



Annual Performance Report For LondonWaste Ltd Permit YP3033BE 2016



Annual Performance Report for LondonWaste Limited
Permit No. YP3033BE – Year 2016

This report is required in accordance with condition 4.1.4 of the site Environmental Permit YP3033BE which states:

“The Operator shall submit an annual performance report on the functioning and monitoring of the incineration plant in a format agreed with the Environment Agency by the 31st January each year. The report shall, as a minimum requirement, give an account of the running of the process and the emissions into air and water compared with the emission standards in the Waste Incineration Directive, as required by Article 12(2) of the Waste Incineration Directive.”

Nazneem Grogan
Operations Director
24th January 2017

1. Introduction

The Plant is owned and operated by LondonWaste Limited, EcoPark, Advent Way, Edmonton, London N18 3AG. LondonWaste Limited is wholly owned by the North London Waste Authority (NLWA). The EcoPark Energy Centre plant is designed to process up to 750,000 tonnes of Municipal Solid Waste (MSW) per year; this comprises the following waste types:

- Mixed household waste which arrives in refuse collection vehicles (Municipal Solid Waste – MSW),
- Residual household waste arising from household waste sites (civic amenity wastes),
- Non-hazardous commercial and industrial dry wastes with similar characteristics to household wastes,
- Non-infectious clinical waste, and
- Other non-hazardous non recoverable combustible wastes.

2. The Energy from Waste Process

The EcoPark Energy Centre consists of 5 boilers, 4 turbines and 4 flue gas treatment streams. The boilers are a rolling grate technology and the plant is equipped with Atmospheric Pollution Control (APC) measures that ensure that the plant conforms to the requirements set out in the Waste Incineration Directive 2000/76/EC (WID) in all respects. In practice, the pollutant abatement technologies applied will limit the emission concentrations to levels below the limit values.

The heat from the process is utilised to generate potentially 40 MW of electricity, of which in excess of up to 80% is exported to the local electricity distribution network, thus saving valuable fossil fuel resources.

The burning process significantly reduces the volume of waste. Ferrous and non-ferrous metals are recycled as is Incinerator Bottom Ash (IBA). The IBA is recycled utilising established methodology for use as a secondary aggregate e.g. for asphalt. The effect of reducing the volume by recovery of this material means that landfill void space is conserved. Equally as important, the use of secondary aggregates reduces the demand upon the quarrying of primary aggregates.

The EcoPark Energy Centre plant operates on a continuous 24-hour basis throughout the year, apart from partial planned and unplanned shutdowns. Incidents that cause unplanned shutdowns are dealt with in accordance with the appropriate planned actions. To offer maximum flexibility to the Local Authorities waste collection services, and to minimise local impact, particularly during peak traffic times, the facility is permitted to accept waste on a 24-hour basis.

3. Summary of Plant Performance

Under the License Conditions, the 5 boilers are permitted to process up to 750,000 tonnes per annum of waste. This figure is based on 5 boilers processing 17.5 tonnes per hour at 100% availability. Due to the upgrades carried out on the plant to enable compliance with the Waste Incineration Directive, changes to calorific value of fuel and improved combustion conditions, the current operation has a maximum capacity of approximately 620,000 tonnes per annum assuming 100% availability.

In 2016 LondonWaste Ltd. Energy Centre processed a total of 547,721 tonnes of waste; this included 664 tonnes of Grade E clinical waste.

The Energy Centre boiler availability was 88.69% with an average waste throughput rate of 14.06 tonnes per hour. The total electricity export over the year was 252,785MW.

The quantities and destination of the solid residues produced from the process are as outlined in the table below:

Output	Tonnage Produce	Destination
FGT residue	18,243	Treatment Facility
Bottom Ash	104,633	Recovery
Metals	21,254	Recovery
Bottom Ash Oversize Rejects	12,697	Landfill

4. **Summary of Plant Monitoring**

4.1 Emissions to Air -

Pollutants measured	Continuously/ 100% operational time	Periodically
Particulates	Yes	
Oxides of Nitrogen	Yes	
Sulphur Dioxide	Yes	
Carbon Monoxide	Yes	
Ammonia	Yes	
Total Organic Carbon	Yes	
Hydrogen Chloride	Yes	
Mercury		Yes
Cadmium and Thallium		Yes
Group III metals		Yes
PCDD and PCDF		Yes
Hydrogen Fluoride		Yes

4.2 Emissions to Sewer –

Pollutants measured	Continuously/ 100% operational time	Periodically
Dieldrin		Yes
Gamma - Hexachlorocyclohexane		Yes
Polychlorinated biphenyl 28		Yes
Polychlorinated biphenyl 52		Yes
Polychlorinated biphenyl 101		Yes
Polychlorinated biphenyl 118		Yes
Polychlorinated biphenyl 153		Yes
Polychlorinated biphenyl 138		Yes
Polychlorinated biphenyl 180		Yes
Trifluralin		Yes
Hexachlorobenzene		Yes
Hexachlorobutadiene		Yes
Trichlorobenzene		Yes
Dichlorvos		Yes
Fenitrothion		Yes
Simazine		Yes
Atrazine		Yes
Pentachlorophenol & it's compounds		Yes
Tributyltin compounds		Yes
Triphenyltin compounds		Yes
Total Cadmium		Yes
Total Mercury		Yes
Chromium, copper, lead, nickel, silver and zinc in total.		Yes

4.3 Emissions to Water (other than to Sewer) –

Pollutants measured	Continuously/ 100% operational time	Periodically
Oil & Grease		Yes

4.4 Residue Emissions –

Pollutants measured	Continuously/ 100% operational time	Periodically
Fly Ash		Yes
Bottom Ash		Yes
APC residue		Yes

5. Summary of Plant Emissions

5.1 Emissions to Air -

The tables below show the emissions of periodically monitored pollutants to air from release points A1 and A2.

Release Point A1 -

Pollutant	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Cadmium, Thallium and their compounds(total)	mg/Nm ³	<0.0012	<0.0013	0.0016	<0.0011
Mercury and it's compounds ³	mg/Nm ³	0.00051	<0.00060	0.0029	0.0073
Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V and their compounds (total)	mg/Nm ³	0.0150	0.33	0.059	0.059
Particulates	mg/Nm ³	0.43	0.77	0.16	2.00
VOCs as Total Organic Carbon (TOC)	mg/Nm ³	0.18	1.1	0.80	0.86
Hydrogen fluoride	mg/Nm ³	<0.029	0.12	<0.028	<0.049
Hydrogen Chloride	mg/Nm ³		5.1		2.0
Nitrous Oxide(N ₂ O)	mg/Nm ³		0.45		21.0
Carbon Monoxide	mg/Nm ³		39.0		32.8
Sulphur Dioxide	mg/Nm ³		12.6		5.2
Oxides of Nitrogen(NO and NO ₂ expressed as NO ₂)	mg/Nm ³		90.5		234
Ammonia (NH ₃)	mg/Nm ³		25.4		8.1
Dioxins and Furans					
I-TEQ	ng/Nm ³		0.0023		0.0034

WHO- TEQ Humans/ Mammals	ng/Nm3		0.0020		0.0033
WHO- TEQ-Birds	ng/Nm3		0.0046		0.0056
WHO- TEQ-Fish	ng/Nm3		0.0024		0.0035
PCBs					
WHO- TEQ Humans/ Mammals	ng/Nm3		0.00055		0.00051
WHO- TEQ-Birds	ng/Nm3		0.0016		0.0017
WHO- TEQ-Fish	ng/Nm3		0.000022		0.000023
Poly-cyclic aromatic hydrocarbons (PAHs)	ug/Nm3		0.62		2.40
Anthanthrene	ug/Nm3		0.021		<0.018
Benzo(a) anthracene	ug/Nm3		0.021		<0.018
Benzo(k)fluoranthene	ug/Nm3		0.021		<0.018
Benzo(b)fluoranthene	ug/Nm3		0.021		<0.018
Benzo(b)naph(2,1- d)thiophene	ug/Nm3		0.021		<0.018
Benzolphenanthrene	ug/Nm3		0.021		<0.018
Benzo(ghi)perylene	ug/Nm3		0.021		<0.018
Benzo(a)pyrene	ug/Nm3		0.021		<0.018
Cholanthrene	ug/Nm3		0.021		<0.018
Chrysene	ug/Nm3		0.021		<0.018
Cyclopenta(c,d)pyrene	ug/Nm3		0.021		<0.018
Dibenzo(ah)anthracene	ug/Nm3		0.021		<0.018
Dibenzo(a,i)pyrene	ug/Nm3		0.021		<0.018
Fluoranthene	ug/Nm3		0.021		<0.018
Indo(1,2,3-cd)pyrene	ug/Nm3		0.021		<0.018
Naphthalene	ug/Nm3		0.31		2.20

Release Point A2 -

Pollutant	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Cadmium, Thallium and their compounds(total)	mg/Nm ³	0.0015	0.0014	0.0013	<0.0018
Mercury and it's compounds ³	mg/Nm ³	<0.00078	0.0012	0.0023	0.000690
Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V and their compounds (total)	mg/Nm ³	0.2600	0.067	0.15	0.064
Particulates	mg/Nm ³	0.17	1.6	0.9	3.80
VOCs as Total Organic Carbon (TOC)	mg/Nm ³	0.38	0.55	0.80	0.45
Hydrogen fluoride	mg/Nm ³	<0.029	0.085	<0.029	<0.060
Hydrogen Chloride	mg/Nm ³		4.9		4.0
Nitrous Oxide(N ₂ O)	mg/Nm ³		20.3		6.1
Carbon Monoxide	mg/Nm ³		30.4		17.4
Sulphur Dioxide	mg/Nm ³		18.9		4.6
Oxides of Nitrogen(NO and NO ₂ expressed as NO ₂)	mg/Nm ³		140		211
Ammonia (NH ₃)	mg/Nm ³		9.1		7.7
Dioxins and Furans					
I-TEQ	ng/Nm ³		0.0035		0.0052
WHO- TEQ Humans/ Mammals	ng/Nm ³		0.0031		0.0053
WHO- TEQ-Birds	ng/Nm ³		0.0061		0.0078
WHO- TEQ-Fish	ng/Nm ³		0.0008		0.0055
PCBs					
WHO- TEQ Humans/ Mammals	ng/Nm ³		0.00016		0.00062
WHO- TEQ-Birds	ng/Nm ³		0.0005		0.0019
WHO- TEQ-Fish	ng/Nm ³		0.000007		0.000029
Poly-cyclic aromatic hydrocarbons (PAHs)	ug/Nm ³		<0.017		2.20

Anthanthrene	ug/Nm3		<0.017		<0.020
Benzo(a) anthracene	ug/Nm3		<0.017		<0.020
Benzo(k)fluoranthene	ug/Nm3		<0.017		<0.020
Benzo(b)fluoranthene	ug/Nm3		<0.017		<0.020
Benzo(b)naph(2,1-d)thiophene	ug/Nm3		<0.017		<0.020
Benzolphenanthrene	ug/Nm3		<0.017		<0.020
Benzo(ghi)perylene	ug/Nm3		<0.017		<0.020
Benzo(a)pyrene	ug/Nm3		<0.017		<0.020
Cholanthrene	ug/Nm3		<0.017		<0.020
Chrysene	ug/Nm3		<0.017		<0.020
Cyclopenta(c,d)pyrene	ug/Nm3		<0.017		<0.020
Dibenzo(ah)anthracene	ug/Nm3		<0.017		<0.020
Dibenzo(a,i)pyrene	ug/Nm3		<0.017		<0.020
Fluoranthene	ug/Nm3		<0.017		0.0390
Indo(1,2,3-cd)pyrene	ug/Nm3		<0.017		<0.020
Naphthalene	ug/Nm3		<0.28		1.90

Of the total 38,954 hours of operating time in 2016, LondonWaste Ltd. Energy Centre was environmentally compliant with respect to emissions to air 99.995% of its total operating time.

In 2016 the following totals were achieved:-

1. Zero CO exceedances hence considered compliant 100% of the time.
2. Zero HCl exceedances hence considered compliant 100% of the time.
3. Dust exceedances for a total for 1/2 hour, therefore dust was considered compliant for:

$$100\% - \left(\frac{0.5}{38954} \times 100 \right) = 99.999\% \text{ of time}$$
4. Zero NO_x exceedances hence considered complaint 100% of time.
5. Zero SO₂ exceedances hence considered complaint 100% of time.

6. TOC analyser failure for a total for 4 hours, therefore TOC was considered compliant for:

$$100\% - \left(\frac{4}{38954} \times 100 \right) = 99.990\% \text{ of time}$$

7. Total hours of abnormal operation for release points A1 and A2 were as follows:

$$A1 = 0.5$$

$$A2 = 4$$

$$100\% - \left(\frac{0.5}{38954} \times 100 \right) = 99.999\% \text{ of time (A1)}$$

$$100\% - \left(\frac{4}{38954} \times 100 \right) = 99.990\% \text{ of time (A2)}$$

All non-compliances including breaches and abnormal operations have been reported to the Environment Agency for their consideration.

LondonWaste Ltd. received no enforcement notices in 2016.

5.2 Emissions to Sewer –

The table below shows the emissions of periodically monitored pollutants to sewer from release point S1.

Pollutant	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Dieldrin	ng/l	<50	<50	<50	<50
Gamma-Hexachlorocyclohexane	ng/l	<50	<50	<50	<50
Polychlorinated biphenyl 28	ng/l	<5	<5	<5	<5
Polychlorinated biphenyl 52	ng/l	<5	<5	<5	<5
Polychlorinated biphenyl 101	ng/l	<5	<5	<5	<5
Polychlorinated biphenyl 118	ng/l	<5	<5	<5	<5
Polychlorinated biphenyl 153	ng/l	<5	<5	<5	<5
Polychlorinated biphenyl 138	ng/l	<5	<5	<5	<5
Polychlorinated biphenyl 180	ng/l	<5	<5	<5	<5
Trifluralin	ng/l	<50	<50	<50	<50
Hexachlorobenzene	ng/l	<50	<50	<50	<50
Hexachlorobutadiene	ng/l	<50	<50	<50	<50
Trichlorobenzene	ng/l	<50	<50	<50	<50
Dichlorvos	ng/l	<50	<50	<50	<50
Fenitrothion	ng/l	<50	<50	<50	<50
Simazine	ng/l	<50	<50	<50	<50
Atrazine	ng/l	<50	<50	<50	<50
Pentachlorophenol & it's compounds	ng/l	<50	<50	<50	<50
Tributyltin compounds	ng/l	<50	<50	<50	<50
Triphenyltin compounds	ng/l	<50	<50	<50	<50
Total Cadmium**	ug/l	<1	<1	<1	<1
Total Mercury**	ug/l	<0.1	<0.1	<0.1	<0.1
Chromium, copper, lead, nickel, silver and zinc in total**	mg/l	0.26	0.15	0.20	0.20

There were no unauthorised releases to sewer during 2016.

5.3 Emissions to Water (other than Sewer) -

The tables below show the emissions of periodically monitored pollutants to water (other than sewer) from release points W1 and W2.

Release Point W1 -

Pollutant	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Oil & Grease	mg/l	1.9	1.0	1.9	<1.0

Release Point W2 -

Pollutant	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Oil & Grease	mg/l	No flow	No flow	No flow	No flow

There were no unauthorised releases to water (other than Sewer) during 2016.

5.4 Residue Emissions -

The tables below show the emissions of periodically monitored pollutants associated with solid residues fly ash, bottom ash and APC residue.

Fly Ash -

Pollutant	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
As	mg/kg	161	120	131	168
Cd	mg/kg	152	178	140	120
Co	mg/kg	120	100	128	88
Cr	mg/kg	45	33	48	79
Cu	mg/kg	2768	2980	3100	3325
Hg	mg/kg	231	270	213	260
Mn	mg/kg	190	244	330	465
Ni	mg/kg	31	25	30	54
Pb	mg/kg	2254	2011	2288	2001
Sb	mg/kg	348	303	287	222
Sn	mg/kg	21	13	25	12
Tl	mg/kg	48	69	40	44
V	mg/kg	139	176	171	193
Zn	mg/kg	4002	4324	4009	4343
Dioxins and Furans					
I-TEQ	ng/g	0.757	0.908	0.100	0.300
WHO- TEQ Humans/ Mammals	ng/g	0.784	0.941	1.035	0.303
WHO- TEQ-Birds	ng/g	1.397	1.676	1.844	0.554
WHO- TEQ-Fish	ng/g	0.859	1.031	1.134	0.341
PCB					
WHO- TEQ Humans/ Mammals	ng/g	0.009	0.011	0.012	0.006
WHO- TEQ-Birds	ng/g	0.014	0.017	0.019	0.009
WHO- TEQ-Fish	ng/g	0.000	0.000	0.000	0.000

Bottom Ash -

Pollutant	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
As	mg/kg	31	16	33	46
Cd	mg/kg	26	44	61	36
Co	mg/kg	135	160	111	97
Cr	mg/kg	377	444	365	184
Cu	mg/kg	1897	1976	2010	1473
Hg	mg/kg	<1	<1	<1	<1
Mn	mg/kg	443	515	540	345
Ni	mg/kg	180	224	237	110
Pb	mg/kg	823	776	903	717
Sb	mg/kg	113	78	98	57
Sn	mg/kg	16	10	5.5	6.7
Tl	mg/kg	<1	<1	<1	<1
V	mg/kg	255	146	120	84
Zn	mg/kg	2254	2435	2172	1639
LOI	%	1.3	1.3	1.3	1.4
Carbon (TOC)	%	1.1	1.0	1.1	1.2
Dioxins and Furans					
I-TEQ	ng/g	0.006	0.008	0.009	0.002
WHO- TEQ Humans/ Mammals	ng/g	0.006	0.008	0.009	0.002
WHO- TEQ-Birds	ng/g	0.010	0.013	0.014	0.004
WHO- TEQ-Fish	ng/g	0.007	0.009	0.010	0.003
PCB					
WHO- TEQ Humans/ Mammals	ng/g	0.000	0.000	0.000	0.000
WHO- TEQ-Birds	ng/g	0.002	0.002	0.003	0.002
WHO- TEQ-Fish	ng/g	0.000	0.000	0.000	0.000

APC Residue –

Pollutant	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
As	mg/kg	159	111	101	123
Cd	mg/kg	121	130	176	199
Co	mg/kg	50	99	71	103
Cr	mg/kg	133	101	87	50
Cu	mg/kg	1879	1435	1651	1893
Hg	mg/kg	150	176	200	319
Mn	mg/kg	276	221	275	505
Ni	mg/kg	11	23	74	102
Pb	mg/kg	2881	2276	2006	2277
Sb	mg/kg	333	243	229	187
Sn	mg/kg	88	45	20	31
Tl	mg/kg	132	109	131	140
V	mg/kg	281	220	161	142
Zn	mg/kg	3769	3354	3184	2275
Dioxins and Furans					
I-TEQ	ng/g	0.529	0.476	0.571	0.215
WHO- TEQ Humans/ Mammals	ng/g	0.495	0.446	0.535	0.201
WHO- TEQ-Birds	ng/g	1.046	0.941	1.129	0.425
WHO- TEQ-Fish	ng/g	0.549	0.491	0.589	0.222
PCB					
WHO- TEQ Humans/ Mammals	ng/g	0.013	0.011	0.013	0.003
WHO- TEQ-Birds	ng/g	0.026	0.023	0.028	0.006
WHO- TEQ-Fish	ng/g	0.006	0.005	0.006	0.001

There were no unauthorised releases during 2016 associated with ash residues from the plant.