Annual Performance Report 2025

Permit EPR/BK0825IU

Riverside Resource Recovery Facility

Riverside 1

Cory

Year:	2025		
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Plant Description and Design

The Riverside Resource Recovery Energy from "The Riverside Resource Recovery Energy from Waste facility at Belvedere in the London Borough of Bexley, uses the waste that would otherwise have gone to landfill as feedstock to generate electricity. As one of the largest operations of its kind in the UK, the facility generates c.610,000 MWh of electricity each year from processing up to 850,000 tonnes of waste through its three operating combustion lines. What's more, we use the River Thames as a green highway to move the waste from the city to the facility on our fleet of tugs and barges, removing around 100,000 truck movements a year off our capital's congested roads. By generating electricity from domestic and commercial residual waste, after recycling, we are improving resource efficiency, avoiding London's use on landfill, and achieving greater sustainability as part of London's circular economy.
With the Riverside Resource Recovery facility continuing to be fully operational, the Environment Agency has renewed the facility R1 certification; this means that the facility is classified as a recovery operation.

Summary of Operational Processes and Procedures

The Riverside Energy from Waste facility is a 24/7 operation which is operated from a continuously staffed control room. The control room operator shall ensure that the site's operations are performed to the facility design and to the strict requirements of the environmental permit.
The river operations are a key aspect of the process for Riverside, with over 85% of the waste being brought to the plant on barges along the River Thames. From the jetty, the waste containers are removed from the barges and are transported using dock tractors into the site tipping hall.
In the tipping hall the waste is tipped into one of 12 tipping bays. Each bay has a hydraulically operated door designed to minimise noise and odour during tipping. Lights on each tipping bay indicate to the drivers of the vehicles which bay is available to receive waste. The tipping bays open into a waste bunker 30m deep, 61m long and 16m wide. It can hold up to circa. 10,000 tonnes of waste, enough to fuel the plant at full capacity for five days.
The plant runs three combustion lines. The waste cranes feed each combustion line ensuring that the boilers have the required feedstock for 24 hour operation. The waste travels down the feed chutes and onto a horizontal feeder table where hydraulically operated ram feeders push the waste onto the moving grate. The grate is made up of alternate rows of fixed and moving cast steel bars that are arranged on a slope. The forward movement of these bars tumbles the waste slowly down the burning waste bed.
Primary heated combustion air is drawn from above the waste bunker and fed into the waste bed through orificies in each grate bar. This process dries the waste and provides the correct amount of air to allow good combustion of the waste. Secondary swirling air is introduced above the grate. This ensures that the gases given off by the burning waste are thoroughly mixed, resulting in a fully optimised combustion process and lower levels of toxicity in the gases leaving the combustion chamber. Ammonia is injected into the flue gas to reduce the level of Oxides of Nitrogen.
The resulting sub-product, from processing the waste, is known as Incinerator Bottom Ash (IBA) and this falls from the end of the grate into a quench bath. The IBA is collected in an ash bunker and loaded into containers by cranes and hoppers. Any oversized metal is removed and recycled and the remainder is transported on the river (circa 200,000 tonnes per annum) to our partner plant at Tilbury Docks for processing and recycling into aggregate that is primarily used within the construction industry.
The energy from the flue gases is utilised to convert water into steam via the steam drum. The steam is then further super-heated and drives the turbine/generator, producing electricity which is used to power the facility and exported to the National Grid.
Flue gases leave the boiler and pass through a reactor tower where hydrated lime, powdered activated carbon and water are injected into the swirling gas flow. These neutralise acids and capture heavy metals.
Gases from the reactor tower are then drawn into the fabric filter baghouse. The clean gases pass through the filters and the Air Pollution Control residue (APCr) collects on the outer surface of the bags. The APCr is collected in silos.
Flue Gas is drawn through the entire process by Induced Draft Fans. The clean hot gas from the Fabric Filter is passed through a heat exchanger that heats feed water to provide an efficient process. Cooled gas is emitted via an 85 metre stack where it is discharged into atmosphere. Continuous Emissions Monitoring (CEMS) equipment continually records emissions to air.

Operational Data

PLEASE ENSURE ALL RELEVANT CELLS ARE COMPLETED!

Plant Size:		850,000	tonnes pa	
Nominal net thermal input:	270	MWth		
Nominal electrical export capacity*:	85	MWe		
Nominal heat export capacity**:		MWth		
No. of combustion lines:	3	No. of steam turbines:	1	

Waste types received	Unit	Q1	Q2	Q3	Q4	**Year Total**	%
Household / Local Authority	tonnes	103,160	110,895	113,570	113,760	**441,384**	55.3%
Commercial & Industrial		82,932	83,880	88,438	85,703	**340,953**	42.7%
Hazardous						**-**	-
Clinical						**-**	-
Waste wood (biomass)						**-**	-
Refuse Derived Fuel (incl. SRF) - H'hold/LA		3,808	3,950	4,060	3,958	**15,776**	2.0%
Refuse Derived Fuel (incl. SRF) - C&I						**-**	-
Other [Please specify]						**-**	-
Other [Please specify]						**-**	-
Other [Please specify]						**-**	-
Total waste received		**189,900**	**198,724**	**206,068**	**203,421**	**798,114**	
Rejected Waste		-	6	-	-	**6**	0.0%
Unprocessed waste transferred out		4,512	655	-	-	**5,167**	0.6%
Total waste combusted ***		**177,586**	**202,849**	**203,321**	**206,820**	**790,575**	

Energy Usage / Export	Unit	Q1	Q2	Q3	Q4	**Year Total**	KWh/te
Power generated at generator terminals	MWh	126,263	138,835	168,544	171,193	**604,836**	765
Power exported to grid and other external user(s)		113,681	124,386	150,760	153,629	**542,455**	686
Power imported		1,720	2,142	39	111	**4,012**	5
Indicative parasitic load	%	10.0%	10.4%	10.6%	10.3%	10.9%	
Thermal Energy Exported **						**-**	-
R1 value (if applicable)	R1	-	-	-	-	0.74	

Waste Disposal & Recovery	Unit	Q1	Q2	Q3	Q4	**Year Total**	% inputs
APC Residues - produced	tonnes	4,351	4,972	5,010	5,052	**19,386**	2.5%
IBA - produced		37,603	42,985	44,126	45,341	**170,055**	21.5%
Metals recycling		227	186	207	224	**844**	0.1%
Other		-	-	-	-	**-**	-

Other		-	-	-	-	-	-
Other		-	-	-	-	-	-

Raw Material Usage	Unit	Q1	Q2	Q3	Q4	**Year Total**	Qty./te
Mains Water	ltrs	31,680,000	36,160,000	35,260,000	35,690,000	**138,790,000**	175.56
Other Water	ltrs					-	-
Ammonia	ltrs	199,322	234,071	202,724	220,922	**857,039**	1.08
Urea	kgs					-	-
Activated Carbon	kgs	75,540	88,340	93,180	93,240	**350,300**	0.44
Hydrated lime	kgs	1,669,780	1,981,540	1,977,300	1,896,440	**7,525,060**	9.52
Fuel oil	ltrs	534,250	345,504	343,053	179,638	**1,402,445**	1.77
Gas	m^3					-	-
Other						-	-

Summary	Line/Unit	Q1	Q2	Q3	Q4	**Year Total**	
	1	1,889	2,078	2,166	2,181	**8,312**	94.9%
	2	1,718	1,930	2,085	2,203	**7,936**	90.6%
Availability of waste combustion by line, hrs ****	3	1,682	2,159	2,060	2,032	**7,933**	90.6%
	4					**-**	0.0%
	5					**-**	0.0%
Hours of turbine operations, hrs	1	1,678	1,804	2,199	2,162	**7,844**	89.5%
Net calorific value of waste*****	MJ/kg	9.38	9.65	9.88	9.77	9.67	
Abnormal operation events	qty.		1	1		**2**	yes
Abnormal operation duration	hours		0.5	1		**1.5**	0.02%
Permit Breaches	qty.	11	36	17	16	**80**	yes

Summary of Plant Operations and Maintenance during the reporting year

During 2025, major and common plant outages were undertaken in March, including major inspection shutdowns on Lines 2 and 3. The driver for the common outage was to complete a borescope turbine inspection, to rectify defects on all systems, and to perform the required inspections under the Pressure Systems Safety Regulations 2000 (PSSR). The major inspection scope of works included Grate Maintenance, condition monitoring of the Boiler, rectification of defects, refractory refurbishment, Boiler cleaning and Fabric filter maintenance.

2025 improvements as follows:

The Boiler improvement 4-year project to replace refractory tiles with Alloy 625 weld overlay on Lines 2 and 3 were completed. The modification provides benefits in condition monitoring as well as reducing the temperature of the flue gas around the superheater stages, thus reducing corrosion in the long term. Modifications were complete on Lines 2 and 3 around the division wall middle header bifurcation to alleviate stresses. Line 2 Fabric filter bags were fully changed out as part of the maintenance strategy for the Bag House."

2025	Plant shut-downs	
Start date	**End date**	**Reason for shut-down**
23/02/2025	25/02/2025	Line 1 - Clear the blockage from the grate surface.
02/03/2025	21/03/2025	Line 3 - Planned shutdown
12/03/2025	19/03/2025	Line 1 - Planned shutdown
14/03/2025	05/04/2025	Line 2 - Planned shutdown
22/03/2025	23/03/2025	Line 3 - ID-fan Coupling failure
11/03/2025	16/04/2025	Common Plant shutdown - extended due to object found inside the turbine governor valve
04/04/2025	05/04/2025	Line 3 - ID-fan Coupling failure
08/04/2025	12/04/2025	Line 2 - Multilple FGT blockage/residue discharge blockage and APCR leaks
19/05/2025	19/05/2025	Line 1 - Forced shutdown for radiation pass conveyor chain change.
01/06/2025	05/06/2025	Line 1 - Two external tube leaks on 3rd pass roof. Additional tube leak observed on 1st-2nd pass division wall on internal inspection.
09/06/2025	12/06/2025	Line 2 - Reinforced concrete block stuck on ram feeder.
06/07/2025	12/07/2025	Line 3 - Grate element issues. Tube leak found on east side situated in 1st-2nd pass dividing wall.
20/08/2025	21/08/2025	Line 1 - Clinker formation observed on rear wall slope and corners. Line removed from service as a precaution to get online cleaning to remove the material before it fell onto the grate surface.
13/09/2025	13/09/2025	Common board K24 trip on high Temperature alarm
15/09/2025	20/09/2025	Line 2 - External tube leak on radiation pass cleaning entry point on 3rd pass roof. Second tube leak found on adjacent radiation pass cleaning tube entry point.
22/09/2025	23/09/2025	Line 3 - ID-fan coupling failure
09/10/2025	16/10/2025	line 3 - Tube leak found.
24/10/2025	24/10/2025	Site black out.
10/11/2025	10/11/2025	Line 1 - Grate movement issues
27/11/2025	27/11/2025	Line 1 - ID-fan Coupling failure

2025 Annual Reporting Performance Form 1

Permit EPR/BK0825IU
Operator: Cory
Facility: Riverside Resource Recovery Facility
Form: Performance 1

Reporting Period from: 01 January 2025 to: 31 December 2025

2025 Annual Reporting of Waste Disposal and Recovery

Waste Description	Disposal Route(s)	Disposal Tonnes	Recovery Tonnes	% / tonne of waste incinerated
1) Hazardous Wastes				
APC Residues	R05, D05	9,459.1	9,926.7	2.5%
IBA				-
				-
				-
Total Hazardous Waste		9,459.1	9,926.7	2.5%
2) Non-Hazardous Wastes				
IBA	R04		169,196.3	21.4%
Ferrous Metal	R04		844.3	0.1%
Process Water				-
				-
				-
Total Non-Hazardous Waste		0.0	170,040.6	21.5%
TOTAL WASTE		**9,459.1**	**179,967.2**	24.0%

Operator's comments :

2025 Annual Reporting of Water and Other Raw Material Usage

Raw Material	Usage	Unit	Specific Usage	Unit
Mains Water	138790	m^3	0.18	m^3/te
Total Water	138790	m^3	0.18	m^3/te
Ammonia	857038	ltrs	1.08	ltr/te
Activated Carbon	350300	kg	0.44	kg/te
Hydrated lime	7525060	kg	9.52	kg/te

Operator's comments :

2025 Annual Reporting of other performance indicators

Parameter	Results by Line							
	A1	A2	A3	A4	A5		Turbine 1	Turbine 2
Operating hours for the year, hours	8312	7935.5	7932.5					
Number of periods of abnormal operation, qty.								
Cumulative hours of abnormal operation for this year, hours								

Operator's comments :

Signed: _____ Date: _____

2025 Annual Reporting of Energy Usage/Export

Permit EPR/BK0825IU Operator: Cory

Facility: Riverside Resource Recovery Facility Form: Energy 1

Reporting Period from: 01 January 2025 to: 31 December 2025

Energy Source	Energy Usage	Unit	Specific Usage (KWh/tonne incinerated
Electricity Produced	604,836	MWh	765
Electricity Imported	4011.75	MWh	5
Electricity Exported	542,455	MWh	686
Gas Oil		tonnes	
Steam/hot water exported	0	GWh	-

Operator's comments :

Signed: _____ Date: _____

Summary of Permit Compliance

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[Note 1]	
	Half-hourly limit	Daily limit
Particulates		
Oxides of nitrogen	100.00%	100.00%
Sulphur dioxide	100.00%	100.00%
Carbon monoxide	94.04% 95% of 10-min averages	95.62%
Total organic carbon	98.02%	100.00%
Hydrogen chloride	100.00%	100.00%
Hydrogen fluoride	100.00%	100.00%

Summary of non-compliances under the permit [Note 2]

Date	Summary of non-compliance [Note 3]	Reason	Measures taken to prevent reoccurrence	CCS score if applicable*	
				Impact	Root cause
Q1 2025	• On Line 1 there were 3 exceedances of the 95%ile Carbon Monoxide ELV • On Line 2 there were 3 exceedances of the 95%ile Carbon Monoxide ELV. • On Line 3 there were 5 exceedances of the 95%ile Carbon Monoxide ELV.	The increase in periods of elevated Carbon Monoxide emissions is thought to be caused by hidden gas cylinders in the waste which is fed to the furnace. Explosions of these gas cylindesr lead to elevated CO	Continue to audit incoming waste streams in attempt to eradicate volatile fractions	CCS4	N/A

Q2 2025	• On Line 1 there were 7 exceedances of the 95%ile Carbon Monoxide ELV • On Line 2 there were 4 exceedances of the 95%ile Carbon Monoxide ELV • On Line 3 there were 25 exceedances of the 95%ile Carbon Monoxide ELV and 6 exceedances of the Daily Carbon Monoxide ELV	The increase in periods of elevated Carbon Monoxide emissions is thought to be caused by hidden gas cylinders in the waste which is fed to the furnace. Explosions of these gas cylindesr lead to elevated CO	Continue to audit incoming waste streams in attempt to eradicate volatile fractions	CCS4	N/A
Q3 2025	• On Line 1 there was one exceedance of the 95%ile Carbon Monoxide ELV • On Line 2 there was one exceedance of the 95%ile Carbon Monoxide ELV • On Line 3 there were 15 exceedances of the 95%ile Carbon Monoxide ELV and 7 exceedances of the Daily Carbon Monoxide ELV	The increase in periods of elevated Carbon Monoxide emissions is thought to be caused by hidden gas cylinders in the waste which is fed to the furnace. Explosions of these gas cylindesr lead to elevated CO	Continue to audit incoming waste streams in attempt to eradicate volatile fractions	CCS4	N/A
Q4 2025	• On Line 2 there was 6 exceedances of the 95%ile Carbon Monoxide ELV and 3 exceedances of the Daily Carbon Monoxide ELV • On Line 3 there were 10 exceedances of the 95%ile Carbon Monoxide ELV and 5 exceedances of the Daily Carbon Monoxide ELV	The increase in periods of elevated Carbon Monoxide emissions is thought to be caused by hidden gas cylinders in the waste which is fed to the furnace. Explosions of these gas cylindesr lead to elevated CO	Continue to audit incoming waste streams in attempt to eradicate volatile fractions		

Summary of Plant Improvements

Summary of any efficiency improvements that have been completed within the year.

Summary of any permit improvement conditions that have been completed within the year and the resulting environmental benefits.

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.
Change of short term emission limit for TOC to a half-hourly ELV of 10mg/m3 against a 97%ile annual compliance.

Summary of any other improvements made to the plant or planned to be made and a summary of the resulting environmental benefits.
Completion of installation of upgraded CEMS analysers on each operating line duty and standby analysers providing more precise measurement of emissions to air via site stack.

Details of Public & Stakeholder Liaison

Summary of events held during the reporting year.	
Date	**Description**
13/01/2025	Imperial College London - Environmental Management Students - Presentation & Site Tour
25th April & 27th October	Reading University Environmental Management Students - Presentation & Site Tour
Various	Monthly local Community group site tours

List of events planned for next year	
Date	**Description**
Various	Monthly local Community group site tours
12/01/2026	Imperial College London - Environmental Management Students - Presentation & Site Tour
20/01/2026	University of Greenwich Mechanical Engineering Students - Presentation & Site Tour

If you wish to be involved in the public liaison programme, please contact enquiries@corygroup.co.uk

Carbon dioxide emissions and biogenic content of waste inputs

Carbon dioxide emissions (all types of plant)

PLEASE ENSURE TONNAGES MATCH THOSE THAT WILL B

Annual mass of carbon dioxide released	tonnes	886,898.98
Annual mass of carbon dioxide released per tonne of waste burned	t CO_2 / t waste	1.12
Annual mass of carbon dioxide released per MWh of energy exported	t CO_2 / MWh export	1.63
Description of how annual carbon dioxide mass emission has been calculated. See Note 1	CO2 measured as part of continuous emissions monitoring system (CEMS).	

Nitrous oxide emissions (only plants which use ammonia or urea to abate NOx emissions)

Annual mass emissions of nitrous oxide	tonnes N_2O	15.29
Description of how annual nitrous oxide mass emission has been calculated See Note 2	N2O measured as part of continuous emissions monitoring system (CEMS).	

Total annual carbon dioxide + nitrous oxide emissions. See Note 3.	tonnes CO_2e	890,950.83

Biogenic CO2 emissions (See Note 4)

Percentage of total carbon dioxide emissions arising from biogenic waste	%	60.5%

No. of measurements undertaken	Number	10
Description of how percentage biogenic carbon dioxide emissions have been measured or calculated. See Note 5	C14 sampling using installed continuous sampling unit.	

Biogenic fraction of waste feedstock (See Note 4)

Yearly average biogenic percentage of the waste by net calorific value (NCV)	%	55.4%
Description of how biogenic percentage (by NCV) has been calculated or estimated. See Note 6	Using the compositional data derived from the waste hand sorting, the corresponding biodegradable factors and the CV data determined from laboratory analysis, the qualifying percentage of electricity generated from renewable sources can be calculated	
Yearly average biogenic percentage of the waste by mass	%	59.9%
If waste sampling undertaken, no. of samples used to ascertain average biogenic percentages above	Number	30
Description of how biogenic percentage (by mass) has been calculated or estimated. See Note 7	Result converted to %mass using "Renewable Energy Association Energy Content of Fuels - Description of Method"	

Summary of Residue Handling for the reporting year
100% of the Incinerator Bottom Ash was transported via the River Thames to Blue Phoenix Ltd at their premises at T The Air Pollution Control residue (APCr) was sent to two main destinations throughout 2025: 1) OCO Ltd in Suffolk where it was treated by Accelerated Carbonation Technology (ACT) to produce a stabilised pro component of breeze blocks. 2) Augean at the East Northants Resource Management Facility (ENRMF) is based at Kings Cliffe near Peterborou is monitored under strict EPR permits to ensure full compliance with all current legislation. Metal recovered at site was sent to Goldstar Metal Trading in Cambridgeshire.

Residue Quality Monitoring Requirements

Summary of monitoring undertaken and compliance
In 2025, the Incinerator Bottom of Ash was tested quarterly for Total Organic Carbon (TOC), Heavy Metals suite, Dioxins/Furans and Dioxin-like PCBs in line with the site permit requirements.
In 2025, The Air Pollution Control residue (APCr) was tested for Heavy Metals suite, Dioxins/Furans and Dioxin-like PCBs in line with the site permit requirements.
In 2025, the facility continued to adopt the the ESA Sampling & Testing Protocol to Assess the Status of Incinerator Bottom Ash, for the hazard assessment of IBA. The IBA remained classified as non-hazardous throughout 2025.

Commentary on any specific events	
Date & Event	**Description**

Residue Quality Monitoring Results			
Parameter (unit)	**Limit***	**Normal Operation**	
		Bottom ash	**APC Residues**

Total Organic Carbon (average %)	<3%	0.86%	
No. of Assessments Undertaken	---	4	4
No. of Hazardous Results	---	0	

* The permit will specify a limit of either 5% loss on ignition or 3% total organic carbon. If both are measured anyway, please enter the results here, even where the limit does not apply.

Comments :

Emissions to Water

Summary of monitoring undertaken and compliance
Monthly visual assessment for visible oil or grease at three emission points for uncontaminated roof and surface water. No visible signs of oil or grease seen throughout 2025.

Commentary on any specific events	
Date & Event	**Description**

Emissions to Water / Sewer

Parameter	Monitoring Frequency	Limit	Target	Max.	Average

Emissions to Air (periodically monitored)

Summary of monitoring undertaken, standards used and compliance

Results of emissions to air that are periodically monitored - oxygen reference 11%							
Substance	**Ref. Period**	**Emission Limit Value**	**Average**				
			A1	**A2**	**A3**	**A4**	**A5**
Hydrogen fluoride	1 hr	1 mg/m^3	0.024	0.022	0.027		
Cd and Tl and their compounds	0.5-8hrs	0.02 mg/m^3	0.0008	0.0011	0.0008		
Hg and its compounds	0.5-8hrs	0.02 mg/m^3	0.0004	0.0005	0.0005		
Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V and their compounds	0.5-8hrs	0.3 mg/m^3	0.0153	0.0119	0.0143		
Dioxins & Furans (I-TEQ)	6-8hrs	0.06 ng/m^3	0.0013	0.001	0.0037		
PCBs (WHO-TEQ Humans / Mammals)	6-8hrs	None set ng/m^3	0.00012	0.00004	0.00056		
PCBs (WHO-TEQ Fish)	6-8hrs	None set ng/m^3	0.000008	0.000007	0.000019		
PCBs (WHO-TEQ Birds)	6-8hrs	None set ng/m^3	0.00045	0.00058	0.00111		
Dioxins & Furans (WHO-TEQ Humans / Mammals)	6-8hrs	None set ng/m^3	0.0007	0.0012	0.0038		
Dioxins & Furans (WHO-TEQ Fish)	6-8hrs	None set ng/m^3	0.0011	0.0011	0.0039		
Dioxins & Furans (WHO-TEQ Birds)	6-8hrs	None set ng/m^3	0.0055	0.0035	0.0069		
Anthanthrene	6-8hrs	None set $\mu g/m^3$	<0.0011	<0.0012	<0.0011		
Benzo(a)anthracene	6-8hrs	None set $\mu g/m^3$	<0.0011	0.027	<0.0011		
Benzo(a)pyrene	6-8hrs	None set $\mu g/m^3$	<0.0011	0.0403	<0.0011		
Benzo(b)fluoranthene	6-8hrs	None set $\mu g/m^3$	<0.0011	0.0122	<0.0011		
Benzo(b)naptho(2,1-d) thiophene	6-8hrs	None set $\mu g/m^3$	<0.0011	0.0151	<0.0011		
Benzo(c)phenanthrene	6-8hrs	None set $\mu g/m^3$	<0.0011	0.0051	<0.0011		
Benzo(ghi)perylene	6-8hrs	None set $\mu g/m^3$	<0.0011	0.0109	<0.0011		
Benzo(k)fluoranthene	6-8hrs	None set $\mu g/m^3$	<0.0011	0.008	<0.0011		
Cholanthrene	6-8hrs	None set $\mu g/m^3$	<0.0011	<0.0012	<0.0011		
Chrysene	6-8hrs	None set $\mu g/m^3$	0.0017	0.0423	0.0018		
Cyclopenta(cd)pyrene	6-8hrs	None set $\mu g/m^3$	<0.0011	<0.0012	<0.0011		
Dibenzo(ai)pyrene	6-8hrs	None set $\mu g/m^3$	<0.0011	0.0013	<0.0011		
Dibenzo(ah)anthracene	6-8hrs	None set $\mu g/m^3$	<0.0011	0.0034	0.0021		
Fluoranthene	6-8hrs	None set $\mu g/m^3$	0.0434	0.097	0.0263		
Indeno(123-cd) pyrene	6-8hrs	None set $\mu g/m^3$	<0.0011	0.0051	<0.0011		
Naphthalene	6-8hrs	None set $\mu g/m^3$	0.1748	0.3323	0.3268		

Emissions to Air (continuously monitored)

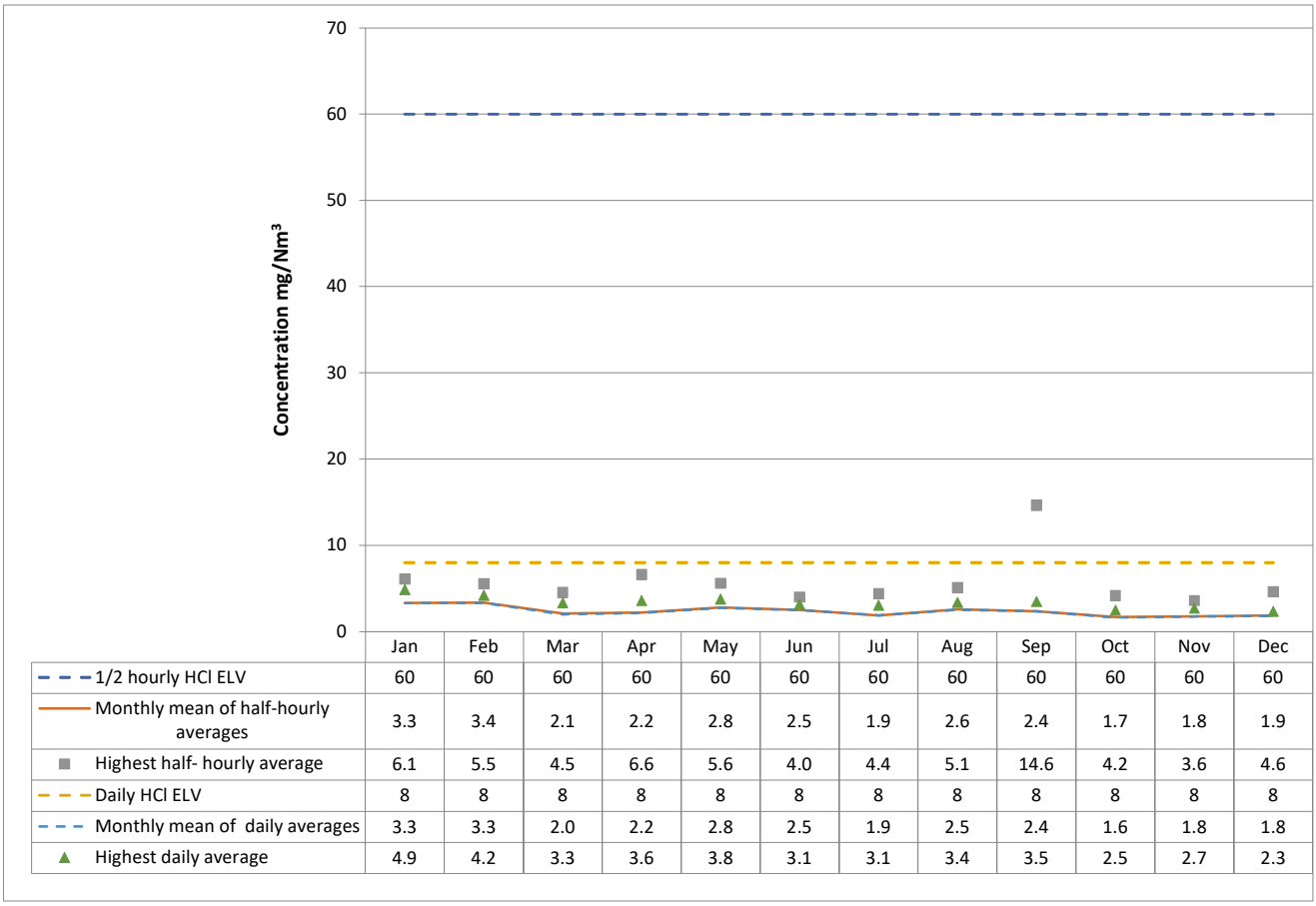
Summary of monitoring undertaken, standards used and compliance
All substances listed below are continuously monitored in line with the requirements of the Environmental permit. Oxides of Nitrogen (ISO 10849), Particulate Matter (BS EN 13284-2), Total Organic Carbon (BS EN 12619), Hydrogen Chloride, Sulphur Dioxide (BS 6069-4.4)

Results of emissions to air that are continuously monitored (maximum and average values for each line) - oxygen reference 11%

Substance	Reference Period	Emission Limit Value	A1		A2		A3		A4		A5	
			Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.
Oxides of nitrogen	Daily mean	180 mg/m^3	151.2	148.4	150.9	147.8	157.1	147.4				
	½ hourly mean	400 mg/m^3	151.2	150.5	151.1	147.9	157.1	147.2				
Particulates	Daily mean	5 mg/m^3										
	½ hourly mean	30 mg/m^3										
Total Organic Carbon	Daily mean	10 mg/m^3	0.8	0.6	1.5	1.0	1.5	1.2				
	½ hourly mean	20 mg/m^3	0.8	0.6	1.5	1.0	1.6	1.2				
Hydrogen chloride	Daily mean	8 mg/m^3	3.3	1.8	3.5	2.5	4.1	2.7				
	½ hourly mean	60 mg/m^3	3.3	1.9	3.5	2.5	4.0	2.7				
Sulphur dioxide	Daily mean	40 mg/m^3	3.6	1.0	2.3	0.3	6.9	4.1				
	½ hourly mean	200 mg/m^3	3.7	1.1	2.2	0.3	7.1	4.2				
Carbon monoxide	Daily mean	50 mg/m^3	25.3	21	24.7	20.7	35.4	27.8				
	95%ile 10-min avg *	150 mg/m^3 *	25.3	21.2	25.0	20.8	35.4	28.3				
Ammonia	Daily mean	15 mg/m^3	6.0	1.3	4.8	1.1	1.5	0.5				

Monitoring of Hydrogen Chloride emissions **Whole Installation** *See Notes in Cell Q3*

2025	1/2 Hourly Reference Periods			Daily Reference Periods		
mg/Nm^3	1/2 hourly HCl ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily HCl ELV	Monthly mean of daily averages	Highest daily average
Jan	60	3.3	6.1	8	3.3	4.9
Feb	60	3.4	5.5	8	3.3	4.2
Mar	60	2.1	4.5	8	2.0	3.3
Apr	60	2.2	6.6	8	2.2	3.6
May	60	2.8	5.6	8	2.8	3.8
Jun	60	2.5	4.0	8	2.5	3.1
Jul	60	1.9	4.4	8	1.9	3.1
Aug	60	2.6	5.1	8	2.5	3.4
Sep	60	2.4	14.6	8	2.4	3.5
Oct	60	1.7	4.2	8	1.6	2.5
Nov	60	1.8	3.6	8	1.8	2.7
Dec	60	1.9	4.6	8	1.8	2.3

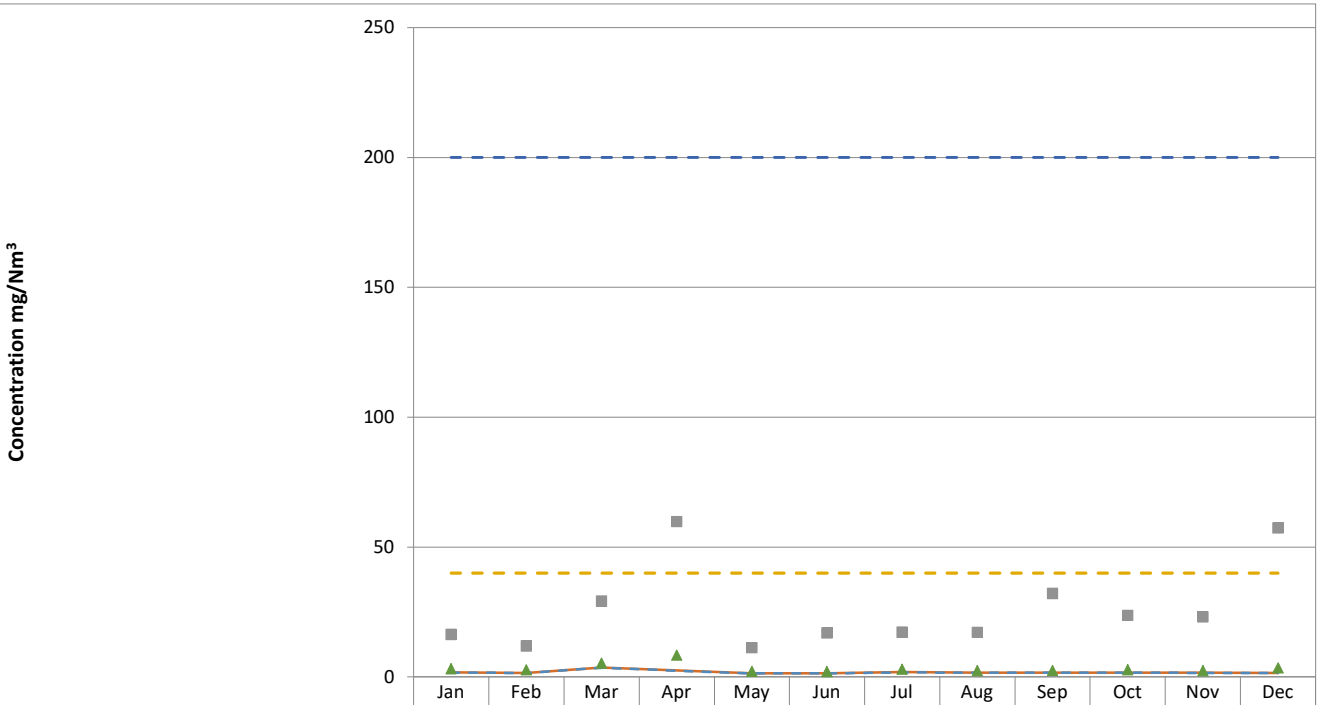


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly HCl ELV	60	60	60	60	60	60	60	60	60	60	60	60
Monthly mean of half-hourly averages	3.3	3.4	2.1	2.2	2.8	2.5	1.9	2.6	2.4	1.7	1.8	1.9
Highest half- hourly average	6.1	5.5	4.5	6.6	5.6	4.0	4.4	5.1	14.6	4.2	3.6	4.6
Daily HCl ELV	8	8	8	8	8	8	8	8	8	8	8	8
Monthly mean of daily averages	3.3	3.3	2.0	2.2	2.8	2.5	1.9	2.5	2.4	1.6	1.8	1.8
Highest daily average	4.9	4.2	3.3	3.6	3.8	3.1	3.1	3.4	3.5	2.5	2.7	2.3

Comments :

Monitoring of Sulphur dioxide emissions **Whole Installation** *See Notes in Cell Q3*

2025	1/2 Hourly Reference Periods			Daily Reference Periods		
mg/Nm^3	1/2 hourly SO2 ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily SO2 ELV	Monthly mean of daily averages	Highest daily average
Jan	200	1.8	16.3	40	1.7	3.2
Feb	200	1.6	11.9	40	1.6	2.7
Mar	200	3.6	29.2	40	3.5	5.4
Apr	200	2.5	59.8	40	2.5	8.4
May	200	1.4	11.2	40	1.4	2.1
Jun	200	1.4	17.0	40	1.4	2.0
Jul	200	1.9	17.2	40	1.8	3.0
Aug	200	1.7	17.1	40	1.6	2.4
Sep	200	1.7	32.2	40	1.6	2.5
Oct	200	1.7	23.6	40	1.6	2.8
Nov	200	1.6	23.1	40	1.6	2.4
Dec	200	1.5	57.4	40	1.5	3.4

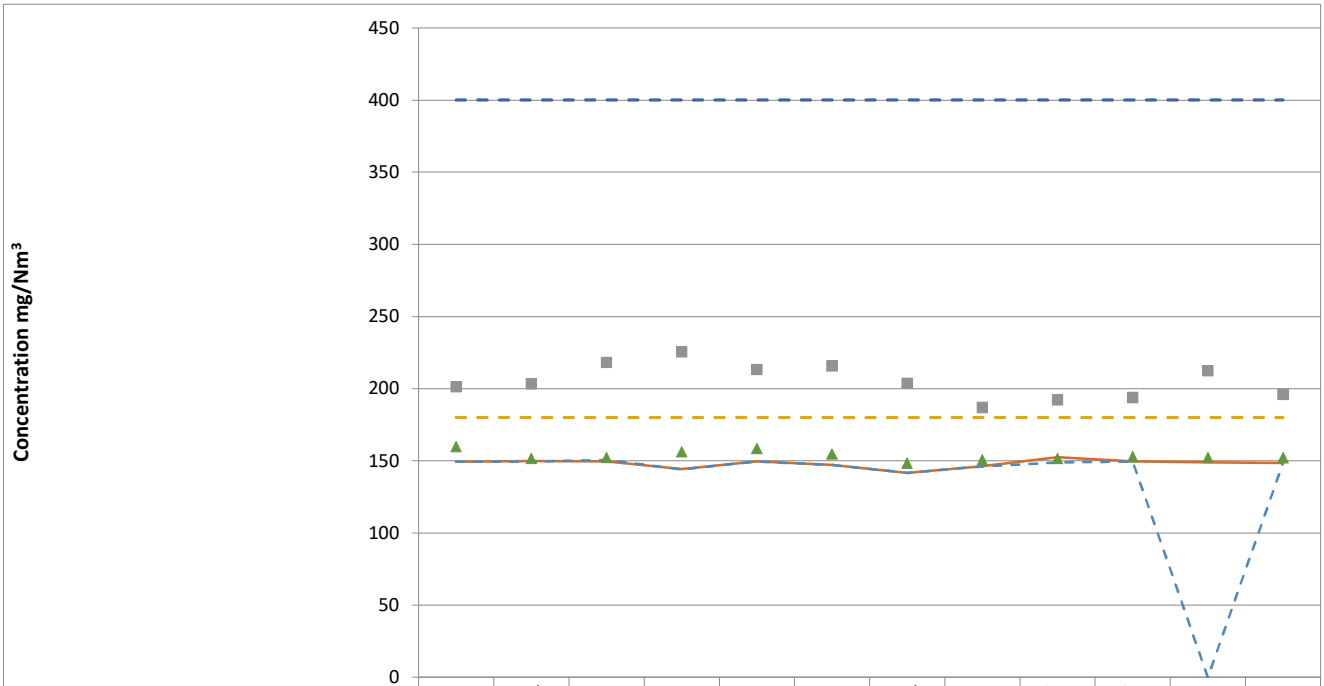


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly SO2 ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly mean of half-hourly averages	1.8	1.6	3.6	2.5	1.4	1.4	1.9	1.7	1.7	1.7	1.6	1.5
Highest half- hourly average	16.3	11.9	29.2	59.8	11.2	17.0	17.2	17.1	32.2	23.6	23.1	57.4
Daily SO2 ELV	40	40	40	40	40	40	40	40	40	40	40	40
Monthly mean of daily averages	1.7	1.6	3.5	2.5	1.4	1.4	1.8	1.6	1.6	1.6	1.6	1.5
Highest daily average	3.2	2.7	5.4	8.4	2.1	2.0	3.0	2.4	2.5	2.8	2.4	3.4

Comments :

Monitoring of Oxides of Nitrogen emissions **Whole Installation** *See Notes in Cell Q3*

2025	1/2 Hourly Reference Periods			Daily Reference Periods		
mg/Nm^3	1/2 hourly NOx ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily NOx ELV	Monthly mean of daily averages	Highest daily average
Jan	400	149.3	201.4	180	149.3	159.9
Feb	400	149.8	203.3	180	149.5	151.8
Mar	400	149.7	218.1	180	150.5	152.5
Apr	400	144.2	225.5	180	144.1	156.4
May	400	149.6	213.4	180	149.6	158.6
Jun	400	147.2	215.7	180	147.2	154.8
Jul	400	141.7	203.8	180	141.7	148.4
Aug	400	146.2	187.1	180	146.1	150.7
Sep	400	152.4	192.3	180	148.8	151.7
Oct	400	149.6	193.9	180	149.6	152.9
Nov	400	149.0	212.5	180	#VALUE!	152.5
Dec	400	148.4	196.1	180	148.4	152.2

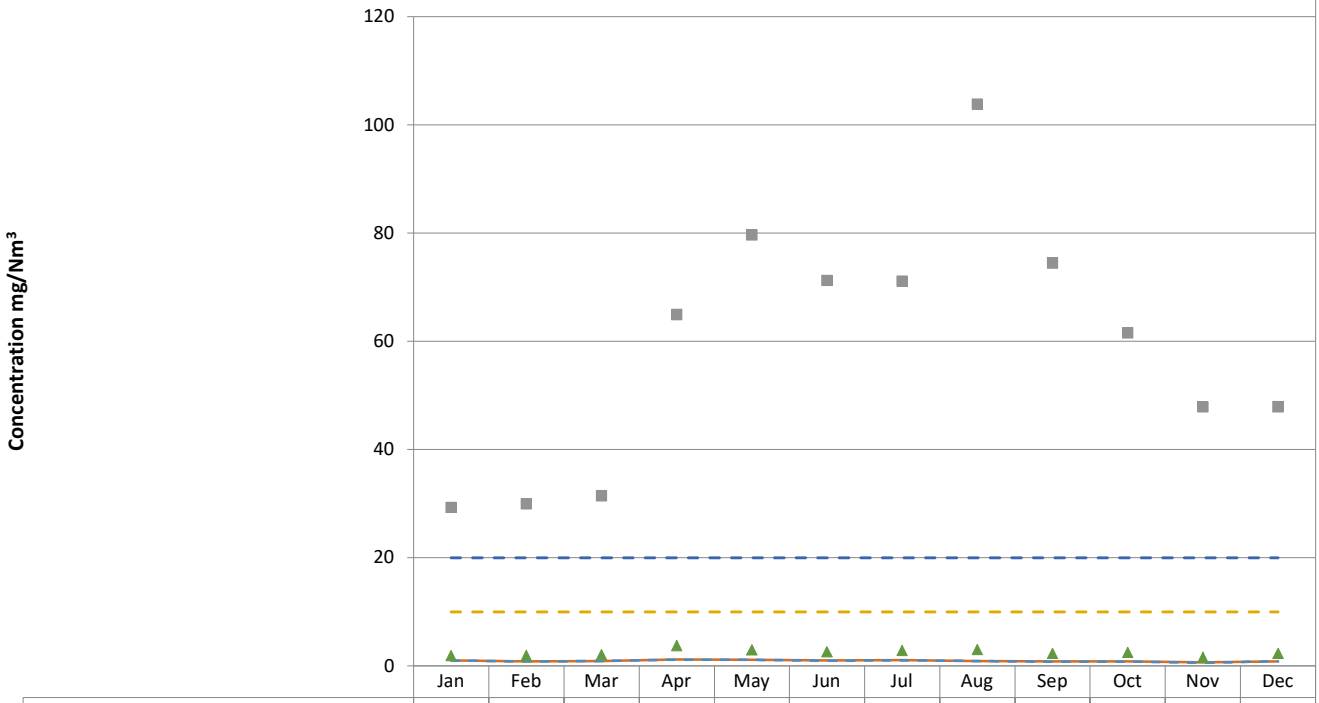


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly NOx ELV	400	400	400	400	400	400	400	400	400	400	400	400
Monthly mean of half-hourly averages	149.3	149.8	149.7	144.2	149.6	147.2	141.7	146.2	152.4	149.6	149.0	148.4
Highest half- hourly average	201.4	203.3	218.1	225.5	213.4	215.7	203.8	187.1	192.3	193.9	212.5	196.1
Daily NOx ELV	180	180	180	180	180	180	180	180	180	180	180	180
Monthly mean of daily averages	149.3	149.5	150.5	144.1	149.6	147.2	141.7	146.1	148.8	149.6	0.0	148.4
Highest daily average	159.9	151.8	152.5	156.4	158.6	154.8	148.4	150.7	151.7	152.9	152.5	152.2

Comments :

Monitoring of Total organic carbon emissions **Whole Installation** *See Notes in Cell Q3*

2025	1/2 Hourly Reference Periods			Daily Reference Periods		
mg/Nm^3	1/2 hourly TOC ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily TOC ELV	Monthly mean of daily averages	Highest daily average
Jan	20	1.0	29.3	10	1.0	1.9
Feb	20	0.9	30.0	10	0.8	2.0
Mar	20	0.9	31.5	10	0.9	2.1
Apr	20	1.2	65.0	10	1.2	3.8
May	20	1.2	79.7	10	1.1	3.0
Jun	20	1.0	71.3	10	1.0	2.6
Jul	20	1.1	71.2	10	1.0	2.9
Aug	20	0.9	103.9	10	0.9	3.1
Sep	20	0.9	74.5	10	0.8	2.3
Oct	20	0.8	61.6	10	0.8	2.5
Nov	20	0.7	47.9	10	0.6	1.6
Dec	20	0.9	47.9	10	0.9	2.3



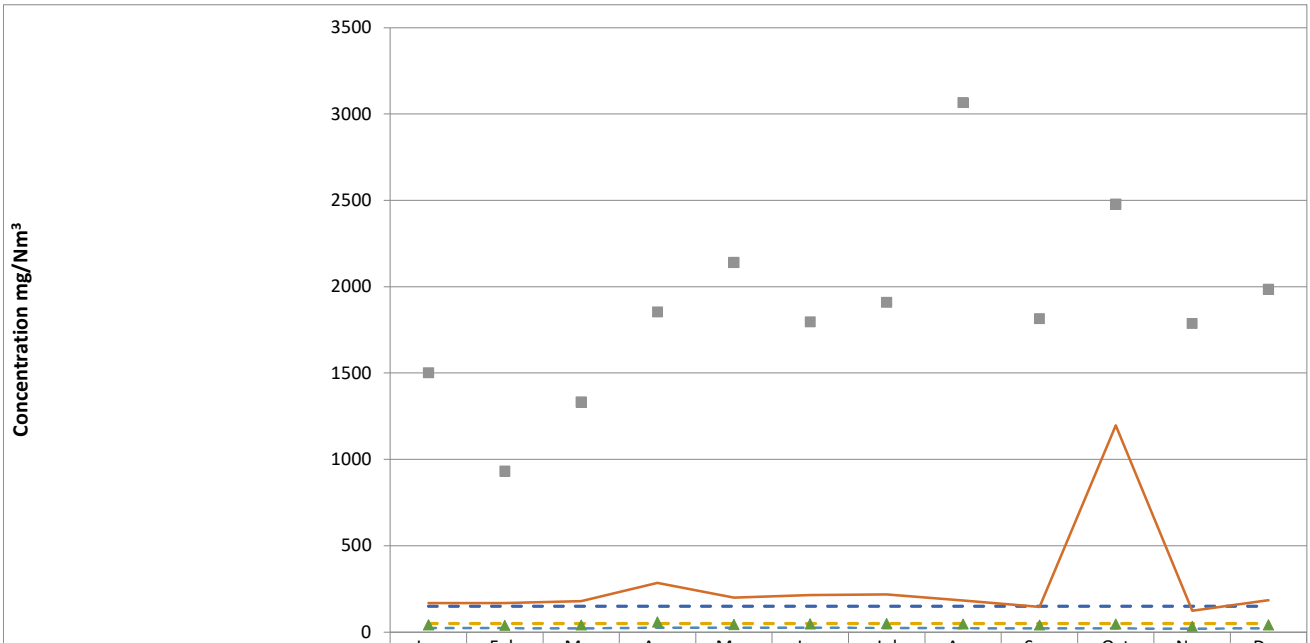
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly TOC ELV	20	20	20	20	20	20	20	20	20	20	20	20
Monthly mean of half-hourly averages	1.0	0.9	0.9	1.2	1.2	1.0	1.1	0.9	0.9	0.8	0.7	0.9
Highest half- hourly average	29.3	30.0	31.5	65.0	79.7	71.3	71.2	103.9	74.5	61.6	47.9	47.9
Daily TOC ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly mean of daily averages	1.0	0.8	0.9	1.2	1.1	1.0	1.0	0.9	0.8	0.8	0.6	0.9
Highest daily average	1.9	2.0	2.1	3.8	3.0	2.6	2.9	3.1	2.3	2.5	1.6	2.3

Comments :

Monitoring of Carbon Monoxide (10-minute avg) **Whole Installation** *See Notes in Cell S3*

Please complete this tab for your plant if you have 10-minute average CO ELVs; otherwise, leave it blank and complete the CO 0.5 hourly tab

2025	10-minute Reference Periods				Daily Reference Periods		
mg/Nm^3	95%ile 10-min avg CO ELV	Highest daily 95%ile 10-min average	Monthly mean of 10-min averages	Highest 10-min average	Daily CO ELV	Monthly mean of daily averages	Highest daily average
Jan	150	168.6	25.1	1501.9	50	24.9	41.8
Feb	150	169.4	22.4	932.0	50	22.4	39.3
Mar	150	180.7	22.4	1332.6	50	21.4	41.0
Apr	150	286.1	26.1	1854.3	50	25.9	58.5
May	150	199.6	25.2	2139.9	50	25.1	43.7
Jun	150	214.1	25.3	1796.4	50	25.2	47.7
Jul	150	218.1	25.1	1908.9	50	24.8	49.0
Aug	150	183.4	23.1	3065.5	50	23.0	46.8
Sep	150	145.8	21.9	1814.9	50	21.6	40.8
Oct	150	1197.7	22.7	2478.4	50	22.2	47.0
Nov	150	124.6	19.5	1787.0	50	19.5	33.8
Dec	150	186.2	22.4	1985.0	50	22.3	42.4



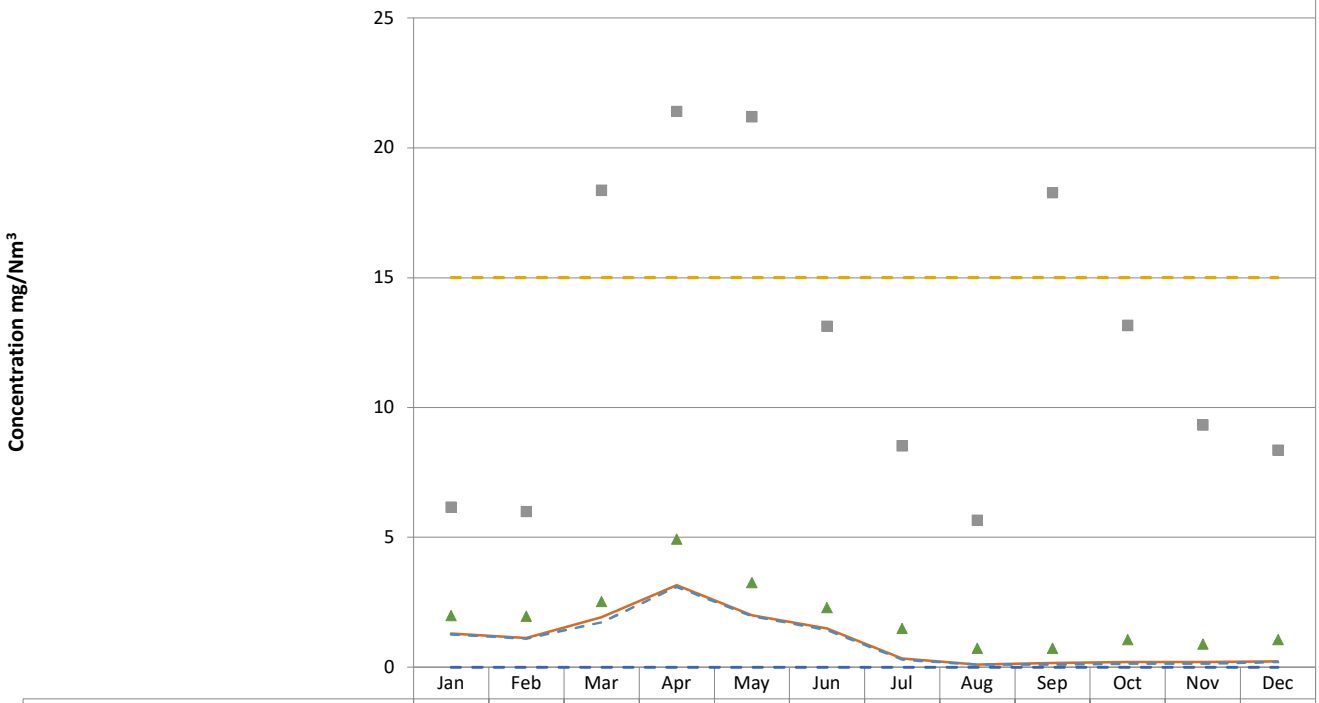
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
95%ile 10-min avg CO ELV	150	150	150	150	150	150	150	150	150	150	150	150
Highest daily 95%ile 10-min average	168.6	169.4	180.7	286.1	199.6	214.1	218.1	183.4	145.8	1197.7	124.6	186.2
Highest 10-min average	1501.9	932.0	1332.6	1854.3	2139.9	1796.4	1908.9	3065.5	1814.9	2478.4	1787.0	1985.0
Daily CO ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly mean of daily averages	24.9	22.4	21.4	25.9	25.1	25.2	24.8	23.0	21.6	22.2	19.5	22.3
Highest daily average	41.8	39.3	41.0	58.5	43.7	47.7	49.0	46.8	40.8	47.0	33.8	42.4

Comments :

Environment Agency explanatory note: The 10-minute average ELV is based on the “95th percentile”. In this case this means that 95% of the 10 minute averages in the relevant 24-hour period (i.e. 137) must be below 150 mg/Nm3, and 5% (i.e. 7) are allowed to be any value above 150 mg/Nm3. Whilst we expect operators to minimise CO emissions at all times, it is perfectly acceptable for the value of the maximum 10-minute average to be above 150 mg/Nm3, provided the 95th percentile ELV has been met for that period.

Monitoring of Ammnonia emissions **Whole Installation** *See Notes in Cell Q3*

2025	1/2 Hourly Reference Periods			Daily Reference Periods		
mg/Nm^3	1/2 hourly NH3 ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily NH3 ELV	Monthly mean of daily averages	Highest daily average
Jan	None	1.3	6.2	15	1.3	2.0
Feb	None	1.1	6.0	15	1.1	2.0
Mar	None	1.9	18.4	15	1.7	2.5
Apr	None	3.2	21.4	15	3.1	4.9
May	None	2.0	21.2	15	2.0	3.3
Jun	None	1.5	13.1	15	1.4	2.3
Jul	None	0.3	8.5	15	0.3	1.5
Aug	None	0.1	5.7	15	0.1	0.7
Sep	None	0.2	18.3	15	0.1	0.7
Oct	None	0.2	13.2	15	0.1	1.1
Nov	None	0.2	9.3	15	0.1	0.9
Dec	None	0.2	8.4	15	0.2	1.1



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly NH3 ELV	0	0	0	0	0	0	0	0	0	0	0	0
Monthly mean of half-hourly averages	1.3	1.1	1.9	3.2	2.0	1.5	0.3	0.1	0.2	0.2	0.2	0.2
Highest half- hourly average	6.2	6.0	18.4	21.4	21.2	13.1	8.5	5.7	18.3	13.2	9.3	8.4
Daily NH3 ELV	15	15	15	15	15	15	15	15	15	15	15	15
Monthly mean of daily averages	1.3	1.1	1.7	3.1	2.0	1.4	0.3	0.1	0.1	0.1	0.1	0.2
Highest daily average	2.0	2.0	2.5	4.9	3.3	2.3	1.5	0.7	0.7	1.1	0.9	1.1

Comments :

An indicated ELV value of zero in the table above means that no ammonia limit is/was set in the permit.