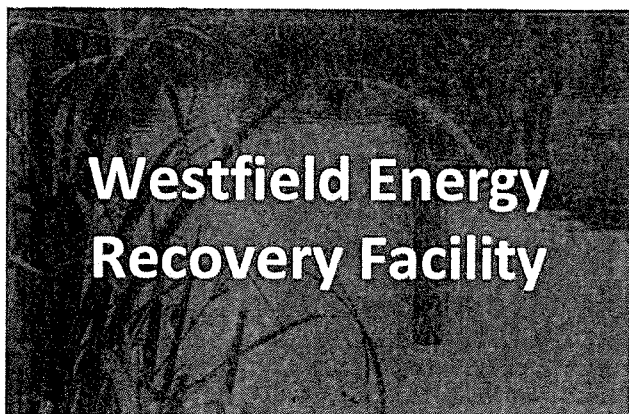
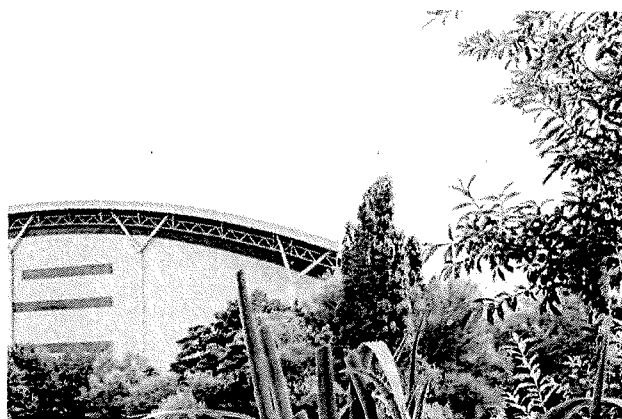
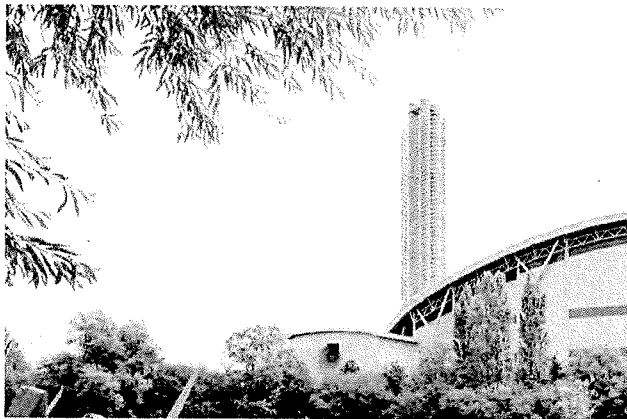


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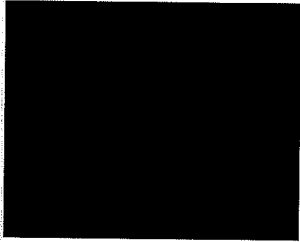


Westfield Energy Recovery Limited

Non-technical summary

ENGINEERING — CONSULTING

Document approval

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Document revision record

Revision no	Date	Details of revisions	Prepared by	Checked by
0	29/04/2019	For Client	JB2	JRS
1	02/05/2019	Update following Client comments	JB2	JRS

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1 Introduction

Westfield Energy Recovery Limited (herein referred to as WERL) is proposing to build the Westfield Energy Recovery Facility (the Facility) as a component of the Westfield Restoration and Regeneration Project at the Westfield Opencast Coal Site near Kinglassie, Fife.

The Facility will be fuelled by incoming residual non-hazardous waste / Refuse Derived Fuel (herein referred to as incoming waste).

1.1 The applicant

WERL is a subsidiary of Brockwell Energy Ltd set up for the development, build and operation of the Facility. WERL will subcontract the operation of the Facility to an Operations and Maintenance (O&M) sub-contractor who will be responsible for the day-to-day operation of the Facility. WERL will retain overall control and ownership of the Facility, and Brockwell will be responsible for the day to day management of WERL under a Management Services Agreement. For the purposes of PPC permit, WERL will be the Operator.

1.2 The site

The Facility will be located on brownfield land within the former Westfield Opencast Coal Site, which is approximately 3.2 km west of Kinglassie (and 2 km northeast of Ballingry) in Fife. The coal mine reportedly stopped production in 1998; the site for the Facility is approximately 2.94 ha and rectangular in shape, accessible via the B9097 and B920. The centre of the site is National Grid reference NT 208 983.

Currently the site is vacant industrial land with no standing structures present, though some ground-level slabs lie to the east of the area. The ground is mostly a bare gravel surface with some topsoil and shrubland towards the southern side of the site. Most of the area surrounding the site is in a similar condition.

A loch (known as The Northern Pond) lies approximately 50 m northeast of the installation boundary, while a small stream (Lochty Burn) flows close to the southern site border. Disused oxidation ponds lie immediately east of the site.

A disused rail siding runs west-east south of Lochty Burn, connecting with the Cardenden-Thornton passenger rail line at Redford.

1.3 The Activities

Activities covered by this application include:

1. Single line waste incineration plant processing incoming waste which is delivered to the site from off-site sources;
2. generation of heat and power and the export of power to the National Grid;
3. production of inert bottom ash material that will be transferred off-site to a suitably licensed waste treatment facility for recovery/disposal; and
4. generation of an air pollution control residue that will be transferred to a suitably licensed hazardous waste facility for disposal or recovery.

The Facility includes a single waste treatment/energy recovery line, waste reception, waste storage, fuel oil storage and supply systems for auxiliary burners, water and air supply systems, facilities for

the treatment of exhaust gases, on-site facilities for treatment or storage of residues and waste water, flues, stack, devices and systems for controlling operation of the Facility, recording and monitoring conditions.

The Facility has been designed as a combined heat and power plant and will have the capacity to provide heat to industrial users on the Westfield Green Energy Park, as well as other local heat users, and to supply power to the National Grid.

The Facility has been designed to thermally treat incoming waste with a range of net calorific values (NCVs) and will have a boiler with a thermal capacity of approximately 76 MWth. This equates to a nominal design capacity of 27 tph of waste with an NCV of 10 MJ/kg. However, as shown in the firing diagram, the Facility will be capable of processing waste with a range of NCVs (7-14 MJ/kg). At the lower end of the range, the Facility is capable of processing up to 34.223 tph of waste with an NCV of 7-8 MJ/kg. In accordance with the constraints of the planning permission, it is assumed that the Facility will be capable of processing up to 250,000 tpa.

An indicative process diagram for the Facility is presented in Appendix A.

2 Details of the proposed Facility

2.1 The Waste Incineration Plant

In outline the waste incineration process would be as follows:

1. Incoming waste will be delivered to the facility and unloaded into the waste reception bunker.
2. Fuel will be transferred from the waste bunker into the feed hopper for the boiler.
3. The boiler will utilise a conventional moving grate combustion system.
4. Residues from the combustion chamber would be removed in a water bath to contain dust releases and provide a gas seal.
5. Emissions of nitrogen oxides would be controlled by the injection of ammonia solution into the combustion chamber.
6. 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 the National Grid and potential for the export of heat to local users. At the time of submission of the application, there are no formal heat export contracts in place.
7. 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.
8. The cleaned exhaust gases would be released to atmosphere via a stack.

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. Incoming waste;
2. Low sulphur fuel oil;
3. Ammonia;
4. Lime (CaO);
5. Powdered Activated Carbon (PAC); and
6. boiler 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 SEPA.

In accordance with the management systems for the Facility, WERL 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 thermal treatment process will be released from an 80 m stack. Detailed air dispersion modelling of emissions from the stack has been undertaken and is presented in Appendix D. This has demonstrated that the impact of emissions to air will not have a significant impact on local air quality.

Emissions to air from the Facility will comply with the BAT AELs in the Draft Waste Incineration BREF. Monitoring reports from an operational facility utilising the proposed emission abatement systems from a reference plant have been provided within Appendix I. In addition, a list of reference plants for the proposed NO_x abatement supplier have been provided by the proposed technology provider, which is also provided within Appendix I. These demonstrate that the proposed NO_x abatement technology is capable of achieving the proposed emission limit for NO_x.

2.3.2 Emissions to water and sewer

The Facility will give rise to surface water run-off from roads, vehicle parking areas, building roofs, hard-standings and hard landscaped areas. Surface water will either be discharged into the surface water drainage systems via an interceptor or, in the case of runoff from roofs, be harvested for use within Facility operations. The surface water run-off from the Facility will be discharged into the Westfield Green Energy Park surface water drainage system.

There will be no process effluent requiring discharge during normal operation of the Facility. Where practicable process effluents will be re-used within the process. In the event of excess effluents being generated, such as during periods of maintenance, the excess effluents will be transferred off-site, via road tanker, to a suitable licensed waste management facility for further treatment.

The drainage systems for the Facility are subject to further design. Therefore, an indicative drainage layout for the facility is presented within Appendix A.

2.4 Monitoring

There will be continuous monitoring of emissions to air from the Facility plant for 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 or exceed the permitted limits.

The results of emissions monitoring will be reported to SEPA in accordance with the requirements of the PPC permit.

Solid residues generated by the Facility 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

An Initial Site Report (Appendix B) has been developed which explains the ground conditions at the time of submission of the PPC 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 loading and off-loading will take place within areas where the drainage is contained with the appropriate capacity to contain a spill during delivery.

Upon cessation of the activities on site, a Closure Plan will be implemented. Any pollution risks will be removed from the site, and 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 and the Facility is capable of complying with the requirements of the BAT AEL's as stated within the Waste Incineration BREF. Best Available Techniques will be employed for the Facility to minimize its impact on the local environment.

A quantitative BAT Assessment has been completed for the Facility, and is included in Appendix E. This has demonstrated that the proposed techniques to be employed at the Installation 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. There will not be any recovery of metals from the IBA at the Facility.

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 considered '*available*' then it 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 WERL will require that the O&M contractor develops 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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