

**Integra North Energy Recovery Facility
 EPR BJ7786IV
 Annual Performance Report 2011**

1.0 INTRODUCTION

This document represents the Annual Performance Report for Integra North Energy Recovery Facility (Chineham 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 4.1.2 of Environmental Permit BJ7786IV:

'A report or reports on the performance of the activities over the previous year shall be submitted to the Agency by 31st January (or other date agreed in writing by the Agency) each year.'

2.0 FACILITY INFORMATION

Plant Operator	Veolia Environmental Services Hampshire Limited
Name of Facility	Integra North Energy Recovery Facility
EPR Permit Number	BJ7786IV
Facility Address	Whitmarsh Lane Reading Road Chineham Basingstoke Hampshire RG23 8LL
Telephone Number	01256 317000
Fax Number	01256 317101

Integra North Energy Recovery Facility (Chineham ERF) is the first of its kind to be built in Hampshire and is a leading example of best environmental practise for waste treatment. The waste produced by residents of the North 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 is used to generate electricity supplied to the National Grid. Strict environmental controls and proven operating

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experience ensure the Integra North ERF is a centre of excellence and a benchmark for the industry.

2.1 Technical details of the plant:

- Maximum Permitted Refuse throughput – 102,000 tonnes per annum, with approximately 11 tonnes per hour burning capacity
- Storage capacity – four days full plant capacity
- Number of tipping bays – 5
- Steam output – 38 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 8MW

The Integra North 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

Waste Code	Description
20 03 01	Mixed Municipal Waste
20 03 02	Market Waste
20 03 03	Street Cleaning Residues
20 03 07	Bulky Waste
19 12 12	Other Wastes From Mechanical Treatment of Wastes

3.0 OPERATIONAL INFORMATION

Table 2.2 : Operational Details

Operational hours	8220	Hours
Total Waste Incinerated	98,562	Tonnes
Electricity Exports to National Grid	49,010	MWHrs
Metals Recovered	1662	Tonnes
Incinerator Bottom Ash Produced	20,593	Tonnes
APC Residues	2904	Tonnes

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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 Minosus, another Veolia site located in Bostock, Cheshire, 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.

The results compared with permitted emission limits are summarised in Table 3.2.1

Table 3.2.1: Releases to Sewer				
Date	Parameter			
	Cadmium ug/l	Limit ug/l	Mercury ug/l	Limit ug/l
30.03.2011	<1.5	30	0.010	50
31.03.2011	<1.5	30	0.019	50
01.04.2011	1.7	30	0.016	50
13.04.2011	2.3	30	0.013	50
19.10.2011	<1.5	30	<0.002	50
20.10.2011	<1.5	30	<0.002	50
21.10.2011	<1.5	30	0.0032	50
28.10.2011	9.90	30	0.840	50
31.10.2011	7.10	30	0.540	50

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01.11.2011	6.70	30	0.510	50
02.11.2011	3.20	30	0.110	50
03.11.2011	<1.5	30	0.049	50
04.11.2011	<1.5	30	0.033	50
05.11.2011	<1.5	30	0.026	50
06.11.2011	<1.5	30	0.021	50
07.11.2011	<1.5	30	0.015	50
08.11.2011	<1.5	30	0.008	50
09.11.2011	<1.5	30	0.009	50
10.11.2011	<1.5	30	0.009	50
11.11.2011	<1.5	30	0.012	50
14.11.2011	<1.5	30	0.008	50
16.11.2011	<1.5	30	0.005	50
17.11.2011	<1.5	30	0.007	50
18.11.2011	<1.5	30	0.007	50
19.11.2011	<1.5	30	0.006	50
20.11.2011	<1.5	30	0.010	50
21.11.2011	<1.5	30	0.012	50
22.11.2011	<1.5	30	0.006	50
24.11.2011	<1.5	30	0.002	50
25.11.2011	<1.5	30	0.003	50
26.11.2011	<1.5	30	<0.002	50
27.11.2011	<1.5	30	0.005	50

Typically, no more than 2 batch discharges are made to sewer within any one month period. Due to a recirculation pump failure an uncharacteristically high number of batch discharges were made to sewer during the months of October and November 2011. Once repairs to the pumps had been made, the site returned to usual operations and began to recycle water more efficiently within the process. The number of batch discharges will greatly decrease as a result.

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	
Mercury and its compounds	0.004	0.05
As, Sb, Pb, Cr, Cu, Mn, Ni, V and their compounds	0.019	0.5
Cadmium, Thallium and their compounds	Non detectable	0.05

Table 3.3.3 : Quarter 2 Extractive Results		
Parameter	Result mg/m³	Emission Limit mg/m³
	Stream 1	
Particulate Matter	1.59	20
TOC	1.02	20
Hydrogen Chloride	6.47	30
Oxides of Nitrogen	196	400
Carbon Monoxide	12.3	100
Sulphur Dioxide	13.8	200
Ammonia	9.53	No Limit Applies
Nitrous Oxide	12.7	No Limit Applies
Hydrogen Fluoride	Non detectable	2
Mercury and its compounds	0.0009	0.05
As, Sb, Pb, Cr, Cu, Mn, Ni, V and their compounds	0.011	0.5
Cadmium, Thallium and their compounds	0.0002	0.05
Dioxins and Furans (I -TEQ)	0.006	0.1
Dioxins and Furans (WHO – TEQ Humans and Mammals)	0.005	No Limit Applies
Dioxins and Furans (WHO – TEQ Fish)	0.005	No Limit Applies
Dioxins and Furans (WHO – TEQ Birds)	0.009	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Humans and Mammals)	0.00002	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Fish)	0.00001	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Birds)	0.0017	No Limit Applies

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PAHs Total	0.712	No Limit Applies
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Table 3.3.4 : Quarter 3 Extractive Results

Parameter	Result mg/m ³	Emission Limit mg/m ³
	Stream 1	
Mercury and its compounds	Non detectable	0.05
As, Sb, Pb, Cr, Cu, Mn, Ni, V and their compounds	0.034	0.5
Cadmium, Thallium and their compounds	Non detectable	0.05

Table 3.3.5 : Quarter 4 Extractive Results

Parameter	Result mg/m ³	Emission Limit mg/m ³
	Stream 1	
Particulate Matter	1.45	20
TOC	0.58	20
Hydrogen Chloride	5.66	30
Oxides of Nitrogen	174	400
Carbon Monoxide	18.6	100
Sulphur Dioxide	13.9	200
Ammonia	6.24	No Limit Applies
Nitrous Oxide	15.7	No Limit Applies
Hydrogen Fluoride	0.44	2
Mercury and its compounds	0.001	0.05
As, Sb, Pb, Cr, Cu, Mn, Ni, V and their compounds	0.013	0.5
Cadmium, Thallium and their compounds	0.001	0.05
Dioxins and Furans (I -TEQ)	0.003	0.1
Dioxins and Furans (WHO – TEQ Humans and Mammals)	0.003	No Limit Applies
Dioxins and Furans (WHO – TEQ Fish)	0.003	No Limit Applies
Dioxins and Furans (WHO – TEQ Birds)	0.004	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Humans and Mammals)	0.002	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Fish)	0.0001	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Birds)	0.006	No Limit Applies
PAHs Total	0.521	No Limit Applies

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3.3.2 Continuous Monitoring

The Continuous Monitoring Equipment (CEMS) for the period of 1st January 2011 through to 31st December 2011 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	54.21
Mercury	Kg	0.40
Arsenic	Kg	0.03
Cadmium	Kg	0.06
Copper	Kg	0.64
Nickel	Kg	1.28
Manganese	Kg	1.57
Antimony	Kg	0.08
Lead	Kg	0.52
Thallium	Kg	0
Dioxins and Furans	Kg	0.000001848
PAHs	Kg	0.240
PCBs	Kg	0.000000690

3.0 ENVIRONMENTAL CONTROLS

The management and staff of Integra North 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

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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