

**Integra South East Energy Recovery Facility
EPR BJ7107IJ
Annual Performance Report 2016**

1.0 INTRODUCTION

This document represents the Annual Performance Report for Integra South East Energy Recovery Facility (Portsmouth ERF) and has been submitted in compliance with Chapter IV Article 62 of the Industrial Emissions Directive (IED):

'The operator shall supply the competent authority, on request, with data enabling the competent authority to verify compliance with the following: (a) give an account of the running of the process and the emissions into air and water compared with the emission standards in the IED.'

2.0 FACILITY INFORMATION

Plant Operator	Veolia Environmental Services Hampshire Limited
Name of Facility	Integra South East Energy Recovery Facility
EPR Permit Number	BJ7107IJ
Facility Address	Quartermaine Road Portsmouth Hampshire PO3 5QH
Telephone Number	0203 567 6182

Portsmouth ERF was the third of its kind to be built in Hampshire and is leading example of best environmental practice for waste treatment. Waste produced by Portsmouth City and South East Hampshire Districts is processed 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 experience ensure the Portsmouth 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 – 8
- 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,

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discharging into a 65 metre high chimney

- Energy produced – maximum generating capacity 14MW

The Portsmouth 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

European Waste Catalogue Number	Description
02	Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing
02 03 04	Materials unsuitable for consumption or processing
15	Waste packaging, absorbents, wiping cloths, filter materials, and protective clothing not otherwise specified
15 01 06	Mixed packaging
18	Wastes from human natal care, diagnosis, treatment or prevention of disease in humans
18 01 04	Wastes whose collection and disposal is not subject to special requirements in order to prevent infection (for example dressings, plaster casts, linen, disposable clothing, diapers)
19	Wastes from Waste Management Facilities, Off-site Waste Water Treatment Plants and Preparation of Water Intended for Human Consumption and Water for Industrial Use.
19 02	wastes from physico/chemical treatments of waste (including dechromataion, decyanidation, neutralisation)
19 02 10	combustible wastes other than those mentioned in 19 02 08 and 19 02 09
19 08	Wastes from water treatment plants not otherwise specified
19 08 01	Screenings
19 08 09	Grease and oil mixture from oil/water separation containing only edible oil and fats
19 12	Wastes from mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified.
19 12 01	paper and cardboard
19 12 08	textiles
19 12 10	combustible waste (refuse derived fuel)
19 12 12	other wastes from the mechanical treatment of wastes

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20	Municipal Waste (Household waste and similar commercial, industrial and institutional wastes) Including separately collected fractions.
20 01	separately collected fractions (except 15 01)
20 01 01	paper and cardboard
20 01 08	biodegradable kitchen and canteen waste
20 01 10	clothes
20 01 11	textiles
20 01 39	plastics
20 01 99	Other fractions not otherwise specified (Hygiene waste collected from domestic facilities that is not classified as clinical waste)
20 02	Garden and Park Wastes (Including Cemetery Waste).
20 02 01	biodegradable waste
20 03	Other Municipal Wastes.
20 03 01	mixed municipal waste
20 03 02	market waste
20 03 03	street cleaning residues
20 03 07	bulky waste

3.0 OPERATIONAL INFORMATION

Table 2.2 : Operational Details

Operational hours combined	16,830	Hours
Total Waste Incinerated	203,721	Tonnes
Electricity Exports	110,014	MWHrs
Metals Recovered	4940	Tonnes
Incinerator Bottom Ash Produced	38,010	Tonnes
APC Residues	5187	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 Longparish, 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 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.

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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 these final disposal points.

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, and cross referenced against the Environmental Permit and Trade Effluent emission limit values.

For the duration of 2016, 100% of water used for the running of the facility was recycled within the process, no discharges were made to sewer.

3.3 Flue Gasses

All gaseous emissions generated during the combustion process pass through an extensive flue gas cleaning process which begins in the boiler itself where good combustion conditions are maintained and Urea is added to treat oxides of nitrogen. Gasses exit the boiler and enter a gas scrubber where hydrated lime is injected to neutralise acid gasses, activated carbon is added to remove metals and dioxins, and finally gasses pass through the bag filter house to remove any remaining particulates. The cleaned gasses are finally released into the atmosphere through the chimney stacks.

In compliance with the IED and EPR Permit requirements, 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 Agency's Monitoring Certification Scheme (Mcerts).

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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		✓		✓	

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

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Table 3.3.2 : Quarter 1 Extractive Results

Parameter	Result mg/m ³		Emission Limit mg/m ³
	Stream 1	Stream 2	
Particulate Matter	2.0	4.3	20
TOC	0.90	0.41	20
Hydrogen Chloride	5.9	9.9	30
Oxides of Nitrogen	219	208	400
Carbon Monoxide	9.0	6.2	100
Sulphur Dioxide	18.7	15.3	200
Ammonia	1.3	1.3	No Limit Applies
Nitrous Oxide	18.2	15.5	No Limit Applies
Hydrogen Fluoride	<0.035	<0.037	1
Mercury and its compounds	0.0024	00090	0.05
As, Sb, Pb, Cr, Cu, Mn, Ni, V and their compounds	00090	0.049	0.5
Cadmium, Thallium and their compounds	<0.00077	0.0024	0.05
Dioxins and Furans (I -TEQ)	0.0063	0.0045	0.1
Dioxins and Furans (WHO – TEQ Humans and Mammals)	0.0060	0.0060	No Limit Applies
Dioxins and Furans (WHO – TEQ Fish)	0.0060	0.0043	No Limit Applies
Dioxins and Furans (WHO – TEQ Birds)	0.0060	0.0090	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Humans and Mammals)	0.0000016	0.00000081	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Fish)	0.00000092	0.00000092	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Birds)	0.00040	0.00000027	No Limit Applies
PAHs Total	8.2	0.63	No Limit Applies

Table 3.3.3 : Quarter 2 Extractive Results

Parameter	Result mg/m ³		Emission Limit mg/m ³
	Stream 1	Stream 2	
Mercury and its compounds	0.0014	0.0019	0.05
As, Sb, Pb, Cr, Cu, Mn, Ni, V and their compounds	0.033	0.027	0.5
Cadmium, Thallium and their compounds	<0.00080	<0.0010	0.05

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Table 3.3.4 : Quarter 3 Extractive Results

Parameter	Result mg/m ³		Emission Limit mg/m ³
	Stream 1	Stream 2	
Particulate Matter	0.082	0.28	20
TOC	0.46	1.0	20
Hydrogen Chloride	4.9	4.4	30
Oxides of Nitrogen	248	209	400
Carbon Monoxide	10.5	8.8	100
Sulphur Dioxide	11.7	11.5	200
Ammonia	2.3	3.3	No Limit Applies
Nitrous Oxide	17.5	17.5	No Limit Applies
Hydrogen Fluoride	0.10	0.069	1
Mercury and its compounds	0.0016	0.0013	0.05
As, Sb, Pb, Cr, Cu, Mn, Ni, V and their compounds	0.015	0.067	0.5
Cadmium, Thallium and their compounds	0.0051	<0.00093	0.05
Dioxins and Furans (I -TEQ)	0.0031	0.0045	0.1
Dioxins and Furans (WHO – TEQ Humans and Mammals)	0.0026	0.0038	No Limit Applies
Dioxins and Furans (WHO – TEQ Fish)	0.0038	0.0037	No Limit Applies
Dioxins and Furans (WHO – TEQ Birds)	0.0054	0.0117	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Humans and Mammals)	0.0000032	0.00048	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Fish)	0.00000053	0.000023	No Limit Applies
Dioxin-like PCBs (WHO – TEQ Birds)	0.0000040	0.0020	No Limit Applies
PAHs Total	5.6	0.24	No Limit Applies

Table 3.3.5 : Quarter 4 Extractive Results

Parameter	Result mg/m ³		Emission Limit mg/m ³
	Stream 1	Stream 2	
Mercury and its compounds	0.0011	0.0014	0.05
As, Sb, Pb, Cr, Cu, Mn, Ni, V and their compounds	0.018	0.011	0.5
Cadmium, Thallium and their compounds	<0.00076	<0.00074	0.05

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The Continuous Monitoring Equipment (CEMS) for the period of 1st January 2016 through to 31st December 2016 was in service for 100% of the IED 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	64.44
Mercury	Kg	1.12
Arsenic	Kg	25.36
Cadmium	Kg	0.64
Copper	Kg	3.76
Nickel	Kg	3.17
Manganese	Kg	1.27
Antimony	Kg	1.26
Lead	Kg	3.09
Thallium	Kg	0.90
Dioxins and Furans	Kg	0.000004920
PAHs	Kg	3.842
PCBs	Kg	0.000000126

4.0 USE OF REJECTED HEAT

Every practicable opportunity to use the heat rejected at the steam condensers for beneficial local use is investigated. To date no cost effective or practicable options have become available. The site will continue to identify all possible opportunities, and investigate the practicalities of its installation. All viable developments will be implemented at the earliest opportunity.

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5.0 ENVIRONMENTAL CONTROLS

The management and staff of Integra South East 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 Industrial Emissions Directive and EPR Permit is maintained.

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 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 5.1 : Facility Compliance Summary

Exceedence of Permitted Limits	None
Abnormal Operations	None
Enforcement Notices	None
Complaints	No Substantiated Complaints