



Annual Performance Report For LondonWaste Ltd Permit YP3033BE 2014



Annual Performance Report for LondonWaste Limited
Permit No. YP3033BE – Year 2014

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
Technical Director & Head of Energy Centre

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 2014 LondonWaste Ltd. Energy Centre processed a total of 561,496 tonnes of waste; this included 3,291 tonnes of Grade E clinical waste.

The Energy Centre boiler availability was 89.30% with an average waste throughput rate of 14.36 tonnes per hour. The total electricity export over the year was 250,775MW.

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	19259	Treatment Facility
Bottom Ash	113099	Recovery
Metals	20027	Recovery
Bottom Ash Oversize Rejects	9011	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	<0.0011	0.0011	0.0023	<0.0013
Mercury and it's compounds ³	mg/Nm ³	<0.0006	<0.0003	0.0042	<0.00056
Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V and their compounds (total)	mg/Nm ³	0.034	0.0359	0.1500	0.040
Particulates	mg/Nm ³	2.5	2.96	1.45	0.60
VOCs as Total Organic Carbon (TOC)	mg/Nm ³	1.30	1.03	0.27	0.61
Hydrogen fluoride	mg/Nm ³	<0.045	<0.04	0.015	<0.064
Hydrogen Chloride	mg/Nm ³		2.19		0.83
Nitrous Oxide(N ₂ O)	mg/Nm ³		20.4		17.7
Carbon Monoxide	mg/Nm ³		45.3		44.9
Sulphur Dioxide	mg/Nm ³		10.07		0.91
Oxides of Nitrogen(NO and NO ₂ expressed as NO ₂)	mg/Nm ³		220		212
Ammonia (NH ₃)	mg/Nm ³		12.03		3.2
Dioxins and Furans					
I-TEQ	ng/Nm ³		0.0007		0.00069

WHO- TEQ Humans/ Mammals	ng/Nm3		0.0007		0.00072
WHO- TEQ-Birds	ng/Nm3		0.0008		0.00110
WHO- TEQ-Fish	ng/Nm3		0.0008		0.00069
PCBs					
WHO- TEQ Humans/ Mammals	ng/Nm3		0.000022		0.000081
WHO- TEQ-Birds	ng/Nm3		0.000129		0.00071
WHO- TEQ-Fish	ng/Nm3		0.000001		0.000006
Poly-cyclic aromatic hydrocarbons (PAHs)	ug/Nm3		0.199		1.189
Anthanthrene	ug/Nm3		<0.001		<0.00093
Benzo(a) anthracene	ug/Nm3		0.0014		0.0257
Benzo(k)fluoranthene	ug/Nm3		<0.001		0.0049
Benzo(b)fluoranthene	ug/Nm3		0.0027		0.0104
Benzo(b)naph(2,1- d)thiophene	ug/Nm3		<0.001		0.0022
Benzolphenanthrene	ug/Nm3		<0.001		0.0095
Benzo(ghi)perylene	ug/Nm3		0.0016		0.0011
Benzo(a)pyrene	ug/Nm3		<0.001		0.00093
Cholanthrene	ug/Nm3		<0.001		<0.00093
Chrysene	ug/Nm3		0.0048		0.0420
Cyclopenta(c,d)pyrene	ug/Nm3		<0.001		<0.00093
Dibenzo(ah)anthracene	ug/Nm3		<0.001		<0.00093
Dibenzo(a,i)pyrene	ug/Nm3		<0.001		<0.00093
Fluoranthene	ug/Nm3		0.0306		0.4340
Indo(1,2,3-cd)pyrene	ug/Nm3		0.0016		0.00093
Naphthalene	ug/Nm3		0.148		0.652

Release Point A2 -

Pollutant	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Cadmium, Thallium and their compounds(total)	mg/Nm ³	0.0016	<0.0014	0.0050	0.0017
Mercury and it's compounds ³	mg/Nm ³	<0.0006	<0.00052	<0.00044	0.0006
Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V and their compounds (total)	mg/Nm ³	0.051	0.054	0.3200	0.055
Particulates	mg/Nm ³	2.5	3.6	2.6	1.4
VOCs as Total Organic Carbon (TOC)	mg/Nm ³	0.49	0.66	0.30	0.38
Hydrogen fluoride	mg/Nm ³	<0.035	<0.050	<0.026	<0.045
Hydrogen Chloride	mg/Nm ³		14.00		9.6
Nitrous Oxide(N ₂ O)	mg/Nm ³		21.8		20.1
Carbon Monoxide	mg/Nm ³		42.3		37.6
Sulphur Dioxide	mg/Nm ³		9.3		7.8
Oxides of Nitrogen(NO and NO ₂ expressed as NO ₂)	mg/Nm ³		247		240
Ammonia (NH ₃)	mg/Nm ³		7.1		8.3
Dioxins and Furans					
I-TEQ	ng/Nm ³		0.00076		0.012
WHO- TEQ Humans/ Mammals	ng/Nm ³		0.00074		0.011
WHO- TEQ-Birds	ng/Nm ³		0.00120		0.025
WHO- TEQ-Fish	ng/Nm ³		0.00079		0.013
PCBs					
WHO- TEQ Humans/ Mammals	ng/Nm ³		0.00003		0.00110
WHO- TEQ-Birds	ng/Nm ³		0.00016		0.0032
WHO- TEQ-Fish	ng/Nm ³		0.000002		0.000059
Poly-cyclic aromatic hydrocarbons (PAHs)	ug/Nm ³		0.0840		0.498

Anthanthrene	ug/Nm3		<0.001		<0.00097
Benzo(a) anthracene	ug/Nm3		<0.001		<0.00097
Benzo(k)fluoranthene	ug/Nm3		<0.001		<0.00097
Benzo(b)fluoranthene	ug/Nm3		0.0011		<0.00097
Benzo(b)naph(2,1-d)thiophene	ug/Nm3		<0.001		<0.00097
Benzo(ghi)perylene	ug/Nm3		0.0025		<0.00097
Benzo(a)pyrene	ug/Nm3		<0.001		<0.00097
Cholanthrene	ug/Nm3		<0.001		<0.00097
Chrysene	ug/Nm3		0.0018		<0.00097
Cyclopenta(c,d)pyrene	ug/Nm3		<0.001		<0.00097
Dibenzo(ah)anthracene	ug/Nm3		<0.001		<0.00097
Dibenzo(a,i)pyrene	ug/Nm3		0.0011		<0.00097
Fluoranthene	ug/Nm3		0.0063		0.0126
Indo(1,2,3-cd)pyrene	ug/Nm3		0.0023		<0.00097
Naphthalene	ug/Nm3		0.061		0.4712

Of the total 39,111 hours of operating time in 2014, LondonWaste Ltd. Energy Centre was environmentally compliant with respect to emissions to air 99.92% of its total operating time.

In 2014 the following totals were achieved:-

1. CO exceedance (daily average) for a total for 24 hours, therefore CO was considered compliant for:

$$100\% - \left(\frac{1}{39111} \times 100 \right) = 99.939\% \text{ of time}$$

2. Zero HCl exceedances hence considered compliant 100% of the time.

3. Dust exceedances for a total for 1 hour, therefore Dust was considered compliant for:

$$100\% - \left(\frac{1}{39111} \times 100 \right) = 99.997\% \text{ of time}$$

4. Zero NO_x exceedances hence considered complaint 100% of time.
5. Zero SO₂ exceedances hence considered complaint 100% of time.
6. Zero TOC exceedances hence considered complaint 100% of time.
7. Total hours of abnormal operation for release points A1 and A2 were as follows:

$$A1 = 1.0$$

$$A2 = 31.5$$

$$100\% - \left(\frac{1.0}{39111} \times 100 \right) = 99.997\% \text{ of time (A1)}$$

$$100\% - \left(\frac{31.5}{39111} \times 100 \right) = 99.919\% \text{ of time (A2)}$$

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 2014.

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	0.45	0.32	0.289	0.42

There were no unauthorised releases to sewer during 2014.

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	2.7	2.1	1.2	1.9

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 2014.

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	114	129	141	173
Cd	mg/kg	90	108	120	149
Co	mg/kg	217	231	259	165
Cr	mg/kg	140	111	141	177
Cu	mg/kg	2523	2651	2998	2478
Hg	mg/kg	168	200	236	251
Mn	mg/kg	201	132	109	120
Ni	mg/kg	62	55	65	38
Pb	mg/kg	2422	2278	2435	2264
Sb	mg/kg	210	232	255	213
Sn	mg/kg	123	149	179	192
Tl	mg/kg	40	13	21	45
V	mg/kg	109	192	254	326
Zn	mg/kg	2524	2671	2981	3182
Dioxins and Furans					
I-TEQ	ng/g	0.397	0.417	0.353	0.317
WHO- TEQ Humans/ Mammals	ng/g	0.288	0.302	0.344	0.310
WHO- TEQ-Birds	ng/g	0.461	0.484	0.641	0.577
WHO- TEQ-Fish	ng/g	0.301	0.316	0.377	0.339
PCB					
WHO- TEQ Humans/ Mammals	ng/g	0.004	0.004	0.009	0.010
WHO- TEQ-Birds	ng/g	0.009	0.010	0.017	0.019
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	10	27	40	26
Cd	mg/kg	6.1	10	19	31
Co	mg/kg	72	101	89	60
Cr	mg/kg	319	370	422	254
Cu	mg/kg	1264	1230	1176	1001
Hg	mg/kg	<1	<1	<1	<1
Mn	mg/kg	387	410	501	387
Ni	mg/kg	101	97	113	89
Pb	mg/kg	1337	1442	1567	1221
Sb	mg/kg	88	99	91	110
Sn	mg/kg	165	120	100	132
Tl	mg/kg	<1	<1	<1	<1
V	mg/kg	110	131	157	116
Zn	mg/kg	1692	1598	1601	1241
Dioxins and Furans					
I-TEQ	ng/g	0.005	0.006	0.004	0.005
WHO- TEQ Humans/ Mammals	ng/g	0.004	0.005	0.004	0.005
WHO- TEQ-Birds	ng/g	0.008	0.009	0.005	0.006
WHO- TEQ-Fish	ng/g	0.005	0.006	0.003	0.004
PCB					
WHO- TEQ Humans/ Mammals	ng/g	0.000	0.000	0.000	0.000
WHO- TEQ-Birds	ng/g	0.001	0.002	0.001	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	158	128	157	101
Cd	mg/kg	141	171	134	126
Co	mg/kg	38	59	103	91
Cr	mg/kg	161	140	188	135
Cu	mg/kg	1799	1633	1243	1450
Hg	mg/kg	129	169	193	158
Mn	mg/kg	150	117	325	186
Ni	mg/kg	90	34	21	37
Pb	mg/kg	1651	1452	1215	1186
Sb	mg/kg	259	303	340	367
Sn	mg/kg	200	164	123	152
Tl	mg/kg	81	59	77	97
V	mg/kg	181	210	287	311
Zn	mg/kg	2992	3157	3365	3427
Dioxins and Furans					
I-TEQ	ng/g	0.640	0.691	0.623	0.748
WHO- TEQ Humans/ Mammals	ng/g	0.657	0.711	0.623	0740
WHO- TEQ-Birds	ng/g	1.441	1.556	1.238	1.486
WHO- TEQ-Fish	ng/g	0.782	0.942	0.689	0.827
PCB					
WHO- TEQ Humans/ Mammals	ng/g	0.017	0.019	0.007	0.008
WHO- TEQ-Birds	ng/g	0.030	0.033	0.014	0.016
WHO- TEQ-Fish	ng/g	0.001	0.001	0.001	0.002

There were no unauthorised releases during 2014 associated with ash residues from the plant.