Riverside Energy Park

Environmental Permit Non-Technical Summary

December 2018 | Revision 0

CORY
RIVERSIDE ENERGY

Contents

1 Introduction

1.1.1 Cory Environmental Holdings Limited (trading as Cory Riverside Energy) (Cory or the Applicant) is applying to the Environment Agency (EA) under The Environmental Permitting (England and Wales) Regulations 2016 (Environmental Permitting Regulations) for an Environmental Permit (EP) to operate an integrated Energy Park, to be known as Riverside Energy Park (REP or the Proposed Development). REP would comprise waste treatment facilities together with an associated Electrical Connection.

1.2 The Applicant/Operator

1.2.1 Cory is registered in England (Company Number 05360864) and is the Applicant for the Proposed Development. Cory's registered address is 2 Coldbath Square, London, United Kingdom, EC1R 5HL.

1.2.2 Cory is a leading recycling, energy recovery and resource management company, with an extensive river logistics network in London. Cory secured consent for, constructed and now operates the existing RRRF that lies adjacent to the Proposed Development.

1.2.3 Cory is now progressing these plans for REP to maximise the use of its existing infrastructure and land holding and to further meet the needs for resource recovery and energy generation in UK and in London.

1.2.4 Further information on REP is provided on the dedicated project website at: http://www.riversideenergypark.com.

1.3 Project Description

1.3.1 REP would be constructed on land immediately adjacent to Cory's existing Riverside Resource Recovery Facility (RRRF), within the London Borough of Bexley and would complement the operation of the existing facility.

1.3.2 The main elements of REP would be as follows:

- Energy Recovery Facility (ERF): to provide thermal treatment of Commercial and Industrial (C&I) residual (non-recyclable) waste with the potential for treatment of (non-recyclable) Municipal Solid Waste (MSW);
- Anaerobic Digestion facility: to process food and green waste. Outputs from the Anaerobic Digestion facility would be transferred off-site for use in the agricultural sector as fertiliser or as an alternative, where appropriate, used as a fuel in the ERF to generate electricity;
- Solar Photovoltaic Installation: to generate electricity. Installed across a wide extent of the roof of the Main REP Building;
- Battery Storage: to store and supply additional power to the local distribution network at times of peak electrical demand. This facility would be integrated into the Main REP building; and
- On Site Combined Heat and Power (CHP) Infrastructure: to provide an opportunity for local district heating for nearby residential developments and businesses. REP would be CHP Enabled with necessary on site infrastructure included within the REP site.

1.3.3 The ERF and the Anaerobic Digestion facility would be regulated as Schedule 1 activities, in accordance with the Environmental Permitting Regulations. Therefore, the primary focus of this EP application is these two waste processing activities.

2 Details of the Proposed Facility

2.1 The Energy Recovery Facility (ERF)

2.1.1 The ERF would include a two-stream energy recovery process. This includes 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 ERF, including recording and monitoring flue gas conditions.

2.1.2 The turbine would be designed to generate up to 67.6 megawatts (MWe) and up to 30 MWth of heat. The ERF would have an estimated parasitic load of 6.1 MWe. Therefore, the maximum export capacity of the ERF would be 61.5 MWe.

2.1.3 The ERF has been designed to thermally treat incoming waste with a range of net calorific values (NCV's). The nominal design capacity of the thermal treatment lines would be approximately 41 tonnes per hour of waste, with an average NCV of 9 MJ/kg. The ERF would have an assumed availability of approximately 8,000 hours per annum. On this basis, the ERF would have a nominal design capacity of approximately 655,000 tonnes per annum. However, allowing for an availability of 8,760 hours per annum and a variability of incoming waste (NCV 7 – 13 MJ/kg), the maximum capacity of the ERF would be approximately 805,920 tonnes per annum. A firing diagram demonstrating the range of capacities of the ERF is presented in Drawing 2383-0006 refer to **Error! Reference source not found.**.

2.1.4 An indicative process diagram for the ERF is presented in Figure 1.

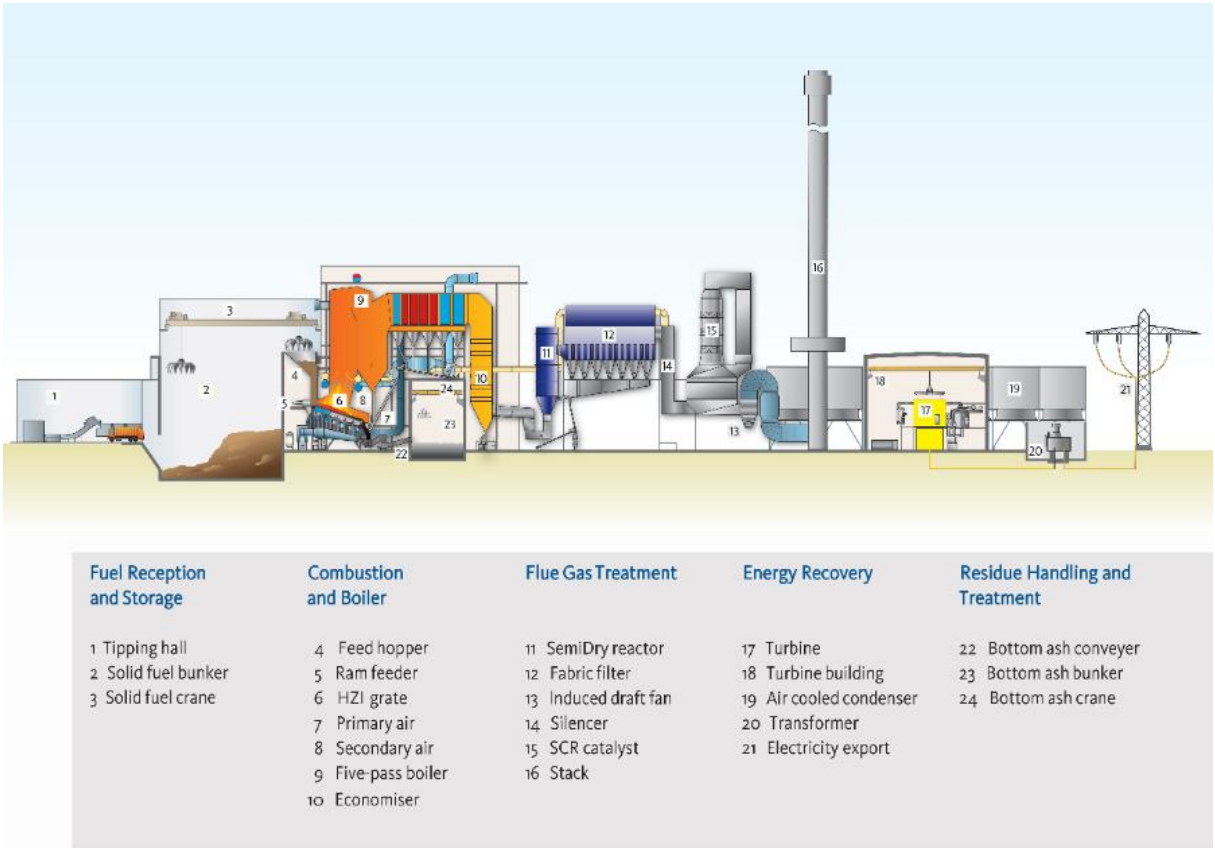


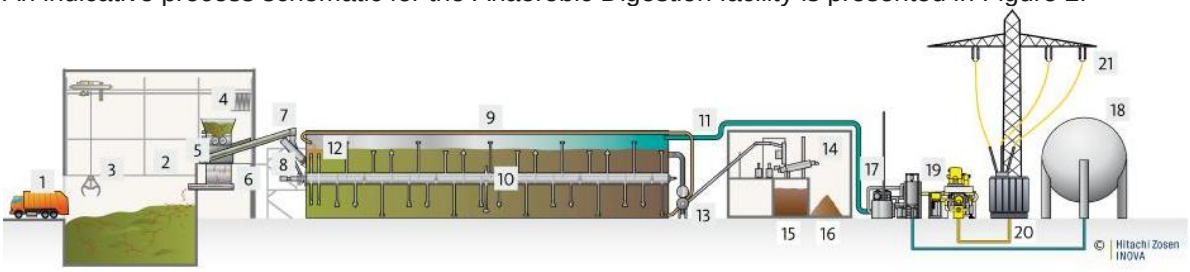
Figure 1 – Indicative schematic of the ERF

2.2 The Anaerobic Digestion Facility

2.2.1 The Anaerobic Digestion facility would operate a single anaerobic digestion line fed with organic material. The Anaerobic Digestion facility would have a design capacity of approximately 40,000 tonnes per annum. The biogas generated by the Anaerobic Digestion facility would be upgraded to a compressed natural gas (CNG) and/or upgraded for injection into a local gas network. CNG would be the preferred option if feasible and viable. However, if a CNG option is not feasible or viable then REP would incorporate a "CHP engine" which would use the biogas to generate electricity and heat, which could be used to support the anaerobic digestion process or added to energy available for export from REP. As the combustion of biogas in an engine on site would be part of the regulated anaerobic digestion activity, for the purpose of this application it has been detailed within the operating techniques within this application.

2.2.2 In addition, the digestate from the Anaerobic Digestion facility would be dried in a belt drier, and processed (through maturation) in the same storage and loading area until it achieves compliance to standards that would be required before use in agriculture, or for onward transportation to a further maturation facility. As an alternative, the digestate could be used as a fuel in the ERF to generate electricity.

2.2.3 An indicative process schematic for the Anaerobic Digestion facility is presented in Figure 2.



Waste Reception and Storage	Anaerobic Digestion	Discharge	Energy Utilization
1 Waste receiving	4 Shredder	12 Inoculation pipe	17 BioMethan biogas upgrading
2 Waste bunker	5 Sieve	13 Discharge system	18 Gas storage
3 Waste crane	6 Sieve rejects	14 Dewatering press or dryer	19 Combined heat and power plant
	7 Conveying system	15 Liquid digestate (optional)	20 Transformer
	8 Feeding system	16 Solid digestate	21 Electricity export
	9 Digester		
	10 Agitator		
	11 Biogas pipe		

Figure 2 – Indicative schematic of the Anaerobic Digestion facility

2.3 Raw Materials and Feedstocks

2.3.1 REP would utilise a number of different chemicals and raw materials within the waste treatment activities. The chemicals and raw materials used would include, but not be limited to, the following:

- Non-hazardous municipal and commercial and industrial waste;
- Organic waste;
- Low sulphur fuel oil;
- Ammonia solution (25% concentration);

- Hydrated lime;
- Activated carbon;
- Boiler treatment chemicals; and
- Mains water.

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

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

2.3.4 In accordance with documented management systems Cory would maintain a detailed inventory of raw materials used and would have procedures for the regular review of developments in raw materials used.

2.4 Emissions

Emissions to Air

2.4.1 Emissions from the ERF would be released to atmosphere via a 90m stack. Emissions to air from the ERF would be in accordance with the requirements of the Draft Waste Incineration Best Available Techniques Reference document (Draft Waste Incineration BREF) and other relevant Air Quality Guidance.

2.4.2 Emissions to air from the biogas engine would be released to atmosphere via an 8m stack. Emissions to air from the biogas engine would be in accordance with the requirements of the Medium Combustion Plant Directive (MCPD).

2.4.3 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 would not have a significant impact on local air quality.

Emissions to Water

2.4.4 REP would give rise to surface water run-off from roads, vehicle parking areas, building roofs, hard-standings and hard landscaped areas.

2.4.5 Where practicable process effluents would be re-used within the process.

2.4.6 There would not be any discharges of process effluents to water from REP.

2.5 Monitoring

2.5.1 There would be continuous monitoring of emissions to air from the ERF for oxygen, carbon monoxide, hydrogen chloride, hydrogen fluoride, sulphur dioxide, nitrogen oxides, ammonia, VOCs, and particulates. Other pollutants would be monitored by spot measurements at regular intervals. All continuous emissions measurements would be recorded and operators would be alerted if emissions to air approach the permitted limits.

2.5.2 Emissions from the biogas engines would be periodically monitored on an annual basis. Emissions would be monitored for sulphur dioxide, non-methane volatile organic compounds, carbon monoxide and nitrogen oxides.

2.6 Ground Conditions

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

2.6.2 All chemicals would 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.

2.6.3 Deliveries of all chemicals would be unloaded and transferred to suitable storage facilities. Areas and facilities for the storage of chemicals and liquid hazardous materials would be situated within secondary containment. Secondary containment facilities would 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.

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

2.6.5 Upon cessation of the activities on site, a Closure Plan would be implemented. Any pollution risks would be removed from the site, and the ground would be returned to a 'satisfactory state'.

2.7 Technology Selection

2.7.1 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 relevant guidance are met. Best Available Techniques (BAT) would be employed at REP to minimise its impact on the local environment.

2.7.2 In accordance with the requirements of the sector guidance on waste incineration, titled '*Incineration of waste (EPR5.01)*', quantitative cost benefit analysis has been completed for the ERF. This has demonstrated that the proposed techniques to be employed in the ERF would represent BAT, including the following:

- SCR 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.

2.8 Residues

2.8.1 There would be three solid residues generated by REP:

- Incinerator bottom ash (IBA);
- Air Pollution Control Residues (APCR); and
- Digestate.

2.8.2 IBA would be transferred to an off-site IBA processing facility for treatment/recycling. In the unlikely event that a suitable recovery facility is not available to accept the residue, it may be transferred for disposal in an off-site non-hazardous landfill.

2.8.3 APCR would be transferred for treatment/recycling in a licensed site waste management facility. Using the residues in this way avoids the use of primary materials. If these options are not available then it would be sent to a suitably licensed hazardous waste landfill for disposal as a hazardous waste.

2.8.4 Digestate would be transferred offsite to be spread on agricultural land to confer benefit.

2.9 Management

2.9.1 As part of its ongoing commitment to sustainable and responsible development and to regulatory compliance, Cory has developed and implemented a documented Environmental Management System (EMS) which covers its existing facilities. Measures would be undertaken to ensure that this would be communicated, understood and effectively maintained throughout the organisation to meet the requirements of the BS EN ISO 14001:2015 Environmental Management System Standard which has been certified to comply with the requirements of ISO:14001.

2.9.2 Cory would extend the existing management systems to incorporate REP. The EMS would form part of REP's management system that will establish an organisational structure, responsibilities, practices, procedures and resources for achieving, reviewing and maintaining the company's commitment to environmental protection.