Report

Canford EfW CHP Facility Environmental Permit Application

Non-technical Summary

For MVV Environment

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Document control

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Prepared By:	Adam Clegg
Reviewed By:	Andy Collins

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Registered Office: 23 Coldharbour Road, Bristol BS6 7JT Tel: +44(0)117 974 1086

24 Greville Street, Farringdon, London, EC1N 8SS Tel: +44(0)20 3873 4780

First Floor, Patten House, Moulders Lane, Warrington WA1 2BA Tel: +44(0)1925 937 195

Avenue du Port, 86c Box 204, 1000 Bruxelles Tel: +44(0)20 3873 4784R

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Purpose of this report

This document supports the application by MVV Environment Ltd (the 'Operator') for an Environmental Permit to operate a Part A(1) installation for an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility (the 'EfW CHP Facility') under the Environmental Permitting (England and Wales) Regulations 2016, as amended (EPR). It provides a non-technical summary of the proposed operations.

Site location

Name: Canford Energy from Waste Combined Heat and Power Facility

Address: Canford Resource Park
Arena Way
Magna Road
Poole
BH21 3BW

Grid reference: SZ 03441 96721

The EfW CHP Facility will be located on an area forming part of the Canford Resource Park (CRP) off Magna Road, north of Poole, in Dorset. The CRP includes a range of existing permitted waste management facilities including:

- Mechanical and Biological Treatment (MBT) facility;
- Materials Recovery Facility (MRF);
- Inert waste recycling facility;
- Landfill gas utilisation compound; and
- Implemented, but not operational, gasification and pyrolysis energy from waste facility.

The EfW CHP Facility will be sited on the land that the gasification and pyrolysis energy from waste facility currently occupies.

The nearest residential receptors to the site are located off Provence Drive approximately 670 m east of the EfW CHP Facility. Other sensitive receptors in close proximity to the site include the proposed Provence Drive business units and Canford Sports Club. Bournemouth, Christchurch and Poole (BCP) Council has declared two Air Quality Management Areas (AQMAs). One of these is located within, and around, Ashley Road, 4.6 km to the south of the EfW CHP Facility, whilst the other (Poole AQMA), is located along Commercial Road and its junctions with Station Road and Curzon Road (5.3 km to the south). At these distances, it is unlikely that the EfW CHP Facility will have significant impacts on the AQMAs. There are a number of designated habitat sites within 10 km, including the Dorset Heaths SAC/SPA/Ramsar immediately adjacent to the south/south-west site boundary.

Process description

The EfW CHP Facility will recover the energy contained within non-hazardous residual (i.e., non-recyclable) household, industrial and commercial waste to generate electricity for export to the local distribution network, and to provide heat to nearby consumers, subject to completion of final design and contractual negotiations.

The EfW CHP Facility is designed with a capacity of 260,000 tonnes per annum and will contain a single thermal treatment line incorporating an advanced moving grate furnace, high pressure steam boiler, air pollution control (APC) plant, continuous emissions monitoring system (CEMS) and a discharging chimney.

Waste will be delivered from pre-approved suppliers in enclosed or covered waste collection vehicles. Systems will be in place to monitor and track waste deliveries, including the amount of waste deposited. The waste collection vehicles will deposit the waste in a watertight bunker in an enclosed tipping hall. Air within the tipping hall will be extracted through the furnace to control odour and dust emissions.

Energy from the thermal treatment of waste will be recovered in the boiler in the form of high temperature, high pressure steam, which will be subsequently routed using insulated pipework to a steam turbine generator for the generation of electricity. The EfW CHP Facility is designed to export up to 28 MW_e of electricity to the national grid and local private wire electricity consumers, subject to suitable commercial arrangements being established.

The design of the steam turbine system will also allow for heat export to local heat consumers, in the form of low temperature hot water, subject to suitable commercial arrangements being established. Heat that cannot be recovered in the form of electricity or hot water will be dissipated through an air cooled condenser.

Waste gases from the thermal treatment process will be routed through the APC plant to ensure emissions are compliant with relevant emission limit values, before being discharged through a 110 m chimney.

The thermal treatment process will result in the production of solid residues, including incinerator bottom ash (IBA) and APC residues (APCr). Generation of these residues will be minimised through appropriate design and control of the combustion process to maximise burn-out of the waste on the grate, and by using an automated control system which optimises the dosing rates of reagents used in the APC plant based on the current level of emissions monitored by the CEMS, and based on the Operator's experience of operating similar sites in the UK and Germany. IBA will be sent off-site for recovery e.g., as a construction aggregate, whilst APCr will initially be sent off-site for disposal, although the Operator will continually review the viability of recovery options for APCr.

An emergency diesel generator will be used to provide emergency power to the EfW CHP Facility in the event of loss of off-site power and failure of island mode operation.

Managing the activities

MVV operates an Integrated Management System (IMS) certified to ISO 9001:2015 (quality management), ISO 14001:2015 (environmental management), ISO 45001:2018 (occupational health and safety management) and ISO 50001:2018 (energy management). The management system covers operations at its headquarters in Mannheim and its existing operational EfW and biomass plants in Germany and the UK.

The scope of MVV's IMS certification will be extended to cover the Canford EfW CHP Facility, including the receipt, handling and combustion of waste, and transfer of waste residues off-site. Where applicable, documented procedures will detail specifically how each of these activities will be managed and controlled for the EfW CHP Facility.

Emissions and monitoring

The thermal treatment of waste will generate flue gases containing a range of pollutants. These emissions will be controlled by effective process design, and control and optimisation of the combustion conditions. The residual emissions will be reduced to levels below the relevant emission limit values by the APC system prior to discharge to atmosphere. Techniques used to control emissions will include:

- Optimisation of the combustion process using an advanced control system to control emissions of oxides of nitrogen, carbon monoxide, volatile organic compounds, particulate matter and dioxins and furans.
- Selective non-catalytic reduction for control of oxides of nitrogen emissions.
- Dry scrubbing with hydrated lime and activated carbon for control of acid gases, mercury and dioxins and furans.
- Fabric filters for control of particulate matter and other metal emissions.
- Optimisation of boiler design to minimise dioxin and furan re-formation through rapid flue gas cooling and on-line and off-line boiler cleaning.

Emissions from the chimney will be continuously monitored using CEMS with a back-up CEMS installed on the chimney so there is no loss of data during e.g., equipment maintenance. The CEMS will be designed to comply with the Environment Agency's Monitoring Certification Scheme (MCERTS). Periodic extractive emissions tests will also be performed by an independent MCERTS accredited test team to validate the CEMS readings and to monitor emissions that are not required to be monitored continuously under the EPR.

The EfW CHP Facility aims to re-use and recycle all process waters, such as that from periodic boiler blowdown or washdown (cleaning) operations. These process waters will be re-used in the IBA quenching system. However, during intermittent on-line maintenance, certain process effluent streams from the water treatment plant may need to be discharged to foul sewer. These effluents will be neutralised in a neutralisation tank, with the pH, temperature and volumetric flow rate of the discharge continuously monitored under the requirements of a trade effluent discharge consent. Management procedures and controls will be in place to control fugitive emissions.

Impact assessment

Detailed impact assessments of emissions to air, odour, noise and flood risk have been completed to support the application. These assessments demonstrate that significant impacts are unlikely to occur as a result of the operation of the EfW CHP Facility. The air quality assessment was supported by a human health risk assessment (HHRA) to investigate total bodily exposure to dioxins and furans, and dioxin-like polychlorinated biphenyls (PCBs). Under worst-case, pessimistic assumptions, the HHRA identifies that, for the maximally exposed individual, any potential health effects would not be significant.

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