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Consulting Engineers Limited

VERUS ENERGY OAK LIMITED
KELVIN ERF
NON-TECHNICAL SUMMARY

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1 INTRODUCTION

Verus Energy Oak Limited (herein referred to as Verus Energy), is developing the Kelvin Energy Recovery Facility (the Facility) to incinerate Municipal Solid Waste (MSW), Commercial and Industrial waste (C&I), and Refuse Derived Fuel (RDF), on land at Giffords Recycling Complex, West Bromwich.

1.1 The Applicant

Verus Energy was established to develop, construct and operate an energy recovery facility fuelled by non-hazardous waste materials at the Giffords Recycling Complex, West Bromwich.

Verus Energy is an independent specialist developer of advanced energy recovery plants in the UK which support the diversion of waste from landfill to the generation of recoverable energy.

1.2 The Site

The site is located within the existing Giffords Recycling Complex located on Kelvin Way, which lies approximately 1km to the south of West Bromwich town centre.

The southwestern area of the site lies within the boundary of CBS Packaging, which currently comprises hardstanding. The land within the remainder of the site currently comprises hardstanding areas, with industrial buildings associated with the Giffords Recycling Complex.

The buildings within the site are currently utilised for the manufacture and refurbishment of wooden pallets. The surrounding industrial area is characterized by large, modern industrial buildings and related facilities.

The site is accessed from Giffords Way which exits Kelvin Way to the north. Kelvin Way (A4182) offers connections to the M5 motorway, which runs along the southern and south-eastern boundaries of the site.

A site location plan is presented in Annex 1.

1.3 The Activities

The Facility will consist of a single Schedule 1 'installation activity' (as defined in the Environmental Permitting Regulations) and directly associated activities.

Table 1 - Environmental Permit Activities		
Type of Activity	**Schedule Activity**	**Description of Activity**
Installation	Section 5.1 Part A1 (b)	The co-incineration of pre-processed refuse derived fuel (RDF), MSW and C&I in a waste incineration plant with a nominal design capacity of greater than 3 tonnes per hour.
Directly Associated Activities		
Directly Associated Activities		The receipt and storage of MSW, C&I, and pre-processed waste (RDF) prior to incineration.
Directly Associated Activities		The handling, storage and transfer of residues for transfer off-site.
Directly Associated Activities		The export of electricity and potential export of heat from the Installation.

The Stationary Technical Unit (the Installation) includes the fuel reception; fuel storage; water, fuel oil and air supply systems; furnace; boiler; steam turbine/generator set; facilities for the treatment of exhaust gases; on-site facilities for treatment or storage of residues and waste water; stack; and devices and systems for controlling combustion operations and recording and monitoring conditions.

The nominal operating capacity of the Installation will be approximately 45 tonnes per hour of mixed non-hazardous wastes, with a nominal calorific value of 10 MJ/kg. The plant will have an estimated availability of around 8,000 hours. Therefore, the plant will have a nominal design capacity of approximately 360,000 tonnes per annum.

The facility will have a maximum capacity of up to 400,000 tonnes per annum. This will allow for variations in the net calorific value of the fuels being combusted (as shown in the firing diagram the range will be from 8 MJ/kg to 14 MJ/kg) and for the plant operating for more than the predicted 8,000 hours in a particular year.

2 DETAILS OF THE PROPOSED FACILITY

2.1 The Process

The Facility will include the following processes.

(1) Feedstock will be delivered to the facility and unloaded into the waste bunker.

(2) Feedstock would be transferred from the waste bunker into the feed hopper for the waste incineration plant.

(3) Emissions of nitrogen oxides would be controlled by the injection of ammonia into the combustion chamber.

(4) Hot gases from the waste combustion would be passed through a boiler to raise steam. The steam would then be passed to a steam turbine to generate electricity for export to nearby users and the National Grid and the potential to export heat to local heat users.

(5) The combustion gases would be cleaned in a flue gas treatment plant. This would include the injection of carbon, primarily to control dioxin emissions, the injection of hydrated lime to control acid gas emissions, and the use of a fabric filter to remove dust.

(6) The cleaned exhaust gases would be released to atmosphere via stack of up to 100m.

2.2 Raw Materials and Feedstocks

The Facility will utilise a number of different chemicals and raw materials within the different waste treatment processes. The chemicals and raw materials used at the site will include, but not be limited to, the following:

(1) hydrated lime;

(2) activated carbon;

(3) SNCR reagent;

(4) auxiliary fuel; and

(5) other boiler treatment chemicals.

These will be supplied to standard specifications offered by different suppliers. All chemicals will be handled in accordance with COSHH Regulations as part of the quality assurance procedures and full product data sheets will be available.

Periodic reviews of all materials used will be made in the light of new products and developments. Any significant change of material, where it may have an impact on the environment, will not be made without firstly assessing the impact and seeking approval from the EA.

The Operator will maintain a detailed inventory of raw materials used and will have procedures for the regular review of developments in raw materials used.

2.3 Emissions

2.3.1 Emissions to Air

Emissions from the Facility will be released from a stack of up to 100 m. Detailed air dispersion modelling of emissions from the stack has been undertaken. This has demonstrated that the impact of emissions to air will not have a significant impact on local air quality. All emissions to air from the Facility will comply with any relevant emission limits in the IED and other relevant Air Quality Guidance.

2.3.2 Emissions to Water and Sewer

There will not be any discharges of process effluent to water from the Facility.

Surface water run-off from all external areas of hardstanding (roads and storage areas) will be discharged into the surface water system having passed through interceptors. All surface water run-off will be discharged to sewer via the combined sewerage system for the site.

The Facility will give rise to process effluents of boiler blowdown, waste water from the water treatment process and washdown waters. Process effluents will be recirculated through the ash quench system. All excess process effluents which cannot be recirculated will be collected in the waste water system, prior to discharge to sewer. A Trade Effluent Consent for the discharge of effluent to sewer from the Facility will be applied for and secured prior to commencement of commissioning of the Facility.

2.4 Monitoring

There will be continuous monitoring of emissions to air of the flue gases from the Facility. The monitoring system will include monitoring of oxygen, carbon monoxide, hydrogen chloride, sulphur dioxide, nitrogen oxides, ammonia, VOCs, and particulates. Other pollutants will be monitored by spot measurements at regular intervals. All continuous emissions measurements will be recorded and operators will be alerted if emissions to air approach the permitted limits.

The results of all emissions monitoring will be reported to the EA.

Solid residues generated by the plant will be sampled on a regular basis to assess bottom ash burnout and to monitor the levels of specified pollutants.

The Facility will utilise modern control systems, which incorporate the latest advances in control and instrumentation technology. These will be used to control operations and optimize the operation of the Facility.

2.5 Ground Conditions

A Site Condition Report (Annex 2) has been developed which explains the ground conditions at the time of submission of the EP application.

All chemicals will be stored in an appropriate manner incorporating the use of suitable secondary and other measures (such as acid and alkali resistant coatings) to ensure appropriate containment and tertiary abatement measures.

All storage facilities for chemicals will be designed in accordance with Environment Agency Pollution Prevention Guidance PPG 2, PPG 3 and PPG 18. The potential for accidents, and associated environmental impacts, is therefore limited.

Deliveries of all chemicals will be unloaded and transferred to suitable storage facilities. Areas and facilities for the storage of chemicals and liquid hazardous materials will be situated within secondary containment. Secondary containment facilities will have capacity to contain whichever is the greater of 110% of the tank capacity or 25% of the total volume of materials being stored, in case of failure of the storage systems.

Tanker off-loading of chemicals will take place within areas where the drainage is contained with the appropriate capacity to contain a spill during delivery.

Upon cessation of the operation of the Facility, a Closure Plan will be implemented and any pollution risks will be removed from the site. The ground will be returned to a '*satisfactory state*'.

2.6 Technology Selection

The processes have been designed against the background of a detailed assessment of the prevailing environmental conditions at the site location, in order that the objectives of the Industrial Emissions Directive (IED) are met. Best Available Techniques will be employed at the Facility to minimize its impact upon the local environment.

A quantitative BAT Assessment has been completed for the Facility. This has demonstrated that the proposed techniques to be employed at the Facility will represent BAT in accordance with the relevant BAT guidance notes.

2.7 Residues

There will be two solid residues generated by the Facility:

- Incinerator bottom ash (IBA); and
- Air Pollution Control residues (APCr).

It is intended that the IBA from the Facility will be transferred to an off-site IBA processing facility. If a suitable recovery facility will not accept the residue, it may be transferred for disposal in an off-site non-hazardous landfill.

APCr is classified as hazardous and requires specialist disposal or treatment. It may be possible to send the residue to a waste treatment contractor, to be used to neutralise acids and similar materials. Using the residues in this way avoids the use of primary materials. If these options are not available then it will be sent to a suitably licensed hazardous waste landfill for disposal as a hazardous waste.

2.8 Management

Verus intend that the day-to-day operation of the Facility will be subcontracted to a third party organisation through an operation and maintenance (O&M) contract. Verus will ensure that, under the O&M contract, Verus retain control and ownership of the Facility and it will be operated to the exact instruction of Verus.

Verus will require the O&M contractor to implement a documented environmental management system. This will include incorporate the operating and maintenance instructions of the EPC contractor responsible for the design of the Facility.

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