Annual Report: 2020
Environmental Performance

Western Bio-Energy Ltd **Longlands Lane** **Margam** **Port Talbot SA13 2NR**	WBE Ltd

ANNUAL EMISSIONS REPORT FOR 2019: WESTERN BIO-ENERGY PLANT MARGAM	
Site Address	Western Bio-Energy Ltd Longlands Lane Margam Port Talbot SA13 2NR
Permit Number:	EPR/ZP3939GL
Permit Holder	WBE limited
Former Permit Holder	Px limited (until October 22nd 2019 - transfer date)
Report compiled by:	Marc Scourfield SLR consulting Ltd
Report submitted by:	Rod Lerwell WBE limited

ANNUAL EMISSIONS REPORT FOR 2020: WESTERN BIO-ENERGY PLANT MARGAM

1 Introduction

This report has been compiled on behalf of WBE Ltd who are the owners of the Western Bio-Energy (WBL) plant located at Margam, Port Talbot. This report incorporates the annual reporting requirements detailed EPR permit ZP3939GL

- Table S5.1 Reporting of monitoring data
- Table S5.2: Annual production/treatment
- Table S5.3 Performance parameters

The site generates electricity from biomass, accepting and chipping predominantly round wood logs, but the fuel is augmented with virgin wood chips, baled brash bundles, bark peelings, wood shavings and sawdust. These virgin products are also supplemented with the addition of clean recycled wood biofuels.

The site is exempt from the requirements of Industrial Emissions Directive Chapter IV as listed in point (b) of point 31 of Article 3;
The electrical power generated is approximately 14MWe which is exported to the National Grid.

2 Summary

This report summarises the emissions data from the WBL plant for 2020 The report covers the emissions data collected by PX Ltd between January 1st, 2020 to March 30th , 2020 when the plant ceased to operate for the remainder of the year.
A continuous monitoring system is in operation which monitors particulate matter, nitrogen dioxide, carbon monoxide,
ELV limits are set within the Permit as follows:-

- Particulates 10 mg/m^3
- Carbon Monoxide (CO) 250 mg/m^3
- Oxides of Nitrogen 250 mg/m^3

Flue gases are ordinarily independently monitored 6 monthly by ANCHEM and these reports are submitted to NRW biannually, however due to the cessation in operations there was no extractive monitoring conducted in 2020.

3 Emissions to Atmosphere

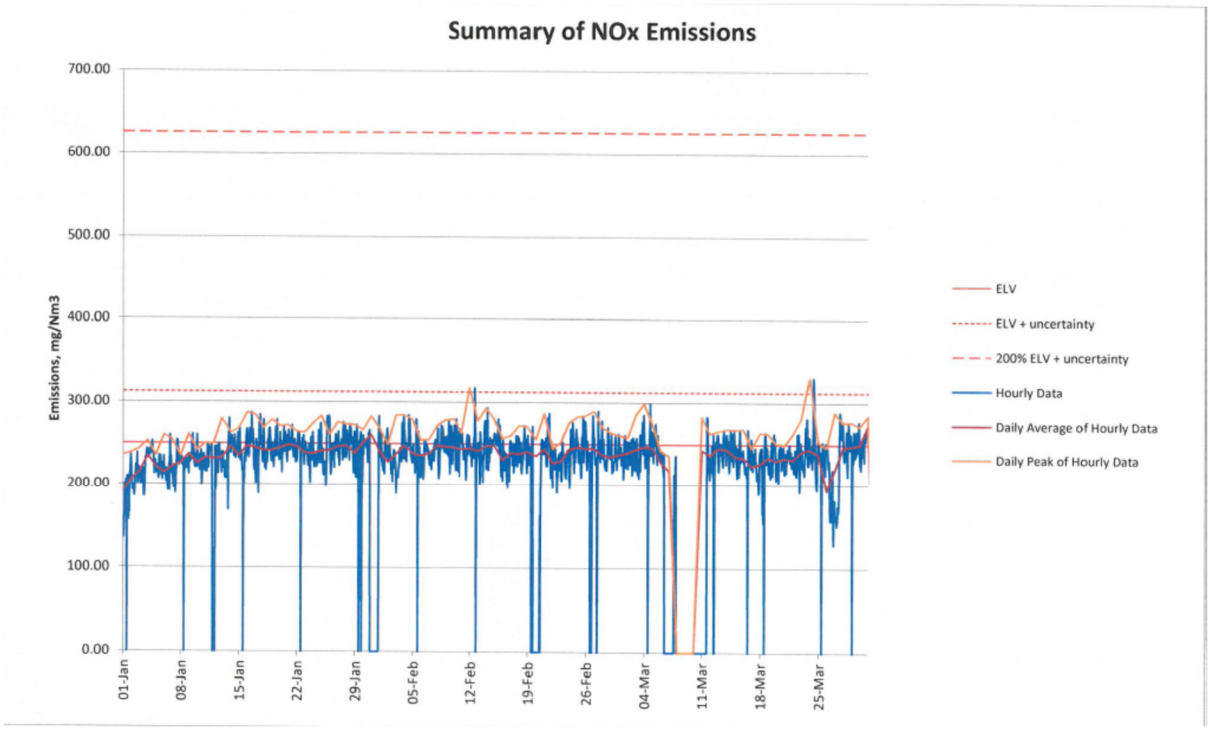
The main emissions to air are combustion gases as a result of the biomass combustion process, which comprises predominantly of nitrogen oxides, carbon monoxide and particulate matter. These emissions are constantly monitored within the CEMS system, as per the Environmental Permit requirements. Graphs relating to each of the emissions can be found in the following pages.

`	Dec	Nov	Oct	Sept	Aug	July	June	May	Apr	Mar	Feb	Jan	Limit
NOx mg/m³													
Daily max										278.71	248.07	250.93	250
Monthly average										235.33	239.79	234.41	250
CO													
Daily max										229.91	178.56	163.66	250
Monthly average										101.76	124.32	102.24	250
Dust													
Daily max										1.88	7.33	11.45	10
Monthly average										1.48	1.82	1.81	10

3.1 Oxides of Nitrogen

Please refer to the graph showing the hourly readings on the following page which shows that the hourly average range of emissions for NOx for the year.

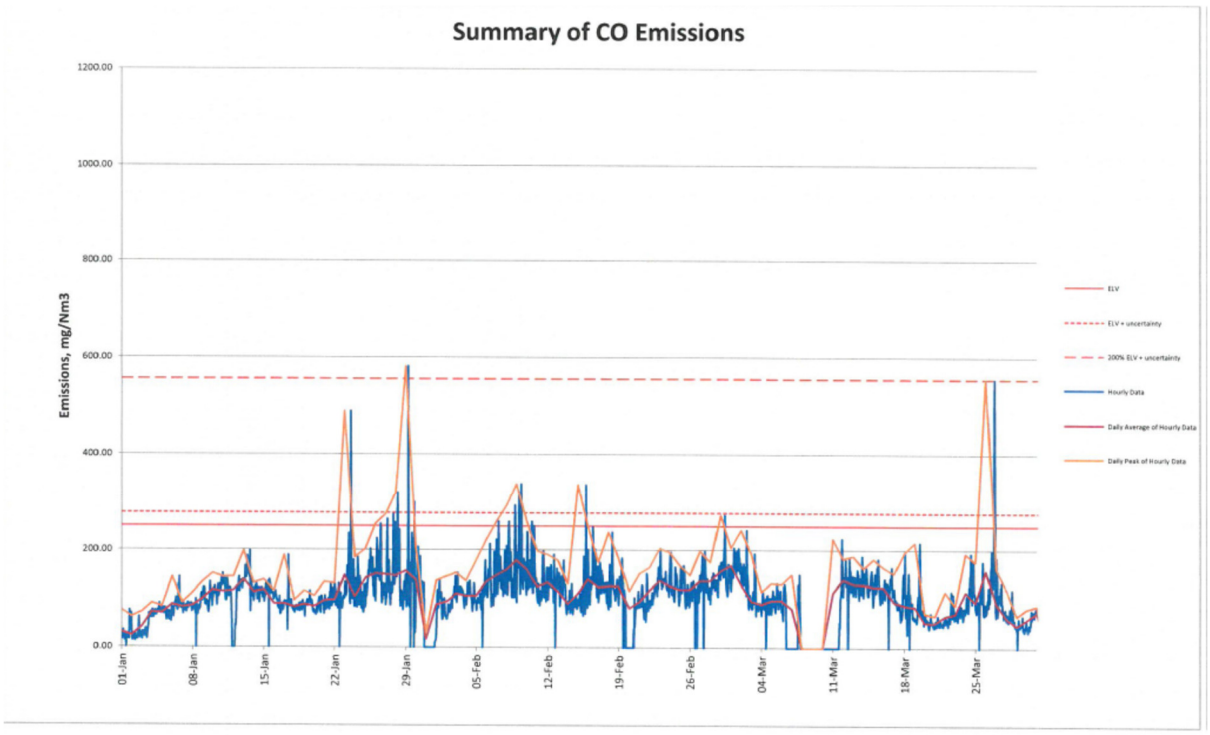
The continuous Emission Limit Values does exceed (ELV) of 250mg/Nm^3 on hourly averages, however 95% of validated hourly averages within a calendar year do not exceed 200% of ELV. The daily average has remained within the ELV 250mg/Nm3 set within the permit and appear stable during the year



3.2 Carbon Monoxide

Please refer to the graph showing the hourly readings on the following page which shows that the hourly average range of emissions for carbon Monoxide (CO) for the year.

The continuous Emission Limit Values does exceed (ELV) of 250mg/Nm^3 on hourly averages, however 95% of validated hourly averages within a calendar year do not exceed 200% of ELV. The daily average has remained within the ELV 250mg/Nm3 set within the permit and appear stable during the year

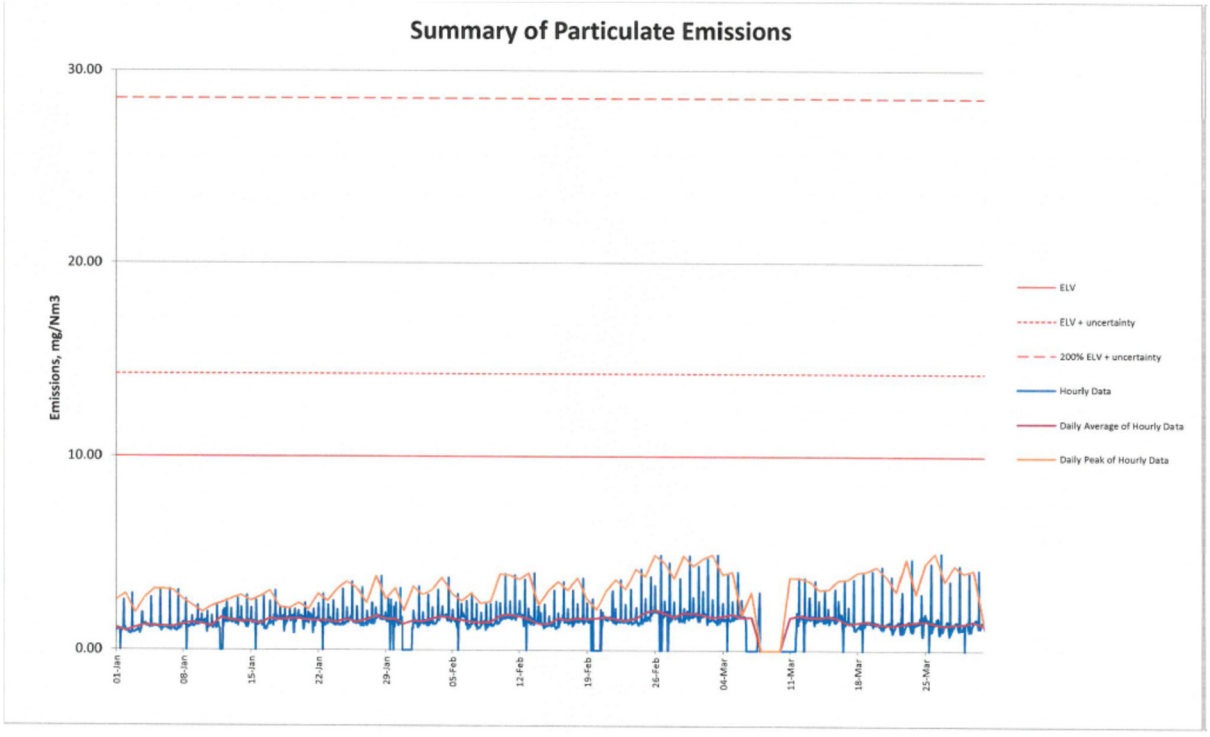


3.3 Particulates

A very consistent result indicates a good performance of the facilities bag filter house.

Please refer to the graph showing the hourly readings on the following page which shows that the hourly average range of emissions for particulate for the year.

The continuous Emission Limit Values does exceed (ELV) of 10mg/Nm3 on hourly averages, however 95% of validated hourly averages within a calendar year do not exceed 200% of ELV. The daily average has remained within the ELV 10mg/Nm3 set within the permit and appear stable during the year



4 Ash Residues

Both bottom and fly ashes were monitored monthly during 2020. The analysis has been performed by Anchem Laboratories. All the analyses are on an 'as received' basis. The heavy metal contents are analysed on a 'dry' basis, reported in mg/kg. Dioxins are reported in ng/kg

Bottom Ash	Jan	Feb	Mar		Fly Ash	Jan	Feb	Mar
Antimony	6.4	<1	<1			15	14	8.6
Arsenic	33	23	22			180	130	310
Cadmium	<0.2	<0.2	<0.2			47	33	26
Chromium	94	76	86			120	76	170
Cobalt	8.6	9.8	8.6			6.7	6.4	6.5
Copper	410	600	330			530	530	570
Lead	1200	180	43			1800	810	530
Manganese	5500	6500	6300			8800	6800	8600
Mercury	<0.3	<0.3	<0.3			<0.3	<0.3	<0.3
Nickel	25	25	27			27	24	23
Thallium	<5	<5	<5			<5	<5	<5
Vanadium	34	34	27			28	26	22
Zinc	390	250	140			2500	3200	2000
Dioxins (I-TEQ)	0.794	0.31	0.335			3250	2930	2120
PCBs (WHO 12)	0.0957	0.0457	0.066			41.4	38.8	38.5

5 Waste: Trade Effluent

Western Bio-Energy Plant has a Trade Effluent Discharge Consent for process waters and boiler blow and drain downs and wastewater from the demineralisation process.

The pH threshold in the consent is set between 6.0 and 10.0. There have been two non-conformities during the year where the pH has been outside these limits.
Welsh water have been contacted and are not concerned about 1 months reading being slightly above the high limit

Other parameters within the consent include:-

- COD at pH 7 shall not exceed 500 mg/l
- Suspended solids shall not exceed 500 mg/l
- Mineral oil shall not exceed 100 mg/l
-

The results from the analyses on the chart below demonstrate that the above parameters are well within consent in 2020

Parameter	PH HL – 10 LL -6	Suspended solids HL – 500mg/l	Oil & grease HL – 100mg/l	COD HL – 500 mg/l	BOD HL – 250mg/l	Toxic Metals HL – 2mg/l	Sulphate HL – 1000mg/l
Jan	8.1	6	<1	10	<2	0.11	49
Feb	7.6	10	<1	17	<2	0.153	35
Mar	7.2	10	<1	12	<2	0.224	35

6 Fuels

The table below shows the fuel composition for 2020. The total tonnage of biomass combusted through the plant was 45,422 tonnes.

During 2020, 7 % of the energy was derived from recycled sources.

Wood Type	Tonnes	GJ's	Weighted Average Moisture Content %	Net Calorific Value GJ/tonne	%age of energy
ARB WHOLETREECHIP	6,792.76	53,149.60	51%	7.82	13%
LOG WHOLELOGS	32,834.20	303,589.62	44%	9.25	75%
PRO PEELINGS	760.64	4,096.29	63%	5.39	1%
PRO SAWMILLCHIP	2,287.16	13,727.39	60%	6.00	3%
PRO SLABWOOD	131.96	1,293.16	42%	9.80	0%
RCF RECYCLED	2,616.24	28,388.56	37%	10.85	7%
	45,422.96	404,244.62	46%	8.90	100%

Fuel oil is used to ignite the boilers, during 2020, 15050 ltrs of oil was used.

7 Additional Information as required

Periodic monitoring was scheduled to be undertaken in March 2020, however with the restrictions placed due to COVID 19 and subsequent cessation in operation extractive monitoring had to be cancelled

Annual production / treatment as req. table s5.2		**Units**
Total virgin biomass	42766	Tonne
Total waste biomass	2616	Tonne
Electrical export energy	27569.71	MWhr
Electrical energy used at site	54.17	MWhr
Performance Parameters as req. table performance s5.3		**Units**
Supplementary fuel oil usage	15050	Litre
Water usage	6364	M^3
Bottom ash generated	299.36	Tonne
Flue gas residues generated	120.16	Tonne
Average calorific value of biomass (wet)Net CV	8.9	MJ/kg
Number of start ups	4	No.
Bag filter bypass events & time	0 events during operation,	No. & time
Rejected fuel loads i.e. outside agreed spec.	0	No.
Average plant availability *(based on 3 months operational data)*	91.3	%

8 Conclusions

Although less than 3 months of operational data is available for the beginning of the year the plant was operating under stable conditions with no emission issues to report.