



Annual Performance Report 2024

Permit EPR/LP3030XA

Cardiff Energy Recovery Facility

Trident Park ERF

Viridor Energy Limited

Year: 2024

Address: Glass Avenue, Ocean Way, Cardiff CF23 5EN

Tel:

Email:

Prepared by: [Redacted] Position: Technical compliance lead

Approved by: [Redacted] Position: Plant Manager

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Distribution		
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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.

Notes:

Section references and Page nos. to be inserted

*Sections and Subjects may require adjustment
by individual operators to meet specific reporting
requirements as defined in the sites Permit(s)*

Plant Description and Design

"Cardiff Energy Recovery Facility is located immediately north of Cardiff Docks. The facility will process approximately 22.96 tonnes of residual municipal and C&I waste per line, per hour and has the capability of exporting approximately 34MW of electrical power.

In accordance with the requirements of Condition 4.2.2, Schedule 4 and Table S4.1 of Permit EPR/LP3030XA issued by Natural Resources Wales to Viridor Waste Management Limited (Viridor) on 21 Decemeber 2022, Viridor is required to produce an annual performance report which is to be submitted to Natural Resources Wales by the 31 January (or as agreed in writing with Natural Resources Wales) each year.

Viridor took over the operation of the Plant on 31st January 2015.

This report summarises the environmental and performance data collected at the site 1st January – 31st December 2024 and fulfils the reporting requirement of Chapter IV, Article 55 (2) of the Industrial Emissions Directive.

Summary of Operational Processes and Procedures

Incoming waste is mainly received from local authorities that have joined together to form two contract hubs - Prosiect Gwyrdd and Tomorrows Valley, some waste is recieved from Pembrokeshire County Council and the rest of the waste is received from third party businesses. Waste is received into an enclosed waste bunker. The waste is loaded into one of two furnaces, which combust the waste at >850°C. The hot gases are put through a variety of heat exchangers used to heat demineralised water to create superheated steam which drives a turbine generator. The turbine generator produces around 37MWh and exports around 33MWh. Combusted waste (incinerator bottom ash) is sent to a third party for further processing. The gases are treated with Lime, Activated carbon and Urea to remove potential pollution leaving the stacks. The powder containing reacted gas particulates (APCr) is removed and sent via a third party for reprocessing. Emissions are monitored via Continuous Emissions Monitoring equipment (CEMs) that are serviced by a contractor.

Operational Data

Plant Size	425,000 tonnes pa	MWth	34 MWe
No. of combustion lines	2	No. of Turbines:	1

Waste types received	Unit	Q1	Q2	Q3	Q4	Year Total	%
Household / Local Authority	tonnes	64,408	64,475	75,331	73,335	277,549	67.6%
Commercial & Industrial		48,091	38,626	22,453	23,660	132,830	32.4%
Hazardous		-	-	-	-	-	-
Clinical		-	-	-	-	-	-
Waste wood (biomass)		-	-	-	-	-	-
Refuse Derived Fuel * - H'hold/LA		-	-	-	-	-	-
Refuse Derived Fuel * - C&I		-	-	-	-	-	-
Other [Please specify]		-	-	-	-	-	-
Other [Please specify]		-	-	-	-	-	-
Other [Please specify]		-	-	-	-	-	-
Total waste received		112,499	103,101	97,784	96,995	410,379	
Rejected Waste		-	-	-	-	-	-
Unprocessed waste transferred out		-	-	-	-	-	-
Total waste combusted **		112,499	103,101	97,784	96,995	410,379	

Energy Usage / Export	Unit	Q1	Q2	Q3	Q4	Year Total	KWh/te
Power Generated	MWh	82,094	80,457	77,789	76,291	316,631	772
Power Exported		73,201	71,480	69,185	68,057	281,923	687
Power Used on site		8,850	8,959	8,476	8,106	34,391	84
Power Imported		43	18	129	128	318	1
Parasitic Load	%	10.9%	11.2%	11.2%	10.9%	11.1%	-
Thermal Energy Produced ***	MWh	-	-	-	-	-	-
Thermal Energy Exported ***	MWh	-	-	-	-	-	-
R1 value (if applicable)	R1	-	-	-	-	0.8	-

Waste Disposal & Recovery	Unit	Q1	Q2	Q3	Q4	Year Total	% inputs
APC Residues - produced	tonnes	2,929	3,174	3,139	2,944	12,186	3.0%
IBA - produced		23,439	22,256	21,592	21,612	88,899	21.7%
Metals recycling		172	244	174	174	764	0.2%
Other		-	-	-	-	-	-
Other		-	-	-	-	-	-
Other		-	-	-	-	-	-

Raw Material Usage	Unit	Q1	Q2	Q3	Q4	Year Total	kg or Ltr /te
Mains Water	ltrs	20,197,000	23,158,000	16,909,000	16,813,000	77,077,000	187.82
Other Water	ltrs	-	-	-	-	-	-
Ammonia	kgs	-	-	-	-	-	-
Urea	kgs	172,000	166,000	143,000	119,000	600,000	1.46
Activated Carbon	kgs	61,000	58,000	52,000	53,000	224,000	0.55
Lime / hydrated lime	kgs	1,815,000	2,095,000	2,044,000	1,863,000	7,817,000	19.05
Fuel oil	ltrs	48,762	47,116	82,477	107,905	286,260	0.70
Gas	cuf	-	-	-	-	-	-
Other	-	-	-	-	-	-	-

Summary	Line/Unit	Q1	Q2	Q3	Q4	Year Total	
	1	2,172	2,048	2,121	2,076	8,417	95.8%
Availability of waste combustion by line, hrs ****	2	2,158	2,183	1,990	1,955	8,286	94.3%
	3					-	0.0%
	4					-	0.0%
	5					-	0.0%
Overall Availability, mean avg. of all lines, hrs						8,351	95.1%
Hours of turbine operations, hrs	1	2,170	2,178	2,146	2,080	8,574	97.6%
Hours of turbine operations, hrs	2					-	0.0%
Hours of heat / steam export						-	n/a
Net Calorific Value of waste	MJ/kg	10	10	11	10		
Abnormal Events	qty.					-	no
Abnormal operation	hours					-	0.0%
Permit Breaches	qty.	1				1	yes

Summary of Plant Operations and Maintenance during the reporting year

The main purpose of the facility is to burn non-hazardous municipal, commercial and industrial waste and to recover energy by producing steam. The steam will be used to produce electricity for export to the local grid and has the potential for further heat export to local consumers. The installation includes waste receipt and storage, two waste combustion units with associated waste heat boilers and exhaust gas abatement systems, on-site storage of residues and all systems for controlling and monitoring incinerator operation. The plant is designed to process approximately 26.48 tonnes per hour in two parallel and identical combustion units. Taking into account the expected long term availability of the facility, the annual permitted throughput of the facility is 425,000 tonnes of waste per annum.

The incoming municipal waste is loaded into the furnace via a feed hopper from the reception hall, where the waste vehicles deposit their loads into the storage bunker. After entering the combustion chamber via the refuse feed ram the waste is allowed to fall onto the grate in a controlled manner. The moving grate mechanisms are used to agitate the waste as it progresses down to the ash discharger. As the waste moves along, primary air is introduced from beneath the grate causing the waste to go through a series of drying and burning areas. Secondary air is introduced from above the grate for combustion control. An auxiliary oil fired burner is located in each combustion chamber to both establish minimum temperature on start up and to maintain the combustion gas temperature at a minimum of 850°C for 2 seconds in the combustion chamber before passing to the boiler, economiser and abatement plant. The furnace is equipped with a water tube boiler raising steam at 60 bar and 400°C. Economisers are fitted down stream of the boiler unit to pre-heat the incoming feed water. Each furnace unit is fitted with an independent dry urea injection system in order to reduce the facility's emissions of Oxides of Nitrogen (NOx) to air through selective non-catalytic reduction. A dry hydrated lime flue gas treatment system is used to neutralise acid flue gases with the injection of lime reagent into the reaction chamber. Activated carbon is injected into the flue gas stream in order to reduce the concentrations of heavy metals and dioxins in the combustion gases emitted to air. Bag filters are used to separate out the resulting particulate matter from the cooled and treated gases. The facility has a 90m stack containing the separate flue gas streams from each combustion unit, via which the combustion gases are released to air. Each flue gas stream is equipped with a Continuous Emission Monitoring System (CEMS) which continuously monitor for particulates, carbon monoxide (CO), ammonia (NH3), sulphur dioxide (SO2), hydrogen chloride (HCl), oxygen (O2), nitrogen oxides (NOx) and volatile organic compounds (VOC's).

There is a discharge of process effluent to sewer in accordance with a Trade Effluent Consent issued by Dwr Cymru Welsh Water. Uncontaminated surface and roof waters are discharged to the surface water drainage system via a series of interceptors, attenuation lagoons and isolation valves.

Trident Park's annual plant maintenance outage was held from 26th to 31st October 2024. During this period planned maintenance and repair of equipment was undertaken.

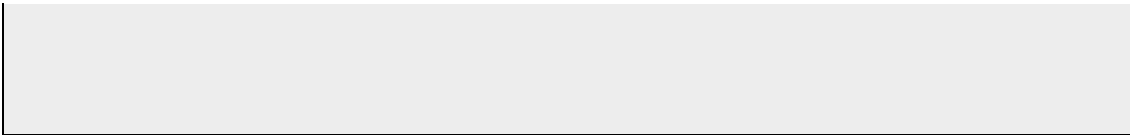
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Summary of Residue Handling for the reporting year

Bottom ash from the incinerator grate is quenched with water and then conveyed via a metals extraction system to a concrete storage area prior to removal from site.

Air pollution control residues (APCr) from the bag filter systems are collected continuously and stored in two dedicated silos. APCr is collected by direct transfer from the on site silos into transport tanker and goes to either for reprocessing or disposal. When taken for reprocessing APCr is taken through accelerated carbonation technology. These carbonated wastes are blended with binders and fillers and pelletised to form an aggregate. If APCr is sent for disposal it is placed within a hazardous waste cell in the landfill.

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2024	Plant shut-downs
Date	Reason for shut-down
31/01/2024	L1 & 2 Crane issues
30/04/2024	L1 Grate issue
08/05/2024	L1 Tube leak
10/06/2024	L1 Tube leak
16/07/2024	L2 Tube leak
09/08/2024	L2 Grate issue
11/08/2024	L1 Tube leak
11/08/2024	L2 Tube leak
21/09/2024	L2 Tube leak
13/10/2024	L2 Tube leak
26/10/2024	L1 Planned outage
27/10/2024	L2 Planned outage
13/12/2024	L2 Tube leak
31/12/2024	L2 Tube leak

2024 Annual Reporting Performance Form 1

Permit EPR/LP3030XA

Operator: Viridor Energy Limited

Facility: Cardiff Energy Recovery Facility

Form: Performance 1

Reporting Period from: 1st January 2024 to: 31st December 2024

2024 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	D05.03	1,669.3		0.4%
APC Residues	R05.04		10,515.9	2.6%
				-
				-
Total Hazardous Waste		1,669.3	10,515.9	3.0%
2) Non-Hazardous Wastes				
IBA	R05		88,899.4	21.7%
Ferrous Metal	R04		811.0	0.2%
Process Water			21,078.0	5.1%
				-
				-
Total Non-Hazardous Waste		0.0	110,788.4	27.0%
TOTAL WASTE		1,669.3	121,304.3	30.0%

Operator's comments :

2024 Annual Reporting of Water and Other Raw Material Usage

Raw Material	Usage	Unit	Specific Usage	Unit
Mains Water	77077	m ³	0.19	m ³ /te
Total Water	77077	m ³	0.19	m ³ /te
Urea / Ammonia	600000	kg	1.46	kg/te
Activated Carbon	224000	kg	0.55	kg/te
Lime / hydrated lime / Sodium Bicarb.	7817000	kg	19.05	kg/te

Operator's comments :

2024 Annual Reporting of other performance indicators

Parameter	Results by Line					Turbine 1	Turbine 2
	A1	A2	A3	A4	A5		
Operating hours for the year, hours	8416.7	8286.2				8574.2	
Number of periods of abnormal operation, qty.	1						
Cumulative hours of abnormal operation for this year, hours	0.5						

Operator's comments :

Signed: _____

Date: _____

2024 Annual Reporting of Energy Usage/Export

Permit EPR/LP3030XA

Operator: Viridor Energy Limited

Facility: Cardiff Energy Recovery Facility

Form: Energy 1

Reporting Period from: 1st January 2024

to: 31st December 2024

Energy Source	Energy Usage	Unit	Specific Usage (KWh/tonne incinerated)
Electricity Produced	316,631	MWh	772
Electricity Imported	318	MWh	1
Electricity Exported	281,923	MWh	687
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	100%	100%
Oxides of nitrogen	100%	100%
Sulphur dioxide	100%	100%
Carbon monoxide	99.99% of 95% of 10-min averages	100%
Total organic carbon	100%	100%
Hydrogen chloride	100%	100%
Hydrogen fluoride	100%	100%
	100%	100%

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
02/02/2024	10-min CO exceedance outside of 95% compliance	Gas cannister in waste	Continuation of waste inspections to attempt to identify suppliers of gas canisters. Ongoing discussion with local authorities on collection of canisters from parks and other recreational spaces	CCSS3	IR3A

*If the Environment Agency (EA) has given a Compliance Classification Scheme (CCS) score due to a permit non-compliance it should be entered here (CCS4 = No impact; CCS3 = Minor impact; CCS2 = Significant impact; CCS1 = Major impact). If the EA has not yet assessed a non-compliance which you have notified to them, these columns should be left blank. Enter N/A if no score was given for the root cause.

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

Date	Summary of complaint [including Line/Reference]	Reason (including whether substantiated by the operator or the EA)	Measures taken to prevent reoccurrence
14/05/2024	Complaint of Odour in area of Splott	Unsubstantiated	N/A
17/05/2024	Complaint of Odour in area of Splott	Unsubstantiated	N/A
02/07/2024	Complaint of strong fuel odour	Unsubstantiated	N/A
15/07/2024	Complaint of smoke and Odour in area	Unsubstantiated	N/A
12/08/2024	Complaint of smoke coming from site	Line 1 had a tube leak and roof vents opened.	This is a safety feature and may occur during future Emergency shut down periods

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

IBA hall lighting fluorescent changed to LED.

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.****Summary of any other improvements made to the plant or planned to be made and a summary of the resulting environmental benefits.**

As part of a permit variation dated 21-12-22, Natural Resources Wales initiated a review and variation to vary the permit following the publication of the revised Best Available Techniques (BAT) Reference Document (BRef) for Waste Incineration.

As part of this permit variation Table S1.3 has a specific improvement condition (IC10) regarding a local district heating offtake. Viridor submitted a response to IC10 to NRW on 25/3/24 setting out the high-level design and programme for construction and commissioning of the heat offtake system to be installed at the ERF. Progress updates have been provided to NRW at quarterly intervals at the liaison group meetings.

Construction works is due to be completed by the end of February 2025, including connection to the existing ERF plant and connection to the off-site network. Once final connections and cold commissioning is completed hot commissioning on steam and testing will take place to prove functionality and conclude with a 2-week reliability test before handover to the Operations function. This is currently scheduled for March 2025.

Details of Public & Stakeholder Liaison

Summary of events held during the reporting year.	
Date	Description
09/01/2024	Community Liasion Group
09/04/2024	Community Liasion Group
09/07/2024	Community Liasion Group
08/10/2024	Community Liasion Group

List of events planned for next year	
Date	Description
14/01/2025	Community Liasion Group
08/04/2025	Community Liasion Group
08/07/2025	Community Liasion Group
07/10/2025	Community Liasion Group

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

Carbon dioxide emissions and biogenic content of waste inputs

Carbon dioxide emissions (all types of plant)

Annual mass of carbon dioxide released	tonnes	412,043
Annual mass of carbon dioxide released per tonne of waste burned	t CO ₂ / t waste	1.00
Annual mass of carbon dioxide released per MWh of energy exported	t CO ₂ / MWh export	1.46
Description of how annual carbon dioxide mass emission has been calculated. See Note 1	CO2 CEMS installed on each line. Daily average concentrations and total flow used to calculate mass emissions	

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

Annual mass emissions of nitrous oxide	tonnes N ₂ O	19
Description of how annual nitrous oxide mass emission has been calculated See Note 2	N2O CEMS installed on each line. Daily average concentrations and total flow used to calculate mass emissions	
Total annual carbon dioxide + nitrous oxide emissions. Note 3.	tonnes CO ₂ e	417,078

Biogenic CO2 emissions (See Note 4)

Percentage of total carbon dioxide emissions arising from biogenic waste	%	61.9%
No. of measurements undertaken	Number	12
Description of how percentage biogenic carbon dioxide emissions have been measured or calculated. See Note 5	C14 Cartridges replaced every 4 weeks and sent for analysis.	

Biogenic fraction of waste feedstock (See Note 4)

Yearly average biogenic percentage of the waste by net calorific value (NCV)	%	46.2%
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Description of how biogenic percentage (by NCV) has been calculated or estimated. See Note 6	RDF sampling carried out annually for REGO accreditation. Biogenic percentage calculated from net CV analysis.	
Yearly average biogenic percentage of the waste by mass	%	
If waste sampling undertaken, no. of samples used to ascertain average biogenic percentages above	Number	3
Description of how biogenic percentage (by mass) has been calculated or estimated. See Note 7		

Comments:

Residue Quality Monitoring Requirements

Summary of monitoring undertaken and compliance
All IBA samples taken during the review period were reported as non-hazardous and the TOC limit was not breached.

Commentary on any specific events	
Date & Event	Description

Residue Quality Monitoring Results			
Parameter (unit)	Limit*	Normal Operation	
		Bottom ash	APC Residues
Loss on Ignition (average %)	<5%	 	
Total Organic Carbon (average %)	<3%	<1	
No. of Assessments Undertaken	---	32	8
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
Weekly visual inspection to ensure no solids, oil or grease. No issues noted throughout the year.

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	0.07	0.04			
Cd and Tl and their compounds	0.5-8hrs	0.02 mg/m ³	0.0009	0.0008			
Hg and its compounds	0.5-8hrs	0.02 mg/m ³	0.0147	0.0028			
Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V and their compounds	0.5-8hrs	0.3 mg/m ³	0.019	0.019			
Dioxins & Furans (I-TEQ)	6-8hrs	0.06 ng/m ³	0.0151	0.0183			
PCBs (WHO-TEQ Humans / Mammals)	6-8hrs	None set ng/m ³	0.0013	0.0024			
PCBs (WHO-TEQ Fish)	6-8hrs	None set ng/m ³	0.0001	0.0001			
PCBs (WHO-TEQ Birds)	6-8hrs	None set ng/m ³	0.0038	0.0062			
Dioxins & Furans (WHO-TEQ Humans / Mammals)	6-8hrs	None set ng/m ³	0.0137	0.0171			
Dioxins & Furans (WHO-TEQ Fish)	6-8hrs	None set ng/m ³	0.0156	0.019			
Dioxins & Furans (WHO-TEQ Birds)	6-8hrs	None set ng/m ³	0.268	0.0287			
Anthanthrene	6-8hrs	None set µg/m ³	<0.0012	<0.0011			
Benzo(a)anthracene	6-8hrs	None set µg/m ³	<0.001	<0.01			
Benzo(a)pyrene	6-8hrs	None set µg/m ³	<0.0012	<0.0011			
Benzo(b)fluoranthene	6-8hrs	None set µg/m ³	<0.001	<0.0011			
Benzo(b)naphtho(2,1-d)thiophene	6-8hrs	None set µg/m ³	<0.0012	<0.0011			
Benzo(c)phenanthrene	6-8hrs	None set µg/m ³	<0.0012	<0.0011			
Benzo(ghi)perylene	6-8hrs	None set µg/m ³	<0.001	<0.01			
Benzo(k)fluoranthene	6-8hrs	None set µg/m ³	<0.001	<0.0011			
Cholanthrene	6-8hrs	None set µg/m ³	<0.0012	<0.0011			
Chrysene	6-8hrs	None set µg/m ³	0.01	<0.01			
Cyclopenta(cd)pyrene	6-8hrs	None set µg/m ³	<0.0012	<0.0011			
Dibenzo(ai)pyrene	6-8hrs	None set µg/m ³	<0.0012	<0.0011			
Dibenzo(ah)anthracene	6-8hrs	None set µg/m ³	<0.0012	<0.0011			
Fluoranthene	6-8hrs	None set µg/m ³	0.03	0.03			
Indeno(123-cd) pyrene	6-8hrs	None set µg/m ³	<0.01	<0.0011			
Naphthalene	6-8hrs	None set µg/m ³	0.24	0.5			
Comments :							



Emissions to Air (continuously monitored)

Summary of monitoring undertaken, standards used and compliance												

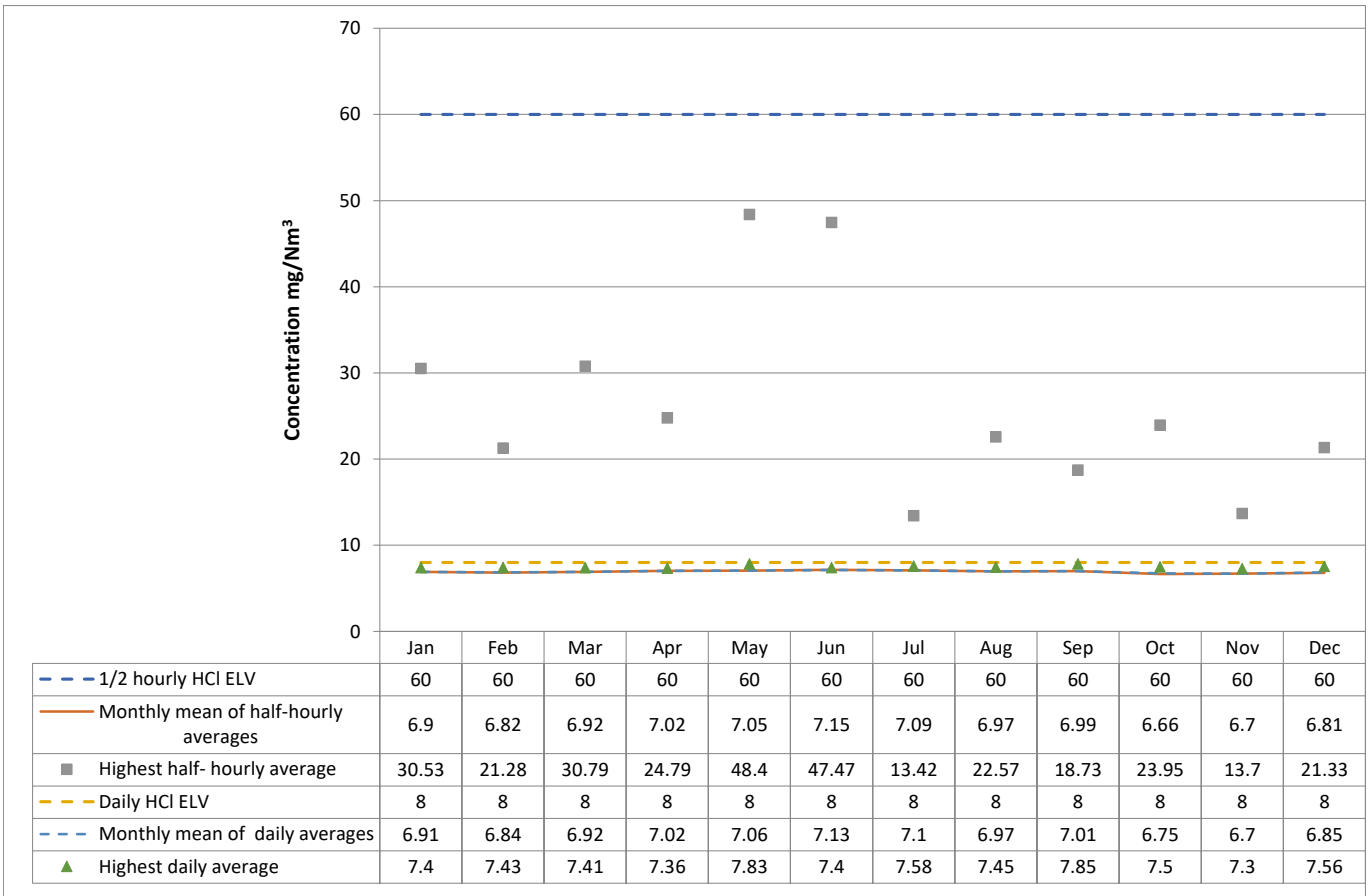
Results of emissions to air that are continuously monitored (maximum and average values for each line) - oxygen reference 11%												
Substance	Reference Period	Emission Limit Value	A1		A2		A3		A4		A5	
			Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.
Oxides of nitrogen	Daily mean	180 mg/m ³	174.81	169.07	176.15	168.66						
	½ hourly mean	400 mg/m ³	340.23	169.08	289.37	168.66						
Particulates	Daily mean	5 mg/m ³	0.90	0.64	1.00	0.41						
	½ hourly mean	30 mg/m ³	6.29	0.64	3.45	0.41						
Total Organic Carbon	Daily mean	10 mg/m ³	0.86	0.10	0.89	0.18						
	½ hourly mean	20 mg/m ³	1029.74	0.15	8.15	0.19						
Hydrogen chloride	Daily mean	8 mg/m ³	7.85	7.08	7.44	6.79						
	½ hourly mean	60 mg/m ³	48.40	7.07	41.63	6.78						
Sulphur dioxide	Daily mean	40 mg/m ³	35.61	16.66	29.44	13.62						
	½ hourly mean	200 mg/m ³	163.22	16.71	117.31	13.65						
Carbon monoxide	Daily mean	50 mg/m ³	48.98	4.16	30.69	4.75						
	95%ile 10-min avg *	150 mg/m ³ *	31.39	4.65	34.60	4.92						
Ammonia	Daily mean	15 mg/m ³	5.66	1.76	13.86	2.37						
Comments :												
Line 1 1/2 hr TOC result 1029.74 mg/m ³ from 11/6/24 10:00 - 10:29hrs reported to NRW via Schedule 5 notification on 11/6/24. Boiler was not in normal operating condition. CAR report Ref CAR_NRW0045070 states "No exceedance of the VOC ELV will be recorded"												

Monitoring of Hydrogen Chloride emissions

Whole Installation

See Notes in Cell Q3

2024	1/2 Hourly Reference Periods			Daily Reference Periods		
	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	6.9	30.53	8	6.91	7.4
Feb	60	6.82	21.28	8	6.84	7.43
Mar	60	6.92	30.79	8	6.92	7.41
Apr	60	7.02	24.79	8	7.02	7.36
May	60	7.05	48.4	8	7.06	7.83
Jun	60	7.15	47.47	8	7.13	7.4
Jul	60	7.09	13.42	8	7.1	7.58
Aug	60	6.97	22.57	8	6.97	7.45
Sep	60	6.99	18.73	8	7.01	7.85
Oct	60	6.66	23.95	8	6.75	7.5
Nov	60	6.7	13.7	8	6.7	7.3
Dec	60	6.81	21.33	8	6.85	7.56



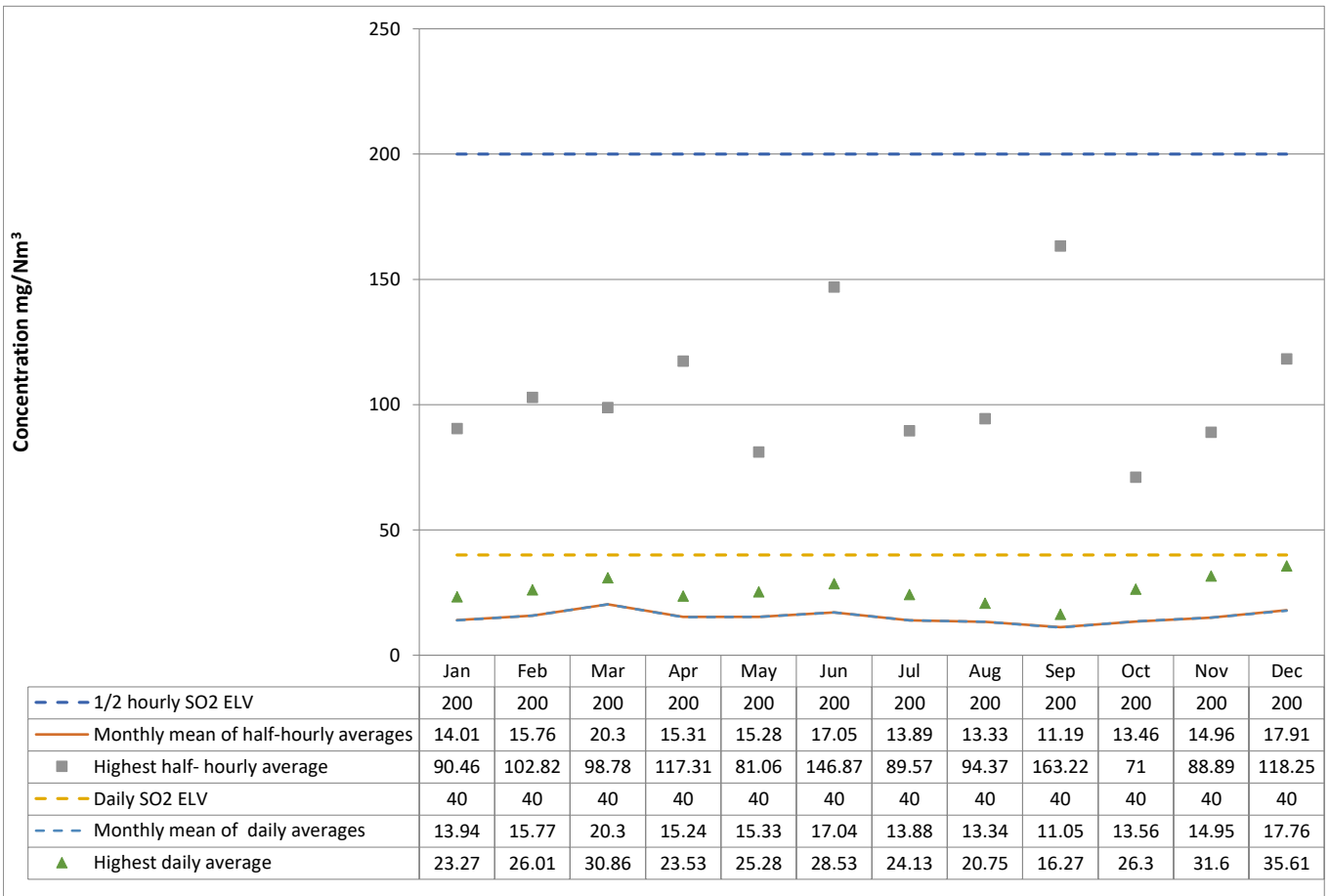
Comments :

Monitoring of Sulphur dioxide emissions

Whole Installation

See Notes in Cell Q3

2024	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	200	14.01	90.46	40	13.94	23.27
Feb	200	200	15.76	102.82	40	15.77	26.01
Mar	200	200	20.3	98.78	40	20.3	30.86
Apr	200	200	15.31	117.31	40	15.24	23.53
May	200	200	15.28	81.06	40	15.33	25.28
Jun	200	200	17.05	146.87	40	17.04	28.53
Jul	200	200	13.89	89.57	40	13.88	24.13
Aug	200	200	13.33	94.37	40	13.34	20.75
Sep	200	200	11.19	163.22	40	11.05	16.27
Oct	200	200	13.46	71	40	13.56	26.3
Nov	200	200	14.96	88.89	40	14.95	31.6
Dec	200	200	17.91	118.25	40	17.76	35.61



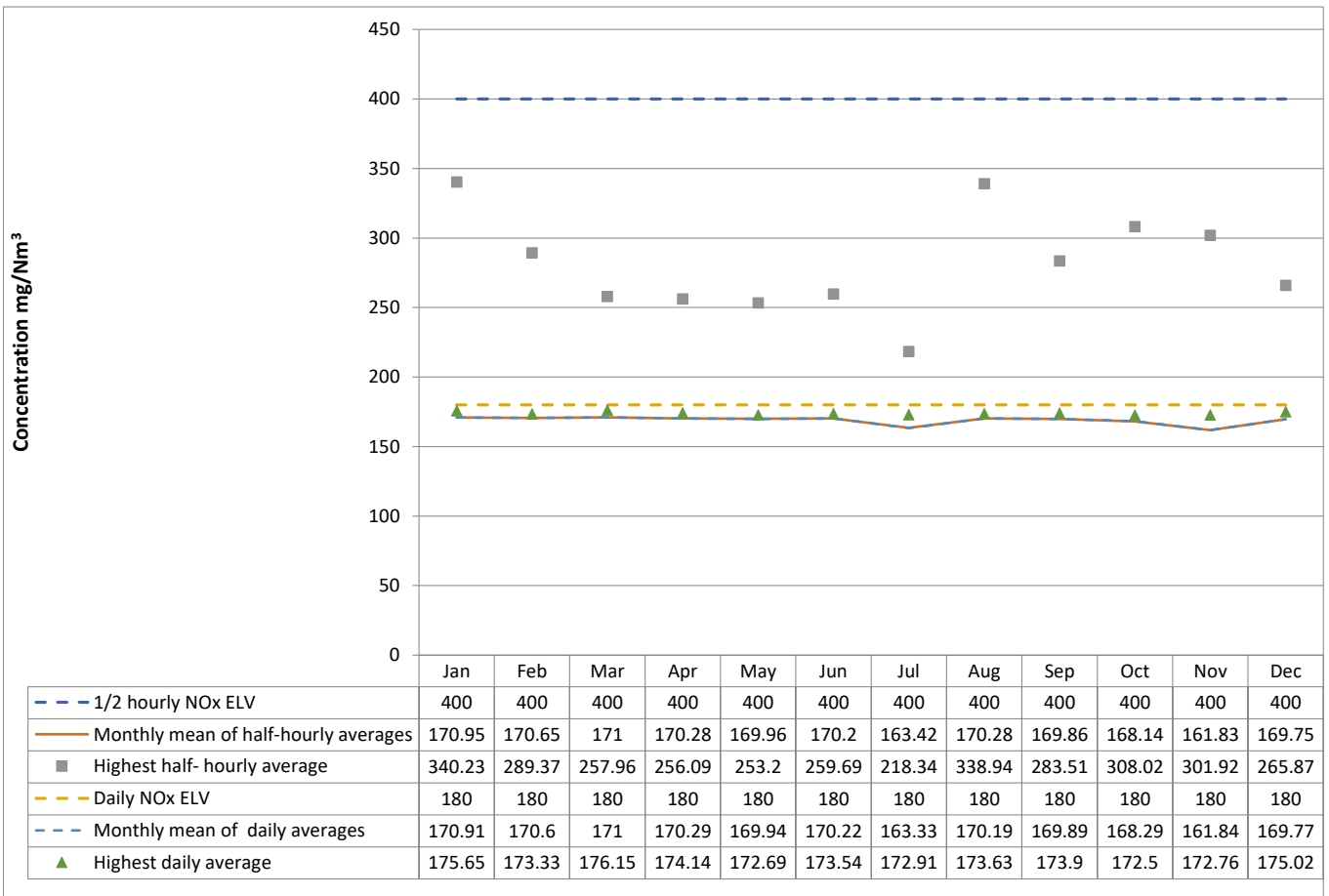
Comments :

Monitoring of Oxides of Nitrogen emissions

Whole Installation

See Notes in Cell Q3

2024	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	170.95	340.23	180	170.91	175.65
Feb		400	170.65	289.37	180	170.6	173.33
Mar		400	171	257.96	180	171	176.15
Apr		400	170.28	256.09	180	170.29	174.14
May		400	169.96	253.2	180	169.94	172.69
Jun		400	170.2	259.69	180	170.22	173.54
Jul		400	163.42	218.34	180	163.33	172.91
Aug		400	170.28	338.94	180	170.19	173.63
Sep		400	169.86	283.51	180	169.89	173.9
Oct		400	168.14	308.02	180	168.29	172.5
Nov		400	161.83	301.92	180	161.84	172.76
Dec		400	169.75	265.87	180	169.77	175.02

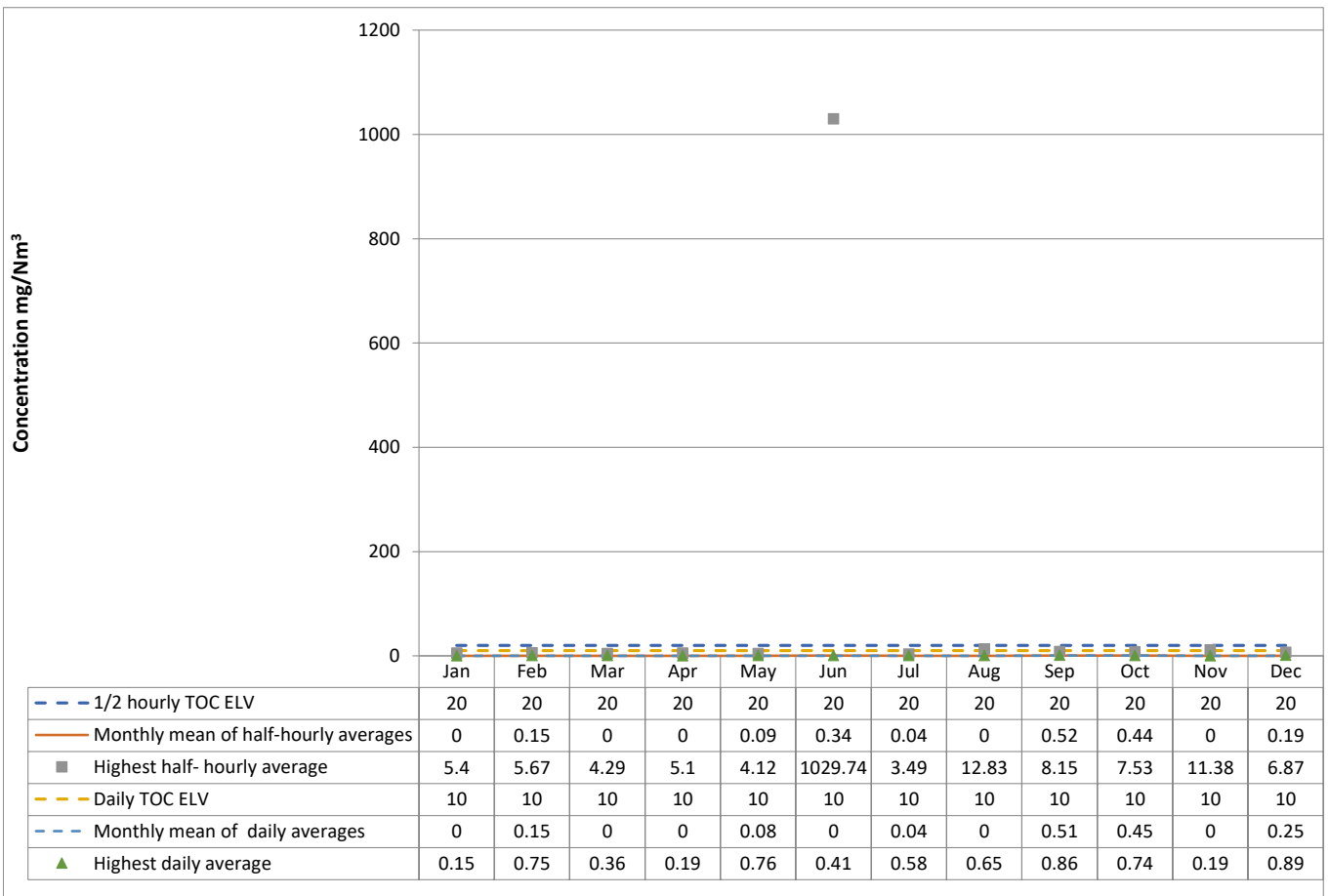


Comments :

Monitoring of Total organic carbon emissions Whole Installation

See Notes in Cell Q3

2024	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	0	5.4	10	0	0.15
Feb		20	0.15	5.67	10	0.15	0.75
Mar		20	0	4.29	10	0	0.36
Apr		20	0	5.1	10	0	0.19
May		20	0.09	4.12	10	0.08	0.76
Jun		20	0.34	1029.74	10	0	0.41
Jul		20	0.04	3.49	10	0.04	0.58
Aug		20	0	12.83	10	0	0.65
Sep		20	0.52	8.15	10	0.51	0.86
Oct		20	0.44	7.53	10	0.45	0.74
Nov		20	0	11.38	10	0	0.19
Dec		20	0.19	6.87	10	0.25	0.89



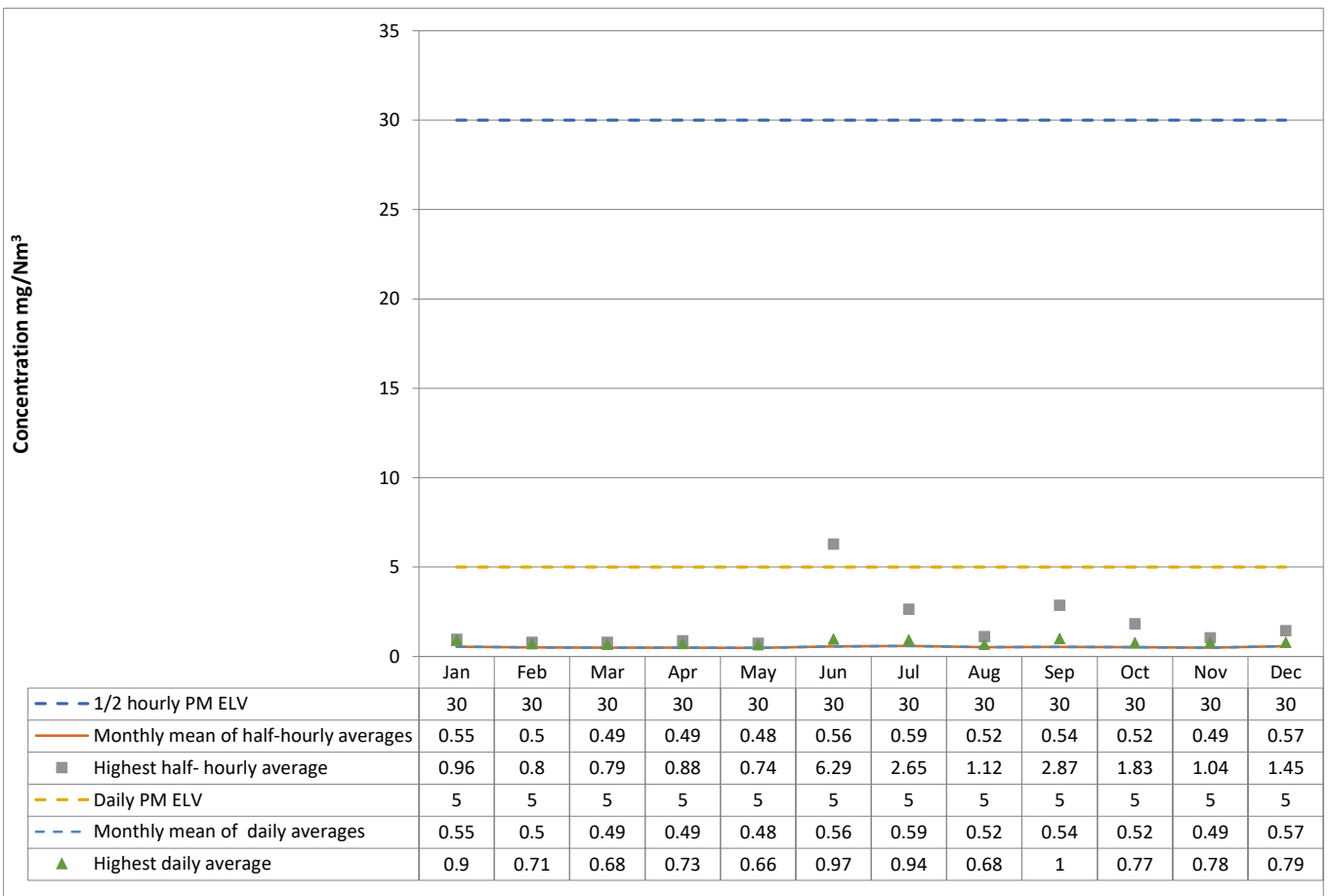
Comments :

Monitoring of Particulate matter emissions

Whole Installation

See Notes in Cell Q3

2024 mg/Nm ³	1/2 Hourly Reference Periods			Daily Reference Periods		
	1/2 hourly PM ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily PM ELV	Monthly mean of daily averages	Highest daily average
Jan	30	0.55	0.96	5	0.55	0.9
Feb	30	0.5	0.8	5	0.5	0.71
Mar	30	0.49	0.79	5	0.49	0.68
Apr	30	0.49	0.88	5	0.49	0.73
May	30	0.48	0.74	5	0.48	0.66
Jun	30	0.56	6.29	5	0.56	0.97
Jul	30	0.59	2.65	5	0.59	0.94
Aug	30	0.52	1.12	5	0.52	0.68
Sep	30	0.54	2.87	5	0.54	1
Oct	30	0.52	1.83	5	0.52	0.77
Nov	30	0.49	1.04	5	0.49	0.78
Dec	30	0.57	1.45	5	0.57	0.79



Comments :

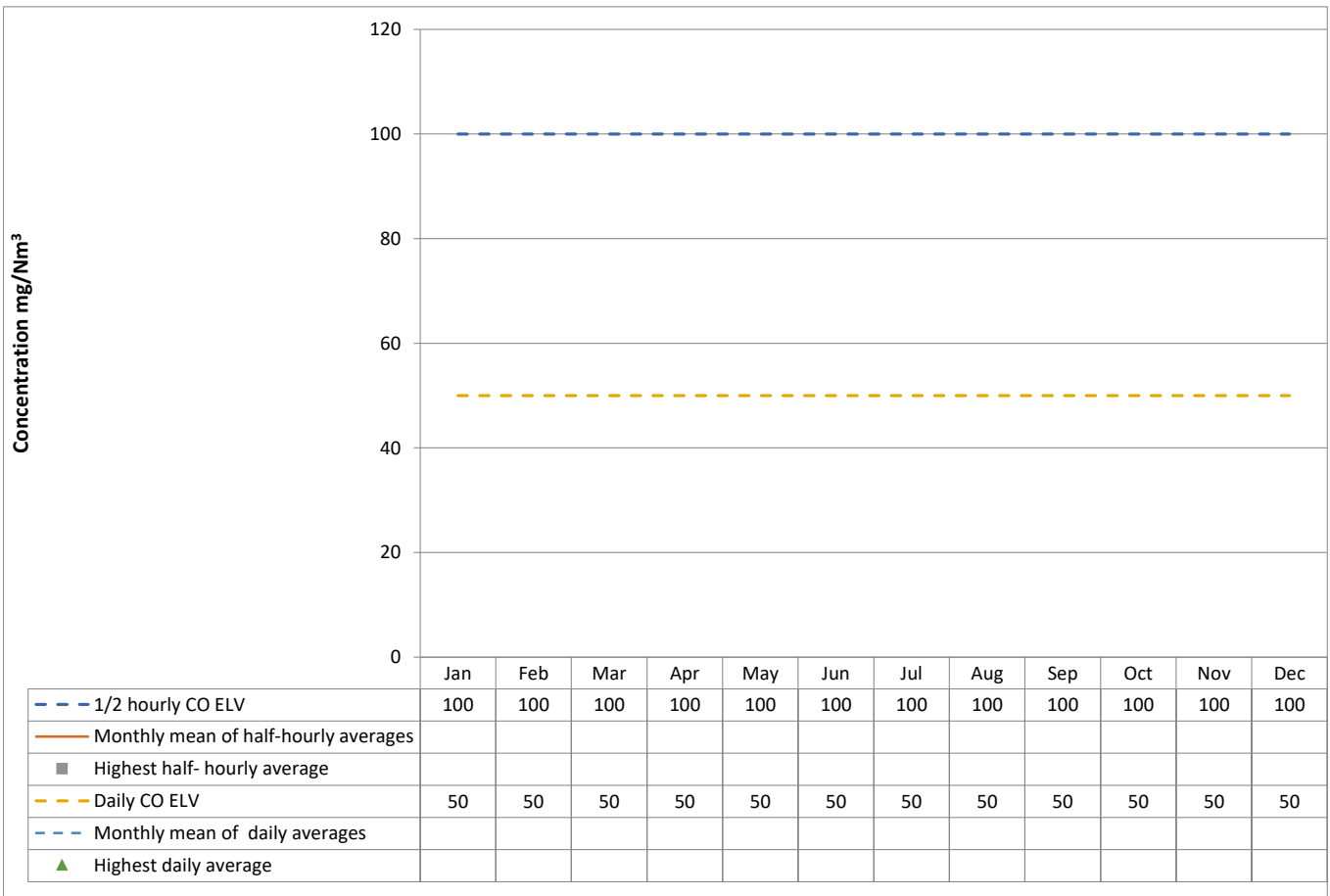
Monitoring of Carbon Monoxide (half hourly)

Whole Installation

See Notes in Cell Q3

Please complete this tab for your plant if you have 1/2 hourly CO ELVs; otherwise, leave it blank and complete the CO 95% 10 min tab

2024 mg/Nm ³	1/2 Hourly Reference Periods			Daily Reference Periods		
	1/2 hourly CO ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily CO ELV	Monthly mean of daily averages	Highest daily average
Jan	100			50		
Feb	100			50		
Mar	100			50		
Apr	100			50		
May	100			50		
Jun	100			50		
Jul	100			50		
Aug	100			50		
Sep	100			50		
Oct	100			50		
Nov	100			50		
Dec	100			50		



Comments :



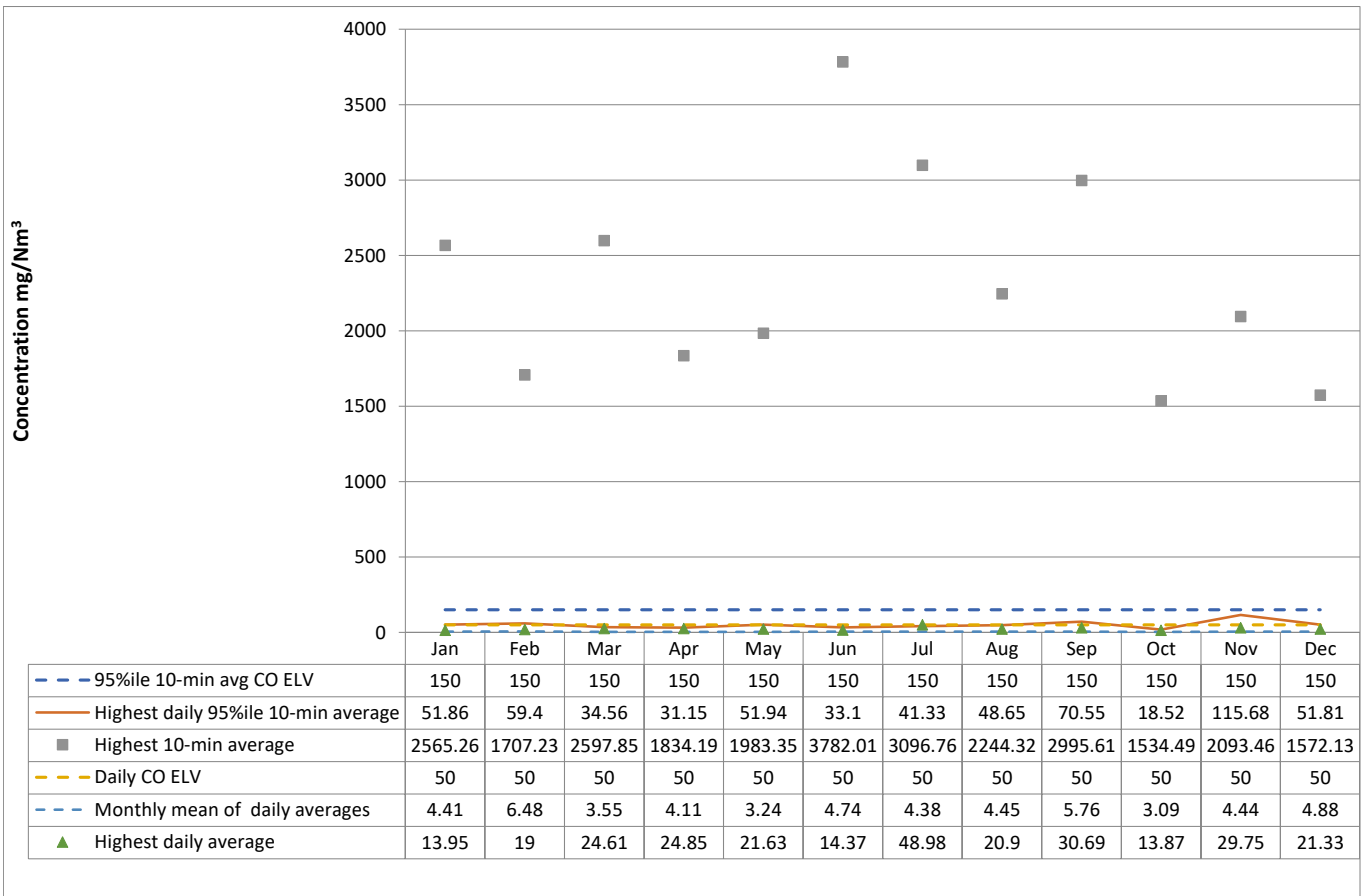
Monitoring of Carbon Monoxide (10-minute avg)

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

2024	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
Jan	150	51.86	4.68	2565.26	50	4.41	13.95
Feb	150	59.4	6.74	1707.23	50	6.48	19
Mar	150	34.56	3.55	2597.85	50	3.55	24.61
Apr	150	31.15	4.1	1834.19	50	4.11	24.85
May	150	51.94	3.22	1983.35	50	3.24	21.63
Jun	150	33.1	6.49	3782.01	50	4.74	14.37
Jul	150	41.33	4.41	3096.76	50	4.38	48.98
Aug	150	48.65	5.08	2244.32	50	4.45	20.9
Sep	150	70.55	6.46	2995.61	50	5.76	30.69
Oct	150	18.52	3.22	1534.49	50	3.09	13.87
Nov	150	115.68	4.44	2093.46	50	4.44	29.75
Dec	150	51.81	5.13	1572.13	50	4.88	21.33



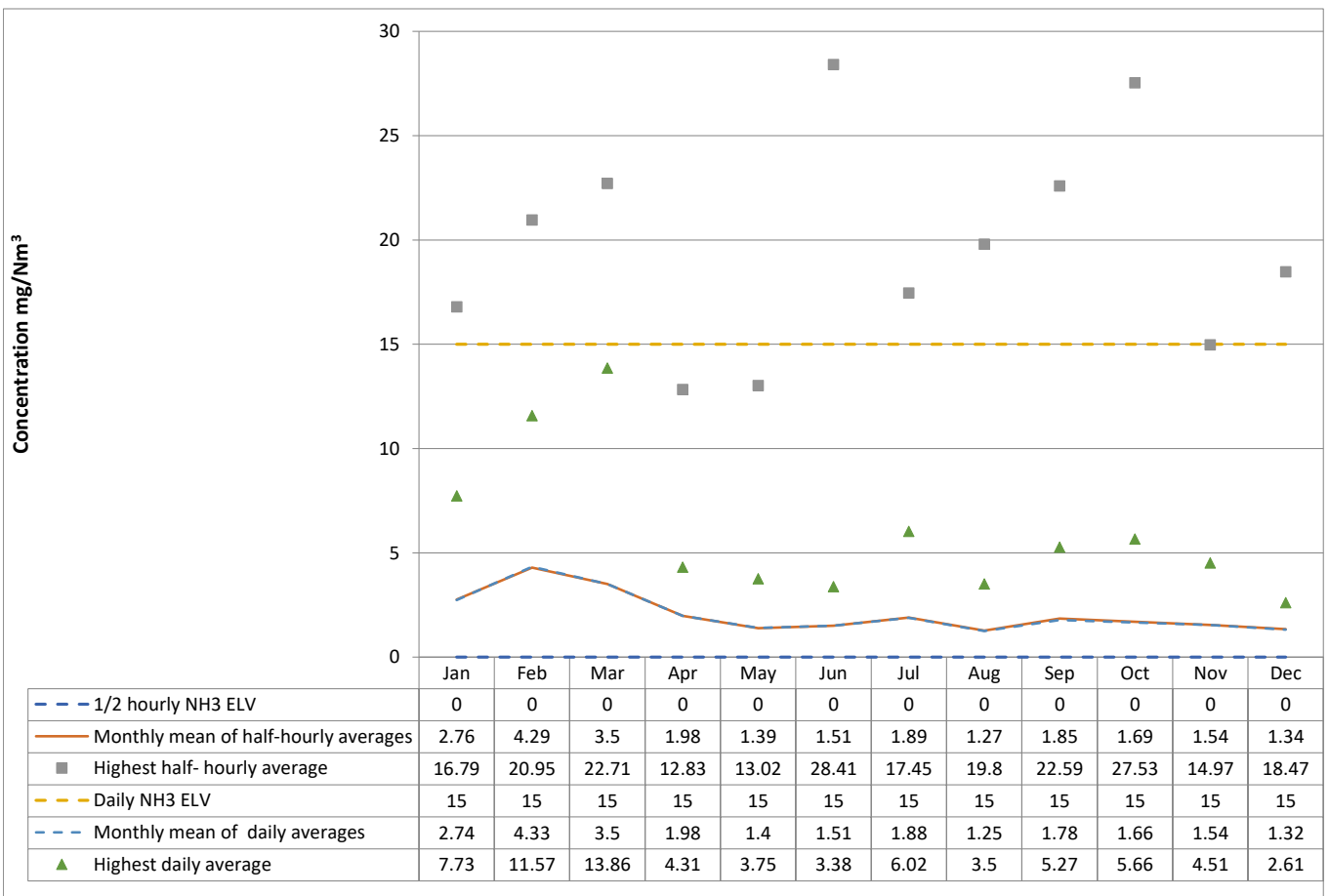
Comments :
 Environment Agency explanatory note: The 10-minute average ELV is based on the “95th percentile”. In this case this means that 95% of the 10 minute averages in the relevant 24-hour period (i.e. 137) must be below 150 mg/Nm³, and 5% (i.e. 7) are allowed to be any value above 150 mg/Nm³. Whilst 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 Ammonia emissions

Whole Installation

See Notes in Cell Q3

2024	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		2.76	16.79	15	2.74	7.73
Feb	None		4.29	20.95	15	4.33	11.57
Mar	None		3.5	22.71	15	3.5	13.86
Apr	None		1.98	12.83	15	1.98	4.31
May	None		1.39	13.02	15	1.4	3.75
Jun	None		1.51	28.41	15	1.51	3.38
Jul	None		1.89	17.45	15	1.88	6.02
Aug	None		1.27	19.8	15	1.25	3.5
Sep	None		1.85	22.59	15	1.78	5.27
Oct	None		1.69	27.53	15	1.66	5.66
Nov	None		1.54	14.97	15	1.54	4.51
Dec	None		1.34	18.47	15	1.32	2.61



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

Log of changes to 1

Date
16/01/2024
23/09/2024
23/09/2024
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27/11/2024

template (Environment Agency use only)

Description of change
Air (periodic) tab: corrected default O2 reference from 6 to 11%
Air (periodic) tab: corrected symbol for Thallium to Tl
Air (periodic) tab: removed last year's references to different emission limit values applying from 03/12/23 and updated all relevant ELVs
Tabs for continuously monitored pollutants (HCl, SO2 etc.): changed terminology in table headings to improve clarity
Tabs for continuously monitored pollutants (HCl, SO2 etc.): removed last year's references to different emission limit values applying from 03/12/23 and updated all relevant ELVs
Perf 1 tab: updated formula for water usage to report m3 rather than litres and corrected error with formula copying operator name
Operational Summary tab: table added on start-ups and shut-downs
Operational Summary tab: table added on dioxins and mercury protocols
Operational Summary tab: table added on AST, QAL 2 and calibration functions
CO2 N2O tab: various changes made to notes to reflect the fact that most plants should now have calibrated CEMS and flow meters + some have C14 samplers and more up to date industry data
CO2 N2O tab: Changed the N2O CO2 equivalence factor from 298 to 265 in line with recently updated government greenhouse gas figures: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024
CO2 N2O tab: Added an additional requirement for municipal EfW plants to state the yearly average biogenic percentage of the waste by mass, and reference to a document which sets out a methodology for calculating NCV of waste from the results of C14 sampling.
Permit Compliance tab: Two additional columns added + explanatory notes to the table entitled "Summary of non-compliances under the permit" to allow CCS scores to be stated where relevant.
Residue Quality tab: Note added explaining application of TOC and LOI limits and asking operators to report both metrics where measured.
Operational Summary tab: Tables on mercury & dioxins protocols and ASTs removed (covered instead by new tables added to updated Air 9 periodic monitoring form)