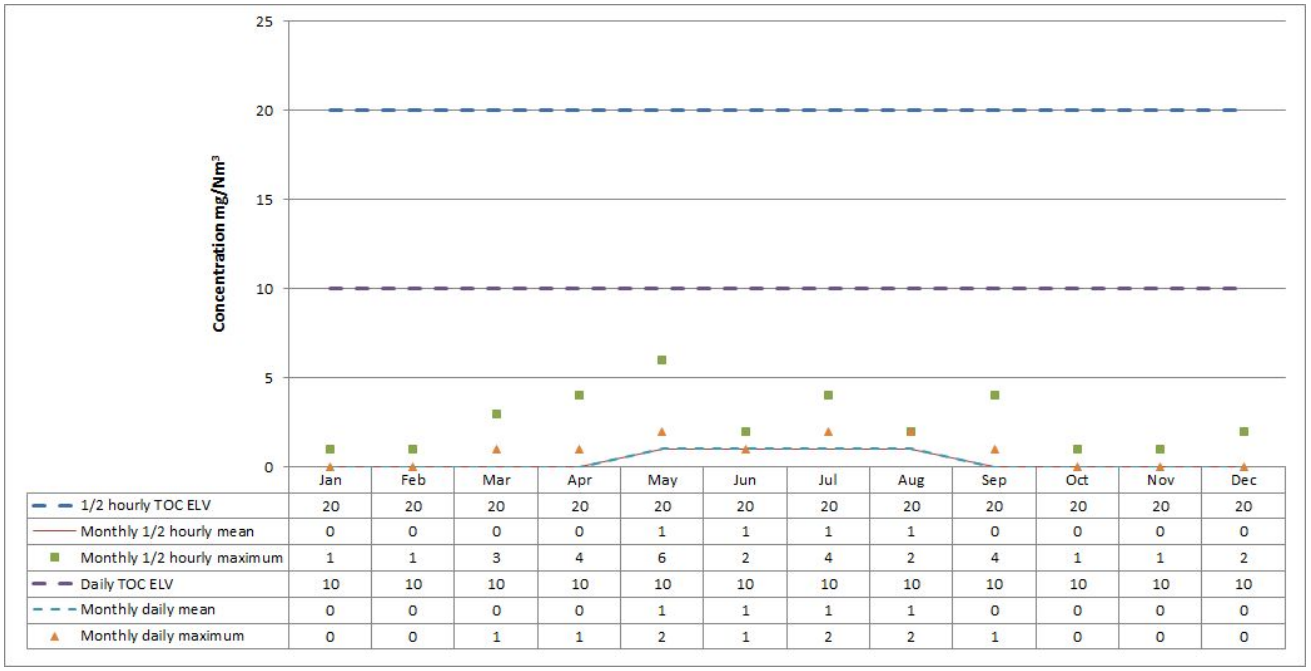
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly HCl ELV	60	60	60	60	60	60	60	60	60	60	60	60
Monthly 1/2 hourly mean	7	7	7	7	7	7	7	7	7	7	7	7
Monthly 1/2 hourly maximum	24	21	20	22	31	27	14	28	33	25	23	38
Daily HCl ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	7	7	7	7	7	7	7	7	7	7	7	7
Monthly daily maximum	8	8	9	8	8	8	8	8	8	8	8	8

Line 2 – Ammonia



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly NH3 ELV												
Monthly 1/2 hourly mean	4	4	5	4	4	2	2	1	3	3	3	3
Monthly 1/2 hourly maximum	9	11	12	9	28	15	20	5	9	6	12	11
Daily NH3 ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	4	4	5	4	4	2	2	1	3	3	3	3
Monthly daily maximum	6	5	7	6	6	4	1	2	7	5	5	6

Line 2 – Total organic carbon

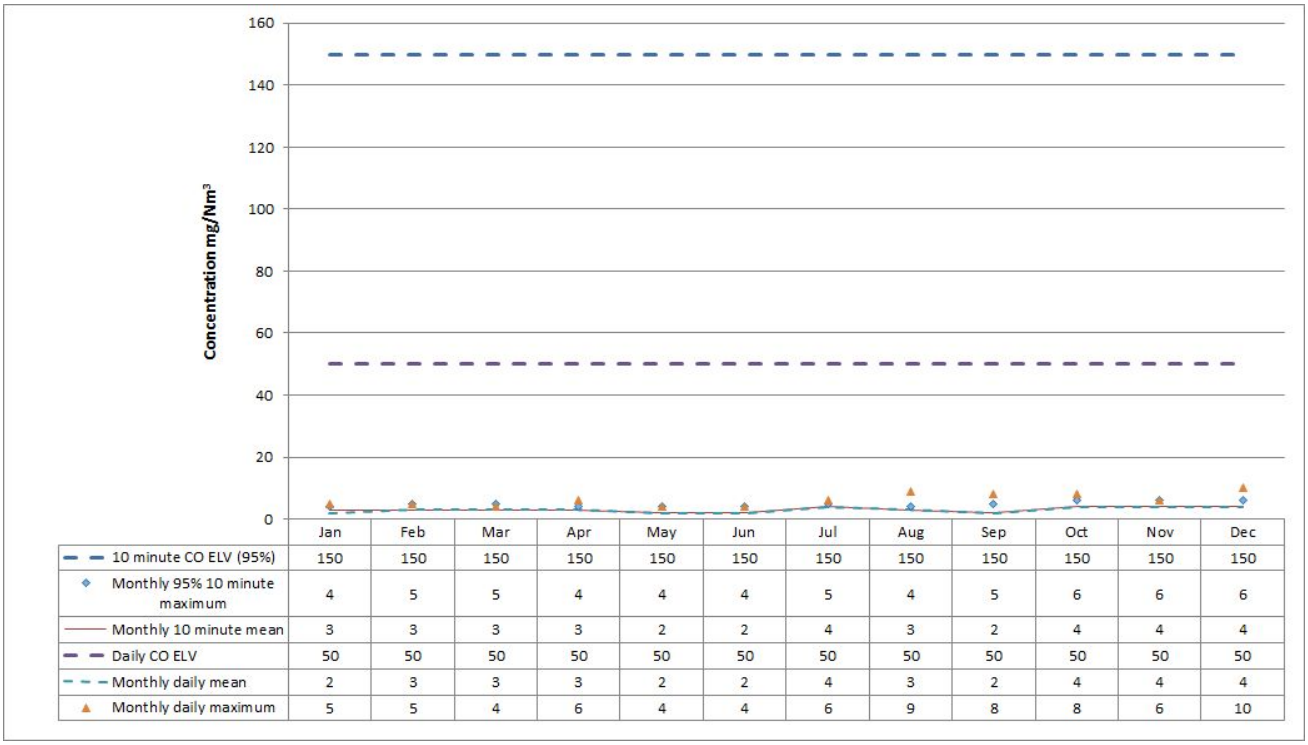


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly TOC ELV	20	20	20	20	20	20	20	20	20	20	20	20
Monthly 1/2 hourly mean	0	0	0	0	1	1	1	1	0	0	0	0
Monthly 1/2 hourly maximum	1	1	3	4	6	2	4	2	4	1	1	2
Daily TOC ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	0	0	0	0	1	1	1	1	0	0	0	0
Monthly daily maximum	0	0	1	1	2	1	2	2	1	0	0	0

Line 2 – 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	1	1	1	2	1	1	0	0	0	0	0
Monthly 1/2 hourly maximum	16	3	5	5	11	7	5	3	6	4	7	4
Daily PM ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean	1	1	1	1	2	1	1	0	0	0	0	0
Monthly daily maximum	2	1	1	1	3	1	1	1	1	1	1	1

Line 2 – 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	4	5	5	4	4	4	5	4	5	6	6	6
Monthly 10 minute mean	3	3	3	3	2	2	4	3	2	4	4	4
Daily CO ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean	2	3	3	3	2	2	4	3	2	4	4	4
Monthly daily maximum	5	5	4	6	4	4	6	9	8	8	6	10

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	A1 Results		A2 Results	
		26/2/2019 to 2/3/2019	2/10/2019 to 18/10/2019	26/02/2019 to 2/03/2019	3/10/2019 to 17/10/2019
Mercury and its compounds	0.05 mg/m^3	0.0010 mg/m^3	0.00063 mg/m^3	0.0010 mg/m^3	0.00058 mg/m^3
Cadmium & thallium and their compounds (total)	0.05 mg/m^3	0.0010 mg/m^3	0.0013 mg/m^3	0.0010 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	0.033 mg/m^3	0.018 mg/m^3	0.032 mg/m^3	0.019 mg/m^3
Dioxins and furans (I-TEQ)	0.1 ng/m^3	0.0030 ng/m^3	0.0034 ng/m^3	0.0050 mg/m^3	0.0008 mg/m^3
Hydrogen Fluoride	2 mg/m^3	0.030 mg/m^3	0.055 mg/m^3	0.040 mg/m^3	0.052 mg/m^3

4.3 Summary of monitoring results for emissions to water

There are no emissions to water from the process other than trade effluent to sewer.

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 %
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
	None		

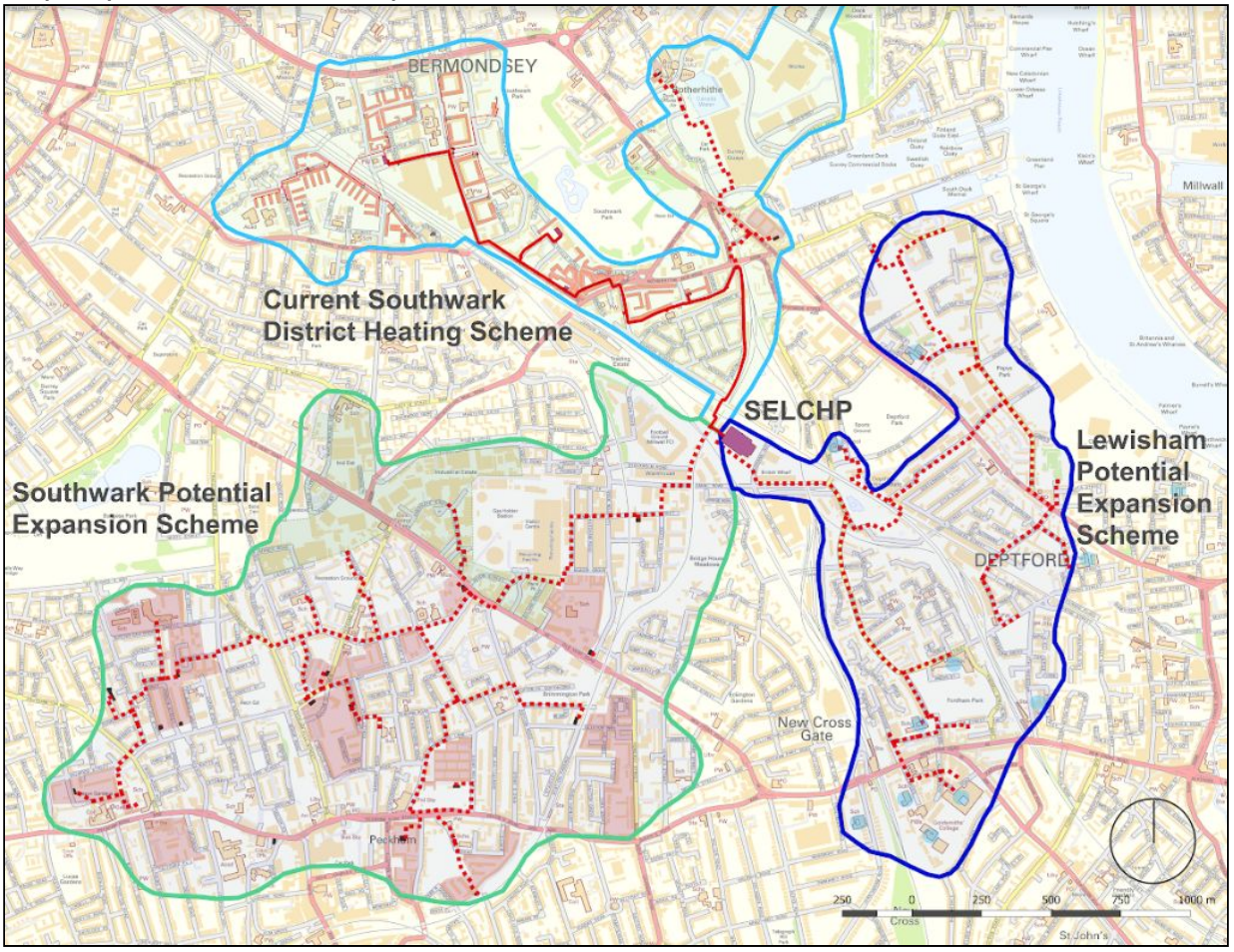
5.3 Summary of any complaints received and actions to taken to resolve them.

Date of complaint	Summary of complaint	Reason for complaint including whether substantiated by the operator or the EA	If substantiated, measures to prevent reoccurrence
09/05/2018	A local resident using a neighboring recycling facility, complained of loud bangs, smoke and a burning odour.	Site CCTV had recorded a group of motorcyclist practicing ‘burn outs’, on the public road adjacent to the site, at the time of the complaint.	Unsubstantiated.

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.
District Heating Expansion Discussions with prospective new customers are progressed well in 2018. Two projects have been identified as having potential for completion of contractual agreements and/ commencement of construction works in 2018. 1. Bermondsey Project: Potential for construction of a network extension in 2019. Supplying approximately 1,1000 homes with a peak heat load of ~6MW. 2. Lewisham Borough project, potential for the construction on the following connections to begin in 2019, assuming Heat Network Investment Projects (HINP) funding is made available: a. Convoys Wharf connection ~3,500 homes b. Deptford Wharf connection ~ 1,100 homes c. Neptune Wharf connection ~ 200 homes 3. Discussions regarding an extension to the existing network in the borough of Southwark is ongoing. Increased heat export reduces the waste heat lost to atmosphere by SELCHP, increasing the plants overall efficiency. Providing local households with low carbon central heating and hot water.

Map of potential network expansions



LED Lighting

Extended to cover the area under the Air Cooled Condenser. Further lighting replacement budgeted for 2019. LED lighting reduces the parasitic load of the plant allowing more electricity to be exported to the national grid.

Improved Air Cooled Condenser (ACC) Cleaning

A more effective method of cleaning was employed during SELCHP's annual outage in June/July 2018. Improving both; the ACC's capacity to condense steam and turbine vacuum as a consequence. A lower vacuum increases turbine efficiency, resulting in a greater conversion of heat to electricity and a significant increase in electricity exported to the national grid per tonne of waste incinerated.

7. Details of any public liaison planned for 2019

Date and time	Description	Location
Sunday the 22nd of September	SELCHP annual open day, as part of 'Open House London'	Veolia SELCHP Ltd Landmann Way Surrey Canal Road London SE14 5RS
Ad-hoc	Group tours for; Higher Educational Institutions, commercial customers, Local Authorities and other professional bodies.	Veolia SELCHP Ltd Landmann Way Surrey Canal Road London SE14 5RS

If you wish to be involved in the public liaison programme, please contact:

enquiries@selchp.com