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FORTUM GLASGOW LIMITED
SOUTH CLYDE ENERGY CENTRE
NON-TECHNICAL SUMMARY

Fichtner Consulting Engineers Limited
Kingsgate (Floor 3), Wellington Road North,
Stockport, Cheshire, SK4 1LW, United Kingdom
t: +44 (0)161 476 0032 f: +44 (0)161 474 0618 www.fichtner.co.uk

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6				
7				

TABLE OF CONTENTS

1 INTRODUCTION

Fortum (Glasgow) Limited (herein referred to as Fortum) is proposing to build the South Clyde Energy Centre (the Facility) waste incineration facility on land off Bogmoor Road, North Cardonald, Glasgow.

The Facility will be fuelled by incoming municipal and commercial non-hazardous waste sourced from within Glasgow City and the surrounding authorities within the Clyde Valley region.

1.1 The Application

Fortum Glasgow Ltd is a subsidiary of Fortum Oyj. Fortum Oyj is an energy company with core operations in 10 countries, focusing on the Nordic and Baltic countries, Poland, Russia and India. Fortum operates a number of power plants, including CHP plants, hydroelectric plants and nuclear plants which generate electricity and heat. Furthermore, Fortum provides waste services such as recycling, and other energy related services and products such as expert services for power plants and electric vehicle charging.

The Project Team responsible for the development of the project is as follows:

- Jyrki Kovanen;
- Janne Huovinen;
- Petri Härmä; and
- Jaakko Kuusisto.

1.2 The Site

The site is located on land adjacent to Bogmoor Road, North Cardonald, Glasgow, within the administrative region of Glasgow City Council, but with the boundary with Renfrewshire Council immediately to the west of the site.

The site comprises approximately 2.9 ha of land on a broadly rectangular shaped plot with a linear corridor extending from the south-west corner. The land on which the Facility will be located is 'brownfield'.

The approximate centre of the Facility is at British National Grid Reference 52813 65606.

The land has previously been developed as railway sidings, and since 2007 the site has been used by Tarmac Limited as an aggregate recycling facility and concrete batching plant. This operation runs under a lease arrangement and Tarmac intends to relocate in the Clydeport area or general locality when the Facility is developed.

The site is accessed directly from Bogmoor Road which in turn provides access to Renfrew Road. Turning left provides access to the A8 at the Sheildhall Road/Renfrew Road roundabout. The A8 Renfrew/Shieldhall Road provides connectivity along a dual carriageway to the M8 motorway with access both east (Junction 25) to Glasgow city centre and west (Junction 26) to Renfrew and Paisley. The A739 Langlands Road provides access north, via the Clyde Tunnel beneath the River Clyde, to north Glasgow and the A814 Victoria Park Drive South/Pointhouse Road.

The site is bounded to the north and east by a band of dense tree planting which extends alongside the M8 motorway, to the south by Bogmoor Road and to the west by a disused railway line bordering the North Cardonald industrial estate.

To the north of the site on Bogmoor Road is a 'Showman's site' comprising a combination of static and mobile homes and further afield residential properties on Hardgate Road/Luma Gardens to the north-east, albeit all these properties are separated from the site by the M8 motorway and A8 Shieldhall Road. To the south lies the urban area of Hillington, separated from the site by the North Cardonald industrial area and by both disused railway and passenger railway lines. The Glasgow Southern General Hospital is situated to the north of the site in the Shieldhall area, separated by the M8 motorway and A8 Renfrew/Shieldhall Road. There is also a school located within the urban area of Cardonald to the south.

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;

(2) generation of heat and power and export 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 incineration line, waste reception, waste storage, water, auxiliary fuel and air supply systems, boilers, 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 waste incineration plant, recording and monitoring conditions.

The Facility has been designed to export power to the National Grid. The turbine has been designed to generate up to 40 MWe of electricity (design maximum) and up to 12 MWth of heat. The Facility will have a parasitic load of 5 MWe. Therefore, the maximum export capacity of the Facility is 35 MWe. However, as the fuel quality will fluctuate and if heat is exported from the facility to local heat users in the future, the power exported will fluctuate.

The Facility has been designed to thermally treat waste with a net calorific value (NCV) of 8 – 15 MJ/kg. A firing diagram demonstrating the range of capacities for the installation is presented in Annex 1.

The maximum design capacity of the thermal treatment line is approximately 44 tonnes per hour of waste with an average NCV of 10 MJ/kg. This is represented by point P2 on the firing diagram. The Facility will have an assumed availability of approximately 8,000 hours per annum. On this basis, the Facility will have a nominal design capacity of approximately 352,000 tonnes per annum. However, allowing for a maximum availability of 8,760 hours per annum, the maximum capacity of the Facility is approximately 385,440 tonnes per annum.

An indicative process diagram for the Facility is presented in Annex 1.

2 DETAILS OF THE PROPOSED FACILITY

2.1 The Waste Incineration Plant

In outline the waste incineration process would be as follows:

(5) Pre-treated waste fuels will be delivered to the facility and unloaded into the waste reception bunker.

(6) Fuel will be transferred from the waste bunker into the feed hopper for the boiler.

(7) The boiler will utilise a conventional moving grate combustion system.

(8) Residues from the combustion chamber would be removed in a water bath to contain dust releases and provide a gas seal.

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

(10) 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.

(11) 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.

(12) 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) RDF;

(2) Low sulphur fuel oil;

(3) Ammonia;

(4) Lime (CaO);

(5) Activated carbon; and

(6) 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.

In accordance with the management systems for the Facility, Fortum 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 a 80m stack. Detailed air dispersion modelling of emissions from the stack has been undertaken and is presented in Annex 4. 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. Monitoring reports from operation facilities utilising emission abatement systems from a number of reference plants have been provided within Annex 9.

2.3.2 Emissions to Water and Sewer

The Installation will give rise to surface water run-off from roads, vehicle parking areas, building roofs, hard-standings and hard landscaped areas. Surface water will be discharged into the surface water drainage systems via a Hydrobrake system.

Where practicable process effluents will be re-used within the process. A small quantity of process effluent will require discharge, which will be discharged into the foul water sewer system.

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

A drainage layout for the facility is presented within Annex 1.

2.4 Monitoring

There will be continuous monitoring of emissions to air from the Facility plant for 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 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 (Annex 2) 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 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 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. Best Available Techniques will be employed at the Installation to minimize its impact on 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 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 installation Fortum 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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