

**Integra South West Energy Recovery Facility
 EPR BJ7093IY
 Annual Performance Report 2012**

1.0 INTRODUCTION

This document represents the Annual Performance Report for Integra South West Energy Recovery Facility (Marchwood ERF) and has been written to conform with Article 12 (2) of the Waste Incineration Directive (WID):

'For incineration or co-incineration plants with a nominal capacity of two tonnes or more per hour and notwithstanding Article 15(2) of Directive 96/61/EC, an annual report to be provided by the operator to the competent authority on the functioning and monitoring of the plant shall be made available to the public. This 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 this Directive.'

This report has also been written in order to comply with Condition 4.1.10 of Environmental Permit BJ7093IY:

'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.'

2.0 FACILITY INFORMATION

Plant Operator	Veolia Environmental Services Hampshire Limited
Name of Facility	Integra South West Energy Recovery Facility
EPR Permit Number	BJ7093IY
Facility Address	Oceanic Way Marchwood Industrial Park Hampshire SO40 4BD
Telephone Number	023 80 875500
Fax Number	023 80 875501

Integra South West Energy Recovery Facility (ERF) is the second of its kind to be built in Hampshire and is leading example of best environmental practise for waste treatment. The waste produced by Southampton City and South West Hampshire Districts is dealt with at this ERF, providing a long term, sustainable solution for waste disposal. It recovers heat energy from the waste to produce steam, which

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is used to generate electricity supplied to the National Grid. Strict environmental controls and proven operating experience ensure the Integra South West ERF is a centre of excellence and a benchmark for the industry.

2.1 Technical details of the plant:

- Maximum Permitted Refuse throughput – 210,000 tonnes per annum, with approximately 12 tonnes per hour burning capacity per stream
- Storage capacity – four days full plant capacity
- Number of tipping bays – 10
- Steam output – 76 tonnes of steam per hour at 400°C and 45 BAR
- Flue gas treatment – CNIM semi-dry lime scrubber followed by high performance bag filters, discharging into a 65 metre high chimney
- Energy produced – maximum generating capacity 14MW

The Integra South West ERF forms part of Veolia's Integrated Contracts, the most progressive integrated waste management system in Britain which provides sustainable waste management for all the domestic waste in the county.

The ERF is regulated by the Environment Agency and is certified in compliance with:

- ISO 9001 : 2008
- ISO 14001 : 2004, and
- OHAS 18001 : 2007

Table 2.1: Permitted Waste Types

Description	European Waste Catalogue Number	Maximum Throughput
Other Wastes from mechanical treatment of waste	19 12 12	Note 1
Confidential Waste	20 01 01 20 01 39	Note 1
Catering Waste	20 01 08	Note 1
Mixed Municipal Waste	20 03 01	Note 1
Market Waste	20 03 03	Note 1
Street Cleaning Residues	20 03 03	Note 1
Bulky Waste	20 03 07	Note 1

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Note 1: The total annual throughput of all waste types shall not exceed 210,000te and the maximum hourly throughput (at average calorific value 9200j/kg) shall not exceed 24 te/hr.

3.0 OPERATIONAL INFORMATION

Table 2.2 : Operational Details		
Operational hours (both lines)	16,507	Hours
Total Waste Incinerated	206,700	Tonnes
Electricity Exports to National Grid	118,885	MWHrs
Metals Recovered	3282	Tonnes
Incinerator Bottom Ash Produced	43,719	Tonnes
APC Residues	5890	Tonnes

3.1 Solid Residue Outputs

The Incinerator Bottom Ash (IBA) is transported by Veolia Haulage to Raymond Brown Minerals and Recycling Ltd Aggregate Processing Facility situated in Verwood, Hampshire. The IBA is reprocessed into a number of different graded aggregates, ferrous and non ferrous metal products, which are then utilised in the construction and metal industry.

Ferrous metals removed during on site processing of IBA are forwarded to M.J.D Light Brothers Waste and Metal Recycling Facility situated in Lewes, East Sussex. The metals are separated into individual fractions, and are sent on for utilisation in the metal industry.

The fine particulate matter, known as Air Pollution Control Residue (APCr), is removed from the process by a fabric filter. The APCr is sent to Empire, another Veolia site located in Aldridge, West Midlands where it is used to neutralise spent acid wastes before final disposal.

In line with Veolia's corporate responsibility, and as a Permit requirement, a Duty of Care Audit is conducted at least annually at the above mentioned locations.

3.2 Water Discharges from Site

The water required for plant operations is reused extensively within the process and therefore few, or no water discharges are released from the facility. When required, water discharges are released in batches from the plant in accordance with the permit. Samples are taken and analysed for the parameters listed in the Trade Effluent Discharge Consent issued and regulated by Southern Water.

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For the duration of 2012; 100% of water used for the running of the plant was recycled within the process, no discharges were made to sewer.

Seawater from the estuary is used to cool the boiler water before it is recycled back into the system. The following parameters are monitored on a continuous basis; Oil and Grease, Chlorine µg/l (Total Residual Oxidant), cooling water flow M³/hr, cooling water temperature increment °C. The monthly peaks are reported to the Environment Agency bi-annually.

The results compared with emission limits are summarised in Table 3.2.1

Table 3.2.1 : Sea Water Monthly Peak 2012													
Parameter	Calendar Month												Limit
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Oil and Grease mg/l	None visible	None visible	None visible	None visible	None visible	None visible	None visible	None visible	None visible	None visible	None visible	None visible	None visible
Chlorine µg/l (Total Residual Oxidant)	212	204	247	217	284*	262*	658*	245	300*	165	169	390*	250
Flow Rate m ³ /h	3327 [†]	3287	3257	3210	3166	3211	3116	3165	3118	3137	3066	3087	3300
Temperature °C	10.5	10.7	10.0	10.8	10.9	10.9	10.5	10.5	10.7	10.7	10.7	10.7	11°C above intake

* Monthly peak complaint with daily average of 250 mg/l

† Monthly peakl complaint with daily average of 3300 m³/h

3.3 Flue Gasses

All gaseous emissions generated during the combustion process pass through an extensive flue gas cleaning process which starts with a gas scrubber where hydrated lime is injected to neutralise acid gasses. Activated carbon is added to remove dioxins, urea is added to treat oxides of nitrogen and finally the bag filter takes away remaining particulates. The cleaned gasses are finally released into the atmosphere through the chimney.

In compliance with the WID and EPR Permit, the flue gasses are continuously monitored using MCERTS accredited equipment. In addition to the continuous monitoring, an extractive sampling campaign is undertaken on a quarterly basis by an approved service supplier. The organisation used for analysis and monitoring are accredited by the United Kingdom Accreditation Service (UKAS) and the Environment

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Agency's Monitoring Certification Scheme (Mcerts).

3.3.1 Extractive Monitoring

The parameters measured and their frequency of monitoring are summarised in Table 3.3.1

Table 3.3.1 : Measured Emissions					
Parameter	Frequency				
	Continuous	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Particulate Matter	✓	✓		✓	
TOC	✓	✓		✓	
Hydrogen Chloride	✓	✓		✓	
Oxides of Nitrogen	✓	✓		✓	
Carbon Monoxide	✓	✓		✓	
Sulphur Dioxides	✓	✓		✓	
Ammonia	✓	✓		✓	
Nitrous Oxide		✓		✓	
Hydrogen Fluoride		✓	✓	✓	✓
Mercury		✓	✓	✓	✓
Arsenic		✓	✓	✓	✓
Cadmium		✓	✓	✓	✓
Chromium		✓	✓	✓	✓
Copper		✓	✓	✓	✓
Cobalt		✓	✓	✓	✓
Nickel		✓	✓	✓	✓
Manganese		✓	✓	✓	✓
Antimony		✓	✓	✓	✓
Lead		✓	✓	✓	✓
Thallium		✓	✓	✓	✓
Vanadium		✓	✓	✓	✓
Dioxins and Furans		✓		✓	
Dioxin-like PCBs		✓		✓	
PAHs		✓		✓	

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The results of the quarterly extractive campaign in comparison to WID and Permitted limits are summarised in Tables 3.3.2 through to and including Table 3.3.5

Table 3.3.2 : Quarter 1 Extractive Results			
Parameter	Result mg/m³		Emission Limit mg/m³
	Stream 1	Stream 2	
Particulate Matter	0.3	0.73	20
TOC	1.6	0.50	20
Hydrogen Chloride	7.2	8.89	30
Oxides of Nitrogen	155.7	207	400
Carbon Monoxide	5.9	17.6	100
Sulphur Dioxide	7.7	22.5	200
Ammonia	7.6	8.66	No Limit Applies
Nitrous Oxide	15.1	15.4	No Limit Applies
Hydrogen Fluoride	0.2	0.16	1
Mercury and its compounds	0.004	0.0006	0.05
As, Sb, Pb, Cr, Cu, Mn, Ni, V and their compounds	0.011	0.015	0.5
Cadmium, Thallium and their compounds	Non Detectable	Non Detectable	0.05
Dioxins and Furans (I -TEQ)	0.0061	0.001	0.1
Dioxins and Furans (WHO – TEQ Humans and Mammals)	0.0056	0.001	No Limit Applies
Dioxins and Furans (WHO – TEQ Fish)	0.0062	0.001	No Limit Applies
Dioxins and Furans (WHO – TEQ Birds)	0.104	0.002	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Humans and Mammals)	0.00001	Non Detectable	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Fish)	0.00001	Non Detectable	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Birds)	0.00125	Non Detectable	No Limit Applies
PAHs Total	1.098	0.312	No Limit Applies

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Table 3.3.3 : Quarter 2 Extractive Results

Parameter	Result mg/m ³		Emission Limit mg/m ³
	Stream 1	Stream 2	
Hydrogen Fluoride	0.11	0.22	1
Mercury and its compounds	Non Detectable	Non Detectable	0.05
As, Sb, Pb, Cr, Cu, Mn, Ni, V and their compounds	0.022	0.002	0.5
Cadmium, Thallium and their compounds	0.0004	Non Detectable	0.05

Table 3.3.4 : Quarter 3 Extractive Results

Parameter	Result mg/m ³		Emission Limit mg/m ³
	Stream 1	Stream 2	
Particulate Matter	0.73	2.06	20
TOC	0.50	2.05	20
Hydrogen Chloride	8.89	13.1	30
Oxides of Nitrogen	207	194	400
Carbon Monoxide	17.6	50.5	100
Sulphur Dioxide	22.5	15.8	200
Ammonia	8.66	7.11	No Limit Applies
Nitrous Oxide	15.4	15.3	No Limit Applies
Hydrogen Fluoride	0.16	0.25	1
Mercury and its compounds	0.0006	0.002	0.05
As, Sb, Pb, Cr, Cu, Mn, Ni, V and their compounds	0.015	0.021	0.5
Cadmium, Thallium and their compounds	Non Detectable	0.0008	0.05
Dioxins and Furans (I -TEQ)	0.001	0.004	0.1
Dioxins and Furans (WHO – TEQ Humans and Mammals)	0.001	0.003	0.1
Dioxins and Furans (WHO – TEQ Fish)	0.001	0.004	0.1
Dioxins and Furans (WHO – TEQ Birds)	0.002	0.010	0.1
Dioxin-like PCBs (WHO – TEQ Humans and Mammals)	Non Detectable	Non Detectable	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Fish)	Non Detectable	Non Detectable	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Birds)	Non Detectable	Non Detectable	No Limit Applies
PAHs Total	0.312	6.668	No Limit Applies

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Table 3.3.5 : Quarter 4 Extractive Results			
Parameter	Result mg/m³		Emission Limit mg/m³
	Stream 1	Stream 2	
Hydrogen Fluoride	0.22	0.18	1
Mercury and its compounds	Non Detectable	Non Detectable	0.05
As, Sb, Pb, Cr, Cu, Mn, Ni, V and their compounds	0.002	0.002	0.5
Cadmium, Thallium and their compounds	Non Detectable	Non Detectable	0.05

3.3.2 Continuous Monitoring

The Continuous Monitoring Equipment (CEMS) for the period of 1st January 2012 through to 31st December 2012 was in service for 100% of the WID operational hours. The equipment is meticulously serviced, maintained, and calibration checks are routinely conducted.

The maximum half hourly average, and daily averages are reported to the Environment Agency on a bi-annual basis. The data is also uploaded on to the companies' website on a monthly basis and can be viewed at: www.veoliaenvironmentalservices.co.uk

3.3.3 Annual Emissions

The annual mass emissions of the periodically monitored parameters are summarised in Table 3.3.6

Table 3.3.6 : Annual Mass Emissions		
Parameter	Units	Annual Total
Hydrogen Fluoride	Kg	260
Mercury	Kg	0.02
Arsenic	Kg	0
Cadmium	Kg	0
Copper	Kg	0.08
Nickel	Kg	0.35
Manganese	Kg	0.36
Antimony	Kg	0.23
Lead	Kg	0.19
Thallium	Kg	0
Dioxins and Furans	Kg	0.000005127
PAHs	Kg	2.5
PCBs	Kg	0.000311989

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3.0 ENVIRONMENTAL CONTROLS

The management and staff of Integra South West ERF are among the most highly qualified and experienced in the sector. Reliable environmental controls and a robust management system ensure that compliance with the Waste Incineration Directive and EPR Permit is achieved.

VES Staff are aware of the environmental impacts of their work and exercise an appropriate standard of good house keeping, proportionate to the impacts of any potential emissions. Training and competency of staff is controlled by the VES Business Management System. The Management System covers training, awareness and competence. The company identifies training requirements of its employees and provides suitable resources to ensure they have the required knowledge, skills and expertise to carry out their duties.

Table 4.1 : Facility Compliance Summary

Exceedence of Permitted Limits	None
Abnormal Operations	None
Enforcement Notices	None
Complaints	None