Riverside Energy Park

Environmental Permit Appendices

APPENDIX:

H

ENVIRONMENTAL RISK ASSESSMENT

December 2018 | Revision 0 |

CORY
RIVERSIDE ENERGY

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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 Project Description

1.2.1 A detailed description of REP is presented in Sections 1.4 to 1.6 of the Supporting Information. 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.

1.2.2 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 The Objective

1.3.1 The aim of this report is to assess the environmental risks from the activities undertaken at the installation.

1.3.2 Within the permit application, the applicant is required to demonstrate that the necessary measures are in place to protect the environment and ensure that the Installation, throughout its life, will not pose an unacceptable risk to the environment.

1.3.3 This report will:

a. identify potential risks that the proposed activities may present to the environment;

b. screen out those that are insignificant and do not require detailed assessment;

c. identify potentially significant risks, where appropriate;

d. choose the right control measures, where appropriate; and

e. report the findings of the assessment.

1.3.4 This document has been developed to consider the requirements of Environment Agency Horizontal Guidance Note H1 Annexes A, C, H and F.

Risk Assessment Process

1.3.5 This assessment has been developed in accordance with the Environment Agency's Guidance Note H1. This guidance promotes four key steps:

a) identify risks from the activity;

b) assess the risks and check that they are acceptable;

c) justify appropriate measures to control the risks; and

d) present the assessment.

1.3.6 This assessment considers the risk of potential accidents associated with the proposed activities occurring at REP and the measures which will be implemented to limit accidents when REP is operational.

1.3.7 The assessment has been developed in accordance with the latest UK guidance published by the Department for Environment and Rural Affairs and the EA titled '*Risk assessments for your environmental permit*'.

Step 1 – Identify risks

1.3.8 The following report will identify the activities that present different types of risk to the environment associated with the operation of the Installation, including:

a. odour;

b. noise;

c. fugitive emissions; and

d. accidents.

Step 2 – Assess the Risk

1.3.9 The report will include an assessment of risks associated with the operation of the Installation, and will identify the:

a. hazard;

b. receptor; and

c. pathway.

Step 3 – Justify appropriate measures

1.3.10 The report will demonstrate that the Applicant has considered the risks associated with the operation of the regulated activities and its directly associated activities, and will identify the control measures which will be in place to demonstrate that the risks are being appropriately managed.

Step 4 – Present the Assessment

1.3.11 The assessment will conclude by presenting the following:

a. possibility of exposure;

b. consequence; and

c. the overall risk.

1.3.12 The report will present the Overall Risk applying the Environment Agency's H1 criteria, defined as:

a. insignificant;

b. not significant; or

c. significant.

2 Odour Risk Assessment and Management Plan

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Odorous emissions may occur during the delivery of waste, reception of waste and the storage and handling of waste prior to processing at the installation.	Immediate area. The nearest residential receptor to the Installation is located approximately 1km from the stack.	Air - Winds generally blow from a south westerly direction.	All wastes received at the installation will be unloaded inside the enclosed Waste Reception Hall. Wastes will be processed on a first-in, first-out principle. The reception halls will be retained at negative pressure. Air from waste reception areas will be combusted within the ERF as detailed in the Odour Management Plan (Appendix I).	Minimal.	Odour annoyance which will have more impact in summer when people are outdoors and temperatures are higher.	Not significant if managed well.

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Odorous emissions may occur during the preparation and feed of organics to the digester and during digestion.	Immediate area. The nearest residential receptor to the Installation is located approximately 1km from the stack.	Air - Winds generally blow from a south westerly direction.	The shredding of organics waste to be fed into the anaerobic digester is undertaken within an enclosed building. The waste reception area will be maintained at a negative pressure. The shredded feedstock is contained within pipework and sealed buffer tanks. The anaerobic digestion process is undertaken within a sealed digester and biogas collection system.	Minimal.	Odour annoyance which will have more impact in summer when people are outdoors and temperatures are higher.	Not significant if managed well.
Odorous emissions may occur during the processing of digestate after the anaerobic digestion plant prior to transfer off-site.	Immediate area. The nearest residential receptor to the Installation is located approximately 1km from the stack.	Air - Winds generally blow from a south westerly direction.	Air will be extracted from processing areas and combusted within the ERF.	Minimal.	Odour annoyance which will have more impact in summer when people are outdoors and temperatures are higher.	Not significant if managed well.

3 Noise Risk Assessment and Management Plan

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Noise from plant items such as the waste treatment processes, heat recovery boiler, exhaust air fans, the stack exhaust, steam turbine, cooling condensers, and noise radiation from the building envelope itself etc.	Immediate area. The nearest residential receptor to the Installation is located approximately 1km from the stack.	Sound propagation through air and the ground.	Noisy plant items, where practicable, will be installed inside buildings rather than outside and where appropriate they will be fitted with noise insulation. The Installation will be designed to reduce noise and tonal components. Regular maintenance of plant items.	Minimal.	Annoyance.	Not significant. Refer to Appendix C – Noise Assessment for further information on the impact of noise from the operation of REP.

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Noise from vehicle movements	Immediate area. The nearest residential receptor to the Installation is located approximately 1km from the stack.	Sound propagation through air and the ground.	The majority of waste deliveries to REP will be via barge. This will minimise noise impacts associated with the delivery of waste to REP.	Minimal.	Annoyance.	Not significant. Refer to Appendix C – Noise Assessment for further information on the impact of noise from the operation of REP.

4 Fugitive Emissions Risk Assessment and Management Plan

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Emission releases from main REP building when opening/closing doors.	Immediate area - air	Air, surface runoff, direct contact.	All waste handling activities will be undertaken within enclosed buildings.	Low	Nuisance, dust on clothing and cars	Insignificant
Spillage of waste during delivery and offloading	Immediate area – air, land, water	Air, surface runoff.	All waste unloading activities will be undertaken within enclosed buildings.	Low	Nuisance and dust	Insignificant
Dust from waste deliveries being blown off-site	Immediate area – air, land	Air, surface runoff.	All waste unloading activities will be undertaken within enclosed buildings.	Low	Nuisance and dust	Insignificant
Bottom ash discharge from the ERF	Immediate area - air	Air, surface runoff, direct contact.	Once removed from the combustion chamber by the bottom ash extractors, the bottom ash is then discharged to an ash quench system, prior to storage in a bottom ash storage area.	Low	Nuisance	Insignificant
Discharge of Air Pollution Control Residues (APCR) when emptying the APCR silo.	Immediate area– air, land	Air, surface runoff, direct contact.	When unloading the APCR silo the displaced air from the tanker will be recirculated into the silo to prevent releases into the atmosphere.	Low	Nuisance, release of hazardous dust	Insignificant

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Reagent and chemical discharges when filling silos.	Immediate area – air	Air, surface runoff, direct contact.	Reagents will be delivered in sealed tankers and off-loaded via a standard hose connection. Air displaced from the silo will be discharged through fabric filters on the top of the silo. Regular inspections/maintenance of abatement equipment. Unloading activities will only be undertaken in areas of hard standing with contained drainage.	Low	Nuisance	Insignificant
Lime leak during injection into APC system.	Immediate area – air	Air, surface runoff, direct contact.	Systems are enclosed and regular inspections/maintenance will be carried out. Reagent will be injected via a completely enclosed dosing and conveying system.	Low	Nuisance	Insignificant
Spillage of air pollution control reagents when capping or changing filter bags.	Immediate area – air, land	Air, surface runoff, direct contact.	Enclosed system. Kept under suction by the ID fan. The fabric filter will have a number of cells. When capping or changing bags, the relevant cell will be shut down for a sufficient time to enable the dust to settle.	Low	Nuisance, release of hazardous dust	Insignificant

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Spillage/leak of liquid chemicals, when tanker off-loading	Immediate area – air, land	Air, direct contact.	Deliveries will be from sealed tankers and off-loaded via a hose. Spillage will be prevented by good operating procedures, high tank level alarm/trips etc. Tanks will be located within suitably designed secondary containment.	Low	Liquid or vapour release	Insignificant
Spillage/leak when unloading from delivery vehicles chemical containers (IBC's, FIBC's, drums, etc)	Immediate area – air, land	Air, direct contact.	Deliveries will be from road vehicles and off-loaded via mobile plant. Potential leaks/spills will be prevented by experienced mobile equipment operators undertaking unloading activities. Unloading activities will only be undertaken in areas of hard standing with contained drainage. Chemical containers will be stored within suitably designed secondary containment.	Low	Hazardous liquid or vapour release	Insignificant
Release off-site of litter.	Immediate area – air, land	Air, direct contact.	Loading/unloading of all waste vehicles will be within enclosed buildings.	Low	Nuisance, dust on cars and road	Insignificant
Release of dusts from the transfer off-site of bottom ash	Immediate area – air, land	Air, direct contact.	Loading of bottom ash into vehicles will be undertaken within enclosed buildings. Bottom ash will be transferred off-site in covered road vehicles.	Low	Nuisance, dust on cars and road	Insignificant

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Re-suspension of dust from road surface, when site vehicles arrive/leave.	Immediate area – air, land, water	Air, surface runoff.	Control speeds, maintain the condition of the road, and take due care and attention of trafficking conditions.	Low	Nuisance, dust on cars and road	Insignificant

5 Accidents Risk Assessment and Management Plan

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Spill during unloading of chemicals	Immediate area – air, land, water	Direct contact	Training in unloading practices. Under manual control, continual observation. Impervious surfaces outdoors. Containment of drainage from chemical handling areas.	Unlikely	Low	Not significant
Overfilling of vessels	Local environment air, land, water	Surface runoff, wind.	Training in unloading practices. Under manual control, continual observation. Impervious surfaces outdoors. High level alarms. Secondary containment for storage vessels.	Unlikely	Low	Not significant
Leak of demineralised water treatment and boiler water treatment chemicals	Immediate area - water	Surface runoff	Secondary containment for storage vessels. Routine inspection and maintenance. Impervious surface indoor, separate drains for process water.	Unlikely	Pollution of surface water	Not significant
Flue gas leak	Local environment - air	Air	Design standards. Inspection and maintenance programme. Controls and alarms for pressure. Most of the systems are retained at negative pressure.	Very unlikely	Pollution of atmosphere, health impacts	Not significant

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Fuel storage failure in the CHP Plant	Immediate area - litter	Direct contact	Storage of waste in a dedicated waste storage bunker.	Unlikely	Litter	Insignificant
Control failure leading to combustion control upset	Local environment - air	Air - Winds generally blow from a south westerly direction.	Fuel inspection. Design of control system. Monitoring of combustion conditions. Maintenance of combustion air systems.	Unlikely	Pollution of atmosphere (short term), human health	Not significant
Failure of emission abatement equipment	Local environment - air	Air - Winds generally blow from a south westerly direction.	Regular maintenance, inspections. Redundancy of critical equipment or spares on stock.	Unlikely	Pollution of atmosphere, human health	Not significant
Failure of emission monitoring systems	Immediate area - air	Air - Winds generally blow from a south westerly direction.	Regular maintenance, inspections. Back-up CEMS system will be available.	Unlikely	Lack of data, public concern.	Not significant
Failure of containment (e.g. bund)	Immediate area – water, land	Surface runoff, wind, leaching.	Regular inspections of bunds.	Unlikely	Pollution of surface water	Not significant
Making the wrong connections to drains	Local environment – water	Direct contact, leaching.	Detailed site drainage plan, which will be available to all staff.	Low	Pollution of surface water	Not significant
Preventing incompatible substances coming into contact	Immediate area	Surface runoff, wind, direct contact.	Due care and attention.	Low	Low	Not significant

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Unwanted reactions	Immediate area	Surface runoff, wind, direct contact.	Due care and attention.	Unlikely	Low	Not significant
Loss of power	None	N/A	Back-up generation for combustion control systems. Controlled shutdown of the pulp and wastewater treatment plants.	Low	None	Not significant
Loss of compressed air	None	N/A	Multiple compressors, backup power supplies.	Low	None	Not significant
Loss of boiler water	None	N/A	Failsafe shutdown.	Low	None	Not significant
Steam leak to plant building/atmosphere	Noise, Visual	Air	Statutory design, fabrication and inspection standards for steam systems. Controls and alarms for pressure. Routine operator checks.	Low	Nuisance from noise and visual impact	Not significant
Residues handling failure	Immediate area – air, land, water	Direct contact	Training in residue handling practices. Contained transfer systems. Impervious surfaces in residue handling areas with designated drainage systems in areas where residues are stored.	Unlikely	Pollution of surface waters	Not significant

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Fires in FGT bag filter	Local environment	Air - Winds generally blow from a south westerly direction.	Temperature measurement in filter, fire-fighting fighting and detection systems.	Low	Dust, pollution of air	Not significant
Fire in furnace / feed system	Immediate area - air	Air	Furnace charging procedures / training. Level indicator in chute. Fire detection and fighting systems.	Low	Pollution of air	Not significant
Over pressurisation of the boiler	Immediate area – air	Direct contact	The boiler will be fitted with a pressure release valve which will open to prevent the risk of an explosion within the boiler.	Low	Pollution of air	Not significant
Fires in all waste reception storage and handling areas	Immediate area – air	Direct contact	Fire detection systems, water sprinklers and fire hoses. Fire marshals.	Low	Visual impact, pollution of air	Not significant
Generation of excess process waste waters from pulp plant	Immediate area – water	Surface runoff, direct contact	Excess containment capacity will be maintained in a Buffer tank within the waste water treatment plant. The Buffer tank will provide storage of process water prior to treatment.	Low	Pollution of water	Insignificant
Failure of the waste water treatment system	Immediate area – water	Surface runoff, direct contact	Treated process water is analysed prior to release.	Low	Pollution of water	Insignificant

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
			Each batch will be analysed prior to release to the lagoon. Any batch which does not achieve the required standards will be returned to the treatment plant for further treatment.			
Fire from ignition of lube oil leak	Immediate area – air	Wind, direct contact	Use of fire-proof lube oil. Fire detection and protection systems.	Low	Visual	Not significant
Contaminated fire water	Immediate area – water, land	Surface runoff, leaching.	Site drainage for external areas will be fitted with a shut-off alarm, linked to the fire detection systems to contain any firefighting water from external areas. Additional storage will be available from site kerbing.	Low	Pollution of surface water	Not significant
Failure to contain firewater	Land	Land, water, ground water	Maintenance of the shut-off valve within the drainage system. Inspection and maintenance of roadways and areas of hardstanding.	Unlikely	Release of chemicals to water	Not significant
Vandalism	Immediate area	Land, air, water	Security fences, controlled entrance to the site.	Low	Release of substances to any environment	Not significant

What Do You Do That Can Harm and What Could Be Harmed?			Managing the Risk	Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely it this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Flooding of the underground attenuation tanks.	Land, Water.	Flood water	Storm attenuation capacity to be maintained within the lagoon.	Low	Release of surface water	Insignificant

6 Detailed Assessment

6.1.1 The environmental impact of REP has been evaluated using the H1 software tool as described in Part 2 of Technical Guidance Note EPR-H1, presented in Appendix A. This assessment has been expanded by a more comprehensive Dispersion Modelling Assessment (refer to Appendix E) and a Noise Assessment (refer to Appendix C).

6.2 Emissions to Air

6.2.1 An assessment of emissions to air has been undertaken using the Environment Agency's assessment tool H1. The H1 assessment is presented in Appendix A of this report.

6.2.2 A more detailed assessment and discussion of the emissions to air has been presented within the Dispersion Modelling Assessment which is contained within Appendix E.

Habitats Assessment

6.2.3 There are a number of habitat sites within a 15km radius of the ERF stack. These habitat sites are presented in Table 6-1.

Table 6-1: Habitat features

Habitat Feature	Designation	X	Y	Distance from Stack (m)
Inner Thames Marshes / Rainham Marshes	SSSI	551371.81	181256.02	2089
Oxlees Woodland	SSSI	544721.81	176156.02	6442
Gilbert's Pit (Charlton)	SSSI	541871.81	178756.02	7741
Epping Forest	SSSI	540475.25	186542.53	10718
Epping Forest	SAC / SSSI	539771.81	188106.02	12205
Ingrebourne Marshes	SSSI	552071.81	182506.02	3293
Thorndon Park	SSSI	560221.81	191156.02	15128
Hainault Forest	SSSI	548065.25	193118.73	12595
Curtismill Green	SSSI	553221.81	195206.02	15106
Hornchurch Cutting	SSSI	554671.81	187356.02	8580
Purfleet Chalk Pits	SSSI	555971.81	178556.02	6889
West Thurrock Lagoon & Marshes	SSSI	557271.81	176756.02	8766
Lion Pit	SSSI	559771.81	178256.02	10641

Habitat Feature	Designation	X	Y	Distance from Stack (m)
Grays Thurrock Chalk Pit	SSSI	560771.81	179106.02	11478
Hangman's Wood & Deneholes	SSSI	563121.81	179456.02	13778
Swanscombe Skull Site	SSSI	559771.81	174356.02	12111
Bakers Hole	SSSI	561071.81	174506.02	13172
Darenth Wood	SSSI	557971.81	173106.02	11389
Farningham Wood	SSSI	553721.81	168706.02	12652
Ruxley Gravel Pits	SSSI	547571.81	170406.02	10349
Wansunt Pit	SSSI	551496.75	173931.84	6987
Crossness LNR	LNR	549321.81	179956.02	642
Lennes Abbey LNR	LNR	548821.81	178856.02	1829
BxB103	LWS	549682.5	178874.86	1744
M039	LWS	551359.88	181214.83	2064
M031	LWS	551065.88	181078.17	1743
B&DB103	LWS	550009.94	181463.14	1067
HvBI18	LWS	549897.75	181533	1067
B&DBI07	LWS	548078.81	182155.55	2040
Thamesmead Ecological Study Area	LWS	547854.75	181088.67	1614
BxL07	LWS	548135.31	180660.89	1257
BxBII02	LWS	548805.94	179545.8	1200
BxL16	LWS	547974.75	180474.75	1421
Lesnes Abbey	LNR	548850.06	178870.64	1806
M041	LWS	549428.69	180754.95	165
M041_A	LWS	549428.69	180773	183
BxBI14	LWS	548405	181084.09	1101
BxBI02	LWS	549686.06	180510	307

Habitat Feature	Designation	X	Y	Distance from Stack (m)
BxBII26	LWS	550642.06	179604.19	1595
BxBII25	LWS	548524.31	180780.12	886

6.2.4 An assessment of the impact of the Installation upon these habitat sites is presented the Dispersion Modelling Report, presented in Appendix D.

6.3 Emissions to Water or Sewer

6.3.1 There will no process emissions to water or sewer from REP. Process effluents will be re-used within the process.

6.3.2 Domestic effluents will be treated in a package water treatment plant.

6.4 Noise

6.4.1 The impact of noise from the Installation is considered in the noise assessment contained in Appendix C.

6.5 Visual Impact

6.5.1 For the purposes of this EP application, the visual impact associated with REP has not been considered as this is primarily a matter for the planning process.

6.6 Odour

6.6.1 An Odour Management Plan for REP has been developed. The Odour Management Plan is presented in Appendix I.

6.7 Photochemical Ozone Creation

6.7.1 Releases of CO, NO_2, SO_2 and benzene contribute to the generation of excess tropospheric ozone, while releases of NO remove ozone from the atmosphere. The annual releases of these substances can be ascribed a photochemical ozone creation potential (POCP). Values for the POCP values relative to ethylene are stated in Environment Agency Guidance Note H1 Annex F as:

- CO 2.7
- NO_2 2.8
- SO_2 4.8
- Benzene 21.8
- NO -42.7

6.7.2 The total POCP for the plant is calculated in the H1 Software Tool as 4,280 tonnes, on the assumption that all NOx is released as NO_2.

6.8 Global Warming

6.8.1 The assessment of the contribution of the Installation to Global Warming is complex. On the one hand, REP releases carbon dioxide to the atmosphere from the combustion of auxiliary fuel, waste fuels and biogas. On the other hand, REP generates electricity, which displaces other electricity generation, which would release carbon dioxide from the combustion of fossil fuels.

6.8.2 In accordance with the Environment Agency requirements, a Greenhouse Gas Assessment considers the direct and indirect emissions from the combustion of waste within the ERF; the processing of organic waste within the anaerobic digestion plant; power from solar panels; and compares this with the emissions produced if the electricity were produced in a conventional gas fired CCGT power station. The Greenhouse Gas Assessment is presented in Appendix D of the EP Application.

6.9 Disposal of Waste

6.9.1 Methods for reducing the impact from waste disposal are considered in section 2.9 of the supporting information.

7 Conclusions

7.1.1 As presented in this report, the Installation is considered to contain appropriate control measures and management systems to ensure that the Installation does not have any significant impacts upon the local environment.

Appendix A H1 Assessment