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**The Environmental Permitting (England  
and Wales) Regulations 2010**

**Permit: EPR/LP3030XA  
Cardiff Energy Recovery Facility**

**Environmental Monitoring Report  
1<sup>st</sup> Quarter 2016: 1<sup>st</sup> January – 31<sup>st</sup> March 2016**

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Version: 1.0  
**Issue Date: 26/04/2016**



## Quality Assurance

This report has been prepared with all reasonable skill, care and diligence. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

### **Report Details**

Report Title:	Cardiff Energy Recovery Facility – 1 <sup>st</sup> Quarter 2016 Environmental Report
Report Date:	April 2016
Version:	1

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## **1. Introduction**

Cardiff Energy Recovery Facility is located immediately north of Cardiff Docks. The facility has an annual throughput of 350,000 tonnes per year of residual municipal and C&I waste and has the capability of exporting approximately 30MW of electrical power from the process.

In accordance with the requirements of Condition 4.2.3, Schedule 4 and table S4.1 of Permit EPR/LP3030XA issued by Natural Resources Wales to Viridor Waste Management Limited (Viridor) on 4th November 2010, Viridor is required to submit a summary of the environmental monitoring works undertaken at the site on a quarterly basis. Such reports will form the basis of the annual environmental review report, which is to be submitted to Natural Resources Wales by the 30<sup>th</sup> April as agreed in writing with Natural Resources Wales of each year in accordance with Condition 4.2.2 of the Permit.

Viridor took over the operation of the Plant on 31<sup>st</sup> January 2015; therefore 2016 is the second year of operations at the Facility.

This report summarises the environmental data collected at the site during the first quarter calendar period of 2016, between 1<sup>st</sup> January and 31<sup>st</sup> March.

The report will cover the following areas of environmental monitoring:

- Section 2 – Point Source Emissions to Air
- Section 3 – Point Source Emissions to Water
- Section 4 – Residue Quality Monitoring Requirements

## **2. Point Source Emissions to Air**

### **2.1. Introduction**

Permit Condition 3.5.1(a) and Tables S3.1 and S3.1(a) require Viridor to undertake performance monitoring of the point source emissions to air arising at sample points A1 and A2 on a continuous and periodic basis.

A summary of the continuous point source emissions to air monitoring data at sample point A1 and A2, for the period, is included as Table 1.

The measurement frequency for periodic point source emissions to air monitoring data at sample point A1 and A2 is on a bi-annual basis, after 12 months of operation. Periodic monitoring data is not included in this report, but will be included in the next quarterly report.

### **2.2 Commentary on Data**

The concentrations recorded under normal operation during the review period remained compliant with the limits set out in Permit.

Line 1 was in operation for 92% of the quarter and Line 2 for 98%.

### **2.3 Schedule Notices Issued**

No Permit limit exceedances were recorded during the review period for emissions to air.

**Table 1: Emissions to Air from A1 and A2 (CEMS)**

Releases to Air from Incinerators – Continuous Monitoring – Air 2							
Parameter	Limit	Reference Period	A1		A2		Test Method
			Max	Avg	Max	Avg	
Oxides of nitrogen	200 mg/m <sup>3</sup>	Daily mean	187	177	184	176	BS EN 15267-3
	400 mg/m <sup>3</sup>	½ hourly mean	308		322		
Particulate Matter	10 mg/m <sup>3</sup>	Daily mean	1	1	0	0	
	30 mg/m <sup>3</sup>	½ hourly mean	1		1		
Total Organic Carbon (TOC)	10 mg/m <sup>3</sup>	Daily mean	0	0	1	0	
	20 mg/m <sup>3</sup>	½ hourly mean	5		6		
Hydrogen chloride	10 mg/m <sup>3</sup>	Daily mean	8	7	9	7	
	60 mg/m <sup>3</sup>	½ hourly mean	26		36		
Sulphur dioxide	50 mg/m <sup>3</sup>	Daily mean	11	6	8	3	
	200 mg/m <sup>3</sup>	½ hourly mean	44		44		
Carbon monoxide	50 mg/m <sup>3</sup>	Daily mean	12	5	21	8	
	100 mg/m <sup>3</sup>	½ hourly mean*					
Ammonia	No limit set	Daily mean	2	0	2	1	

\*Note. ½ hourly monitoring for CO is no longer required in the latest version of the permit

\*\*Note. CEMS data figures are adjusted for the method uncertainty

### **3. Point Source Emissions to Water**

#### **3.1. Introduction**

Permit Condition 3.5.1(a) and Table S3.2 requires Viridor to ensure sample point W1 is free of oil, grease and visible solids.

#### **3.2 Commentary on Data**

During the quarter monitoring point W1 has remained free of oil and grease.

#### **3.3 Schedule Notices Issued**

No Permit limit exceedances were recorded during the review period for emissions to water.

## **4. Residue Quality Monitoring Requirements**

### **4.1. Introduction**

Permit Condition 3.5.1(c) and Table S3.5 require Viridor to undertake residue quality monitoring at quarterly intervals following the first year of operation. This applies for both bottom ash and air pollution control residues.

### **4.2 Commentary on Data**

#### **Incinerator Bottom Ash**

Figures shown in Table 3 detail the quarterly analysis undertaken in line with the criteria laid out in the ESA protocol.

#### **Air Pollution Control Residues**

Figures shown in Table 3 detail the analysis undertaken during the quarter.

**Table 3 Residue Quality**

Residue quality					
Parameter	Limit	Normal Operation			
		Bottom ash		APC Residues	
		Line 1	Line 2	Line 1	Line 2
		Quarter 1	Quarter 1		
Total Organic Carbon	3%	1.2	1.4		
		Composite			
Quarter		Quarter 1		Quarter 1	Quarter 1
Antimony (mg/kg)	---	213		1006	888
Cadmium (mg/kg)	---	19		260	256
Thallium (mg/kg)	---	<0.1		1.05	0.94
Mercury (mg/kg)	---	<0.5		9.93	5.71
Lead (mg/kg)	---	789.5		2533	2365
Chromium (mg/kg)	---	149		38.4	28.3
Copper (mg/kg)	---	2333.8		684	604
Manganese (mg/kg)	---	861		371	349
Nickel (mg/kg)	---	92.9		16.6	13.6
Arsenic (mg/kg)	---	19.5		59.6	49.1
Cobalt (mg/kg)	---	24.7		7.2	5.9
Vanadium (mg/kg)	---	42.7		<10	<10



Zinc (mg/kg)	---	3008.8	14580	13520
Dioxins / Furans (WHO 2005 TEQ) (ng/kg)	---	3.94	378.68	430.83
PCB (WHO 2005 TEQ) (ng/kg)	---	0.97	15.77	10.59