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Consulting Engineers Limited

Ford Energy Recovery Facility

Ford Energy from Waste Limited

Non-technical Summary

ERF – EP Application

ENGINEERING CONSULTING

Document approval

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Document revision record

Revision no	Date	Details of revisions	Prepared by	Checked by
00	11/06/2020	First draft	KLH	JRS
01	25/06/2020	Updated following Client comments	KLH	JRS
02	16/12/2020	Updated for design changes	TJM	JRS

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1 Introduction

Ford Energy from Waste Limited (Ford EfW Ltd) is applying for an Environmental Permit (EP) for an Energy Recovery Facility (ERF), to incinerate incoming waste fuel, at the Ford Circular Technology Park (the 'Facility') on land off Rodney Crescent in Ford, Arundel, West Sussex.

1.1 The Applicant

Ford EfW Limited, a joint venture between Grundon Waste Management Limited and Viridor Waste Management Ltd, is registered in England (Company Number: 12272542) and has a registered address of Thames House, Oxford Road, Benson, Oxfordshire, OX10 6LX. The two businesses have a combined experience of 155 years in waste management, recycling and environmental services.

Grundon is a leading recycling and waste management company. Grundon owns and operates multiple industry-leading facilities enabling environmentally friendly methods of recycling and waste disposal. These facilities include Materials Recovery Facilities (MRFs), Waste Transfer Stations (WTS), and High Temperature Incinerators (HTIs) among others.

Viridor is a leading recycling, renewable energy and waste management company. Viridor have extensive experience in developing and operating Energy Recovery Facilities including Beddington ERF, Ardley ERF and Cardiff ERF, alongside recycling and waste management facilities.

This is the second time that the two businesses have worked together to develop a modern, state-of-the-art energy recovery facility, having previously developed (and now operating) the Lakeside EfW facility.

1.2 The site

The Facility will be located on land formerly host to the Ford Topblock concrete works, off Rodney Crescent, Ford, Arundel, West Sussex. The Facility will be located at an approximate National Grid Reference of SU 99436 03348, with the nearest postcode listed as BN18 0DB.

The Installation Boundary surrounding the ERF covers an area of approximately 4.6 hectares, with the site currently comprising an unoccupied former airfield and concrete works buildings with associated hardstanding. The site is surrounded predominantly by agricultural fields.

There is a wastewater treatment plant located to the south of the site, with an industrial estate and HMP Ford prison present further to the south. The small village of Ford lies to the northeast of the site, with the River Arun running approximately 900m to the east of the site.

A site location plan and Installation Boundary drawing are presented in Appendix A.

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 (DAAs).

Table 1-1: Environmental Permit Activities

Type of Activity	Schedule 1 Activity	Description of Activity
Installation	Section 5.1 Part A b)	The incineration of non-hazardous waste in a two stream waste incineration plant with a nominal design capacity of 32.5 tonnes per hour

Type of Activity	Schedule 1 Activity	Description of Activity
Directly associated activities		
Directly Associated Activities		Waste reception, storage and handling facilities
Directly Associated Activities		Combustion and energy recovery processes including the export of electricity to the National Grid
Directly Associated Activities		Flue gas treatment
Directly Associated Activities		Residue storage and handling facilities
Directly Associated Activities		Standby electrical generation to provide electrical power to the plant in the event of an interruption in the supply.

The Facility comprises waste reception; waste storage; water, fuel oil and air supply systems; two furnaces; two boilers; steam turbine/generator set; facilities for the treatment of exhaust gases; on-site facilities for treatment or storage of residues and waste water; two flues within an associated stack; and devices and systems for controlling combustion operations and recording and monitoring conditions.

The Facility will process up to 275,000 tonnes per annum (at the design capacity of 32.5 tph with an NCV of 10.5 MJ/kg and an availability of approximately 8,500 hours). However, assuming a more realistic operational availability of 8,000 hours, the nominal annual capacity of the Facility will be approximately 260,000 tonnes per annum.

2 Details of the proposed Facility

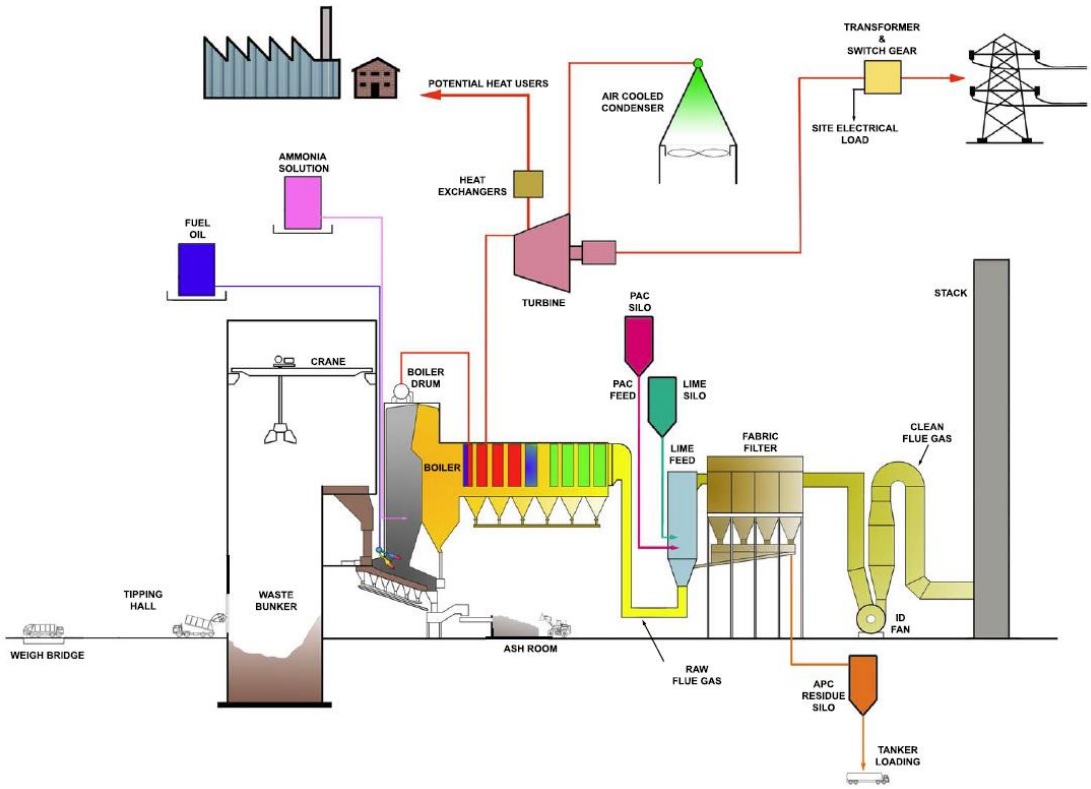
2.1 The process

The Facility will include the following processes:

1. Incoming waste would be delivered to the Facility and unloaded into the waste bunker.
2. Incoming waste would be transferred from the waste bunker into the feed hopper for the waste incineration plant.
3. Emissions of nitrous oxides would be controlled by the injection of ammonia solution 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, with 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 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 a stack of 85 m.

An indicative process diagram for the Facility is presented below.

Figure 1: Indicative Schematic of the Waste Incineration Process



2.2 Raw materials and feedstocks

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

- hydrated lime ($CaOH_2$);
- activated carbon;
- ammonia solution;
- mains water;
- non-hazardous mixed waste;
- auxiliary fuel; and
- water 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 Environment Agency (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 ERF will be released from a stack of 85 m. Detailed air dispersion modelling of emissions from the stack has been undertaken and is presented within Appendix E of the application.

The Waste incineration BREF was published by the European IPPC Bureau on 3 December 2019. The Waste incineration BREF introduces BAT-Associated Emission Limits (BAT-AELs) for all 'new plants', i.e. those which are granted an environmental permit after the Waste incineration BREF is published; this includes the Facility. The emission limits proposed within this application are in accordance with the BAT-AEL's stated in the Waste incineration BREF.

2.3.2 Emissions to water and sewer

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

Where practicable process effluents will be re-used within the process. Excess amount of process effluent will require discharge, which will either be discharged to sewer in accordance with a Trade Effluent Consent first obtained from the Sewerage Undertaker or tankered off-site for treatment at a suitably licensed waste management facility – to be confirmed during detailed design.

Surface water run-off from buildings, roadways and external areas of hardstanding will be discharged into the surface water drainage system. The surface water will pass through silt traps and oil interceptors, where appropriate, prior to being discharged into underground surface water

attenuation tanks. The surface water attenuation tanks will have a discharge off-site into an unnamed land drain prior to release into the River Arun.

Domestic effluents from welfare facilities will be discharged to foul sewer in accordance with a Trade Effluent Discharge Consent.

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, hydrogen fluoride, 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.

The Facility will utilise modern control systems, which incorporate the latest advances in control and instrumentation technology. These systems will optimise the operation of the Facility.

2.5 Ground conditions

A Site Condition Report (Appendix B of the application) has been developed which details the ground conditions at the time of submission of the EP application.

All chemicals will be stored in an appropriate manner to ensure appropriate containment and secondary and tertiary abatement measures where appropriate. 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, such as bunds. 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 site closure plan will be implemented, and any pollution attributable to the permitted activities will be assessed and where required 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) and Waste incineration BREF 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 – refer to Appendix F of the Application. This has demonstrated that the proposed techniques to be employed at the Facility will represent BAT in accordance with the relevant BAT guidance notes.

The following techniques are proposed to be employed at the Facility:

- SNCR with ammonia solution for the abatement of oxides of nitrogen;
- A moving grate for the combustion of waste;

- A dry system for the abatement of acid gases; and
- Lime to be used as a reagent for the abatement of acid gases.

2.7 Residues

The main solid residue streams arising from the Facility are:

1. Incinerator Bottom Ash (IBA) (including extracted oversize and ferrous material); and
2. 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.

Ferrous metals will be transported to a suitably licensed metals recycling facility for recycling, whilst oversize material will be transported to a suitably licensed waste management facility for disposal.

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, the APCr will be sent to a suitably licensed hazardous waste landfill for disposal as a hazardous waste.

2.8 Management

To ensure effective management of the Facility, Ford EfW Ltd will develop a documented management system that clearly defines the management structure for the Facility, as well as setting out the roles and responsibilities of all staff.

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