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

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

**Environmental Monitoring Report
3rd Quarter 2016: 1st July – 30th September 2016**

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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

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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 30th 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 31st 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 third quarter calendar period of 2016, between 1st July and 30th September.

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 the Permit, with the exception of the events listed in 2.3.

Line 1 was in operation for 91.5% of the quarter and Line 2 for 95.1%.

2.3 Schedule Notices Issued

09/09/2016 – Schedule notification Part A was submitted due to a marginally elevated half hour TOC reading. (Part B was submitted 12/09/2016).

11/09/2016 – Schedule notification Part A was submitted due to two marginally elevated 10 minute CO readings. (Part B was submitted 12/09/2016).

11/09/2016 – Schedule notification Part A was submitted due to two marginally elevated half hour TOC readings. (Part B was submitted 12/09/2016).

22/09/2016 – Schedule notification Part C was submitted for two abnormal operation occurrences, which resulted in a disturbance in the abatement systems on Line 1 and Line 2.

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 ³	Daily mean	186	175	190	179	BS EN 15267-3
	400 mg/m ³	½ hourly mean	311		320		
Particulate Matter	10 mg/m ³	Daily mean	1	1	0	0	
	30 mg/m ³	½ hourly mean	2		2		
Total Organic Carbon (TOC)	10 mg/m ³	Daily mean	2	0	3	0	
	20 mg/m ³	½ hourly mean	10		11		
Hydrogen chloride	10 mg/m ³	Daily mean	9	8	9	8	
	60 mg/m ³	½ hourly mean	20		23		
Sulphur dioxide	50 mg/m ³	Daily mean	20	11	11	6	
	200 mg/m ³	½ hourly mean	74		33		
Carbon monoxide	50 mg/m ³	Daily mean	32	12	24	9	
	100 mg/m ³	½ hourly mean*					
Ammonia	No limit set	Daily mean	4	0	4	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 3	Quarter 3		
Total Organic Carbon	3%	0.9	1.7		
		Composite			
Quarter		Quarter 3		Quarter 3	Quarter 3
Antimony (mg/kg)	---	192		575	583
Cadmium (mg/kg)	---	17.2		150	150
Thallium (mg/kg)	---	0.17		0.7	0.7
Mercury (mg/kg)	---	<0.5		5.50	4.81
Lead (mg/kg)	---	1274.7		1338	1347
Chromium (mg/kg)	---	98.5		34.5	34.3
Copper (mg/kg)	---	3927.6		341	337
Manganese (mg/kg)	---	721		457	455
Nickel (mg/kg)	---	51.3		7.7	7.8
Arsenic (mg/kg)	---	13.4		46.4	47.1
Cobalt (mg/kg)	---	16.3		3.7	3.3
Vanadium (mg/kg)	---	24.7		<10	<10

Zinc (mg/kg)	---	3018.4	8162	8170
Dioxins / Furans (WHO 2005 TEQ) (ng/kg)	---	9.309	334.61	280.62
PCB (WHO 2005 TEQ) (ng/kg)	---	4.074	10.663	4.837