Notice of variation with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

T & L Sugars Limited

Thames Refinery
Factory Road
Silvertown
London
E16 2EW

Variation application number

EPR/MP3530HZ/V002

Permit number

EPR/MP3530HZ

Thames Refinery
Permit number EPR/MP3530HZ

Introductory note

This introductory note does not form a part of the notice

The following notice gives notice of the variation of an environmental permit.

The requirements of the Industrial Emissions Directive (IED) 2010/75/EU are given force in England through the Environmental Permitting (England and Wales) Regulations 2010 (the EPR) (as amended).

This Permit, for the operation of large combustion plant (LCP), as defined by articles 28 and 29 of the Industrial Emissions Directive (IED), is varied by the Environment Agency to implement the special provisions for LCP given in the IED, by the 1 January 2016 (Article 82(3)). The IED makes special provisions for LCP under Chapter III, introducing new Emission Limit Values (ELVs) applicable to LCP, referred to in Article 30(2) and set out in Annex V.

The Operator has chosen to operate this LCP under the ELV compliance route.

The rest of the installation is unchanged and continues to be operated as follows:

The installation is an existing sugar refinery, including on-site power generation and a lime slaking plant in Silvertown, London. Electrical power and steam is generated via a Combined Heat and Power (CHP) facility.

The Permit authorises the operation of the following activities specified within the Environmental Permitting (England and Wales) Regulations 2010

Section 6.8 Part A (1) d) (ii) - Treating and processing materials intended for the production of food products from vegetable raw materials at a plant with a finished product production capacity of more than 300 tonnes per day (average value on a quarterly basis)

The site also operates as an installation carrying out the activity Section 1.1 Part A (1) (a): “Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more” and is the subject of this variation. The two LCP numbers LCP392 and LCP393 were previously considered as one LCP with reference LCP278. The primary unit is a CHP (LCP393 with emission stack A2) which is the combustion plant for electrical power and steam generation within a gas fired gas turbine (GT) and waste heat boiler (WHB); this operates mainly as a combined cycle gas turbine (CCGT) with steam turbines. The 6 MW_{elec} GT has a net thermal input of 21 MWth and can operate in open cycle gas turbine (OCGT) mode with emission stack A3. The gas turbine has been fitted with steam injection as a means to control NOx emissions to air which only operates during CCGT mode. The WHB can operate to increase steam generation using the supplementary firing mode (i.e. added combustion when the GT is running) up to 43 MWth); or auxiliary firing up to 57 MWth, also called FD (force draft) firing, when the GT is not operating – thus acting as a emergency boiler.

The second LCP392 is a pair of Aalborg package boilers each 60 MWth (total 120 MWth) releasing up stack A1. These have low NOx burners and will be provided with flue gas recirculation (FGR) in 2016 to control NOx emissions to air. These can also feed steam to the steam turbines.

The plant has a back-up supply of fuel gas oil for both LCPs. The fuel gas oil is selected with low sulphur content to minimise sulphur dioxide emissions.

The site installed a set of four biomass boilers each 19 MWth (total 76 MWth) in 2011 as a replacement for the Aalborg boilers. These can only burn wheat husks. The biomass plant has not operated since being installed. The emission from the plant is actually a separate flue within the LCP393 stack (this is emission point A57 within the stack containing A2).

The site produces waste waters which are discharged to sewer. Onsite treatment facilities include pH adjustment and cooling for those effluents which may include acidic, alkaline or hot wastewater. Further treatment is undertaken off-site by the sewerage undertaker. The effluent treatment plant is classified as a 5.4 Part A (1) (a) (ii) activity.

The schedules specify the changes made to the permit.

The status log of a permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	**Date**	**Comments**
Application BP7711IF	Received 30/03/05	
Response to request for information	Requested 05/09/05	
Response to request for information	Requested 16/02/06	Response dated 22/02/06
Permit determined	29/03/06	
Application LP3934MT (Variation of permit BP7711IF)	Received 21/11/06	
Variation determined	21/01/08	
Application EPR/MP3530HZ/T001 (Full transfer of permit BP7711IF)	Duly made 13/08/10	
Transfer determined EPR/MP3530HZ	24/08/10	
Regulation 60 Notice sent to the Operator	31/10/14	Issue of a Notice under Regulation 60(1) of the EPR. Environment Agency Initiated review and variation to vary the permit.
Regulation 60 Notice response	31/03/15	Response received from the Operator.
Additional information received	24/07/15	Email response to request for further information (RFI) dated 04/06/16.
Variation determined EPR/MP3530HZ/V002 (PAS Billing ref: GP3538RT)	30/12/15	Varied permit effective 01/01/16

End of introductory note

Notice of variation

The Environmental Permitting (England and Wales) Regulations 2010

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2010 varies

Permit number

EPR/MP3530HZ

Issued to

T & L Sugars Limited ("the operator")

whose registered office is

Thames Refinery
Factory Road
Silvertown
London
E16 2EW

company registration number 07318607

to operate an installation at

Thames Refinery
Factory Road
Silvertown
London
E16 2EW

to the extent set out in the schedules.

The notice shall take effect from 01/01/2016

Name	Date
Anne Nightingale	**30/12/2015**

Authorised on behalf of the Environment Agency

Schedule 1 – conditions to be deleted

The following conditions are deleted following an Environment Agency initiated variation

Table 2.2.11 *Equivalent parameters and technical measures* referred to in condition 2.2.8.1 is deleted.

Condition 2.6.4 *"Unless otherwise agreed in writing with the Agency the only biomass material burned in the plant shall be wheat husks"* is deleted.

Schedule 2 – conditions to be amended

The following conditions are amended as detailed, following an Environment Agency initiated variation

Table 1.1.1 referred to in condition 1.1.1 is amended by the inclusion of new descriptions for the LCP activity:

Table 1.1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
Section 6.8 Part A (1) d) (ii): "Treating and processing materials intended for the production of food products from vegetable raw materials at a plant with a finished product production capacity of more than 300 tonnes per day (average value on a quarterly basis)"	Processing of sugar cane for the manufacture of refined sugars	Use of raw materials within listed activity to creation of finished product

Table 1.1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
Section 1.1 A(1) (a): Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more.	LCP392: Aalborg boilers for production of steam (2 x 60 MWth). LCP393: Combined heat and power plant of a gas turbine and waste heat recovery boiler capable of supplementary and auxiliary firing for the production of electricity and steam including: CCGT mode: Operation of a combined cycle gas turbine power plant to produce electricity and steam (64 MWth).	From receipt of natural gas or gas oil to discharge of exhaust gases and the generation of electricity and steam. Gas oil shall be used as a standby fuel only.
	OCGT mode: Operation of an open cycle gas turbine power plant to produce electricity (21 MWth).	OCGT is for on-site electricity demands only. Export to the National Grid shall be limited to such quantity to achieve minimum start up load (MSUL). OCGT operation excludes elective power generation as part of a National Grid peak demand reduction scheme.
	WHB Auxiliary (FD) mode: Operation of the waste heat boiler to produce steam.	WHB Auxiliary (FD) is for emergency use only and is limited to a maximum of 500 operating hours per year.
	Biomass boilers on LCP393: Combustion of wheat husk fuel in four biomass boilers to generate steam (4x19MWth).	Biomass boilers: from receipt of wheat husk fuel to emission of combustion products and despatch of waste from site.

Table 1.1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
Section 5.4 Part A (1)(a)(ii) Disposal of non-hazardous waste in a facility with a capacity exceeding 50 tonnes per day by- Physico-chemical treatment.	Treatment of effluent in an effluent treatment plant.	Collection of effluent to release to sewer and solid waste for off site disposal.
Section 3.1 Part B (c): "Slaking lime for the purpose of making calcium hydroxide or calcium magnesium hydroxide"	Lime slaking	Use of raw materials within listed activity to production of calcium hydroxide for use in sugar refining
Directly Associated Activity		
Directly associated activity	Raw materials and fuels storage	From receipt of raw materials to their use within the process.
Directly associated activity	Storage and handling of waste materials, prior to off site recycling or disposal	From the collection of waste to removal from the installation.
Directly associated activity	Finished product storage prior to dispatch	From receipt of finished product to dispatch.

Condition 1.2.1 is amended as follows:

1.2.1 The activities authorised under condition 1.1.1 shall not extend beyond the Site, being the land shown edged in red on the Site Plan at Schedule 5 to this permit.

Table 1.4.1 referred to in condition 1.4 is amended to add improvement conditions 13, 14, 15, 16 and 17 as follows:

Table 1.4.1 Improvement Programme		
13	The operator shall provide a report in writing to the Environment Agency for acceptance which provides the net rated thermal input for LCP392 and LCP393. The net rated thermal input is the 'as built' value unless the plant has been modified significantly resulting in an improvement of the plant efficiency or output that increases the rated thermal input (which typically requires a performance test to demonstrate that guaranteed improvements have been realised). The Operator shall then also include a report in writing to the Environment Agency for acceptance. The report shall define and provide a written justification of the "minimum start up load" and "minimum shut-down load", for LCP392 and LCP393 as required by the Implementing Decision 2012/249/EU	31/01/2016
14	The Operator shall submit a report in writing to the Environment Agency for acceptance. The report shall define and provide a written justification of the "minimum start up load" and "minimum shut-down load", for the biomass plant within the LCP393 as required by the Implementing Decision 2012/249/EU	Within 6 months of restarting the biomass boilers

15	The Operator shall submit a report in writing to the Environment Agency for acceptance. The report shall define and provide a written justification of the efficiency of the LCP393. This shall justify the ELVs for NOx as meeting the >75% efficiency criteria required of IED.	31/01/2016
16	For LCP278 (now LCP392 and LCP393) annual emissions of dust, sulphur dioxide and oxides of nitrogen including energy usage for the year 01/01/2015 to 31/12/2015 shall be submitted to the Environment Agency using form AAE1 via the NERP Registry. If the LPCD LCP was a NERP plant the final quarter submissions shall be provided on the RTA 1 form to the NERP Registry.	submission date is 28/01/16
17	The Operator shall submit a report in writing to the Environment Agency for acceptance. The report shall define and provide an assessment of the emission from the OCGT emission point A3. The operator shall propose new limits for NOx and CO.	submission date is 28/01/16

Condition 1.6.1 is amended as follows: 1.6.1 No condition applies.

Table 2.1.1 referred to in condition 2.1.1 is amended to add responses to regulation 60(1) notices as follows.

Table 2.1.1 Operating techniques		
Description	**Parts**	**Date Received**
Application	The response to questions 2.1 and 2.2 given in section 2.1 and 2.2 of the application	30/03/05
Response to regulation 60(1) Notice – request for information dated 31/10/14	Compliance route(s) and operating techniques identified in response to questions 2 (compliance route), 4 (configuration), 5 (net rated inputs), 6 (MSUL/MSDL), 7 (ELVs), 8 & 9 (monitoring).	Received 31/03/15
Receipt of additional information to the regulation 60(1) Notice. requested by letter dated 04/06/15	Operating techniques identified in response to questions 4 (configuration), 5 (net rated inputs) and 6 (MSUL/MSDL).	Email response 24/7/15

Table 2.2.2 referred to in condition 2.2.1.3 is amended as follows:

Table 2.2.2 Point source emissions to air and monitoring *(continuous monitoring section)*							
			Limit (including unit and reference period) - these limits do not apply during start up or shut down[note2]			**Monitoring frequency**	**Monitoring standard or method**
Emission point ref.	**Parameter**	**Source**	**Monthly average of validated hourly averages (mg/m^3)**	**Daily mean of validated hourly averages (mg/m^3)**	**95% of validated hourly averages within a calendar year (mg/m^3)**		
A1	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	LCP392 Aalborg Boilers firing on natural gas	100	110	200	Continuous	BS EN 14181
A1	Carbon monoxide (CO)	LCP392 Aalborg Boilers firing on natural gas	100	110	200	Continuous	BS EN 14181
A1	Sulphur dioxide (SO_2)	LCP392 Aalborg Boilers firing on natural gas	35			6 monthly	Concentration by calculation as agreed in writing with the Environment Agency
A1	Dust	LCP392 Aalborg Boilers firing on natural gas	5			6 monthly	Concentration by calculation as agreed in writing with the Environment Agency
A1	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP392 Aalborg Boilers firing on gas oil	200	220	400	Continuous	BS EN 14181
A1	Carbon monoxide (CO)	LCP392 Aalborg Boilers firing on gas oil	125	125	250	Continuous	BS EN 14181

Table 2.2.2 Point source emissions to air and monitoring *(continuous monitoring section)*							
Emission point ref.	**Parameter**	**Source**	**Limit (including unit and reference period) - these limits do not apply during start up or shut down[note2]**			**Monitoring frequency**	**Monitoring standard or method**
			Monthly average of validated hourly averages (mg/m^3)	**Daily mean of validated hourly averages (mg/m^3)**	**95% of validated hourly averages within a calendar year (mg/m^3)**		
A1	Sulphur dioxide (SO_2)	LCP392 Aalborg Boilers firing on gas oil	-	275	-	6 monthly periodic [note3]	BS EN14791
A1	Dust	LCP392 Aalborg Boilers firing on gas oil	-	27.5	-	6 monthly periodic [note3]	BS EN 13284
A2	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP393 GT/WHB CHP Supplementary firing on natural gas	75	82.5	150	Continuous	BS EN 14181
A2	Carbon monoxide (CO)	LCP393 GT/WHB CHP Supplementary firing on natural gas	100	100	200	Continuous	BS EN 14181
A2	Sulphur dioxide (SO_2)	LCP393 GT/WHB CHP Supplementary firing on natural gas	Note 1			6 monthly	Concentration by calculation as agreed in writing with the Environment Agency
A2	Dust	LCP393 GT/WHB CHP Supplementary firing on natural gas	Note 1			6 monthly	Concentration by calculation as agreed in writing with the Environment Agency
A2	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP393 GT/WHB CHP Supplementary firing on gas oil	90	99	180	Continuous	BS EN 14181

Table 2.2.2 Point source emissions to air and monitoring *(continuous monitoring section)*							
			Limit (including unit and reference period) - these limits do not apply during start up or shut down[note2]			**Monitoring frequency**	**Monitoring standard or method**
Emission point ref.	**Parameter**	**Source**	**Monthly average of validated hourly averages (mg/m^3)**	**Daily mean of validated hourly averages (mg/m^3)**	**95% of validated hourly averages within a calendar year (mg/m^3)**		
A2	Carbon monoxide (CO)	LCP393 GT/WHB CHP Supplementary firing on gas oil	100	110	200	Continuous	BS EN 14181
A2	Sulphur dioxide ($S0_2$)	LCP393 GT/WHB CHP Supplementary firing on gas oil	Note 1			6 monthly periodic [note3]	BS EN14791
A2	Dust	LCP393 GT/WHB CHP Supplementary firing on gas oil	Note 1			6 monthly periodic [note3]	BS EN 13284
A2	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP393 WHB Auxiliary firing (FD) on natural gas [note4]	100	110	200	Continuous	BS EN 14181
A2	Carbon monoxide (CO)	LCP393 WHB Auxiliary firing (FD) on natural gas [note4]	100	110	200	Continuous	BS EN 14181
A2	Sulphur dioxide (SO_2)	LCP393 WHB Auxiliary firing (FD) on natural gas [note4]	35			6 monthly	Concentration by calculation as agreed in writing with the Environment Agency
A2	Dust	LCP393 WHB Auxiliary firing (FD) on natural gas [note4]	5			6 monthly	Concentration by calculation as agreed in writing with the Environment Agency

Table 2.2.2 Point source emissions to air and monitoring *(continuous monitoring section)*							
Emission point ref.	**Parameter**	**Source**	**Limit (including unit and reference period) - these limits do not apply during start up or shut down[note2]**			**Monitoring frequency**	**Monitoring standard or method**
			Monthly average of validated hourly averages (mg/m^3)	**Daily mean of validated hourly averages (mg/m^3)**	**95% of validated hourly averages within a calendar year (mg/m^3)**		
A2	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	LCP393 WHB Auxiliary firing (FD) on gas oil [note4]	200	220	400	Continuous	BS EN 14181
A2	Carbon monoxide (CO)	LCP393 WHB Auxiliary firing (FD) on gas oil [note4]	125	125	250	Continuous	BS EN 14181
A2	Sulphur dioxide (SO_2)	LCP393 WHB Auxiliary firing (FD) on gas oil [note4]	-	275	-	6 monthly periodic [note3]	BS EN14791
A2	Dust	LCP393 WHB Auxiliary firing (FD) on gas oil [note4]	-	27.5	-	6 monthly periodic [note3]	BS EN 13284
A3	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	LCP393 GT OCGT firing on natural gas MSUL/MSDL to baseload	-	250	-	Continuous	BS EN 14181
A3	Carbon monoxide (CO)	LCP393 GT OCGT firing on natural gas MSUL/MSDL to baseload	-	100	-	Continuous	BS EN 14181
A3	Sulphur dioxide (SO_2)	LCP393 GT OCGT firing on natural gas MSUL/MSDL to baseload	Note 1			6 monthly	Concentration by calculation as agreed in writing with the Environment Agency

Table 2.2.2 Point source emissions to air and monitoring *(continuous monitoring section)*							
			Limit (including unit and reference period) - these limits do not apply during start up or shut down[note2]			**Monitoring frequency**	**Monitoring standard or method**
Emission point ref.	**Parameter**	**Source**	**Monthly average of validated hourly averages (mg/m^3)**	**Daily mean of validated hourly averages (mg/m^3)**	**95% of validated hourly averages within a calendar year (mg/m^3)**		
A3	Dust	LCP393 GT OCGT firing on natural gas MSUL/MSDL to baseload	Note 1			6 monthly	Concentration by calculation as agreed in writing with the Environment Agency
A3	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	LCP393 GT OCGT firing on gas oil MSUL/MSDL to baseload	-	380	-	Continuous	BS EN 14181
A3	Carbon monoxide (CO)	LCP393 GT OCGT firing on gas oil MSUL/MSDL to baseload	-	125	-	Continuous	BS EN 14181
A3	Sulphur dioxide (SO_2)	LCP393 GT OCGT firing on gas oil MSUL/MSDL to baseload	Note 1			6 monthly	Concentration by calculation as agreed in writing with the Environment Agency
A3	Dust	LCP393 GT OCGT firing on gas oil MSUL/MSDL to baseload	Note 1			6 monthly	Concentration by calculation as agreed in writing with the Environment Agency
A57 flue within A2 stack	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	CHP LCP393 Biomass Boiler	300	300	450	Continuous	BS EN 14181

Table 2.2.2 Point source emissions to air and monitoring *(continuous monitoring section)*							
			Limit (including unit and reference period) - these limits do not apply during start up or shut down[note2]			**Monitoring frequency**	**Monitoring standard or method**
Emission point ref.	**Parameter**	**Source**	**Monthly average of validated hourly averages (mg/m^3)**	**Daily mean of validated hourly averages (mg/m^3)**	**95% of validated hourly averages within a calendar year (mg/m^3)**		
A57 flue within A2 stack	Carbon monoxide (CO)	CHP LCP393 Biomass Boiler	250	250	375	Continuous	BS EN 14181
A57 flue within A2 stack	Sulphur dioxide (SO_2)	CHP LCP393 Biomass Boiler	200	200	400	Continuous	BS EN 14181
A57 flue within A2 stack	Dust	CHP LCP393 Biomass Boiler	25	25	37.5	Continuous	BS EN 14181
A57 flue within A2 stack	Hydrogen chloride (HCl)	CHP LCP393 Biomass Boiler	30	30	45	Continuous	BS EN 14181
A1, A2, A3 and A57	% Oxygen (O_2)	LCP393 (CCGT, OCGT and biomass boilers) and LCP392 (Aalborg boilers)	-	-	-	Continuous As appropriate to reference	BS EN 14181
A1, A2, A3 and A57	Water vapour (H_2O)	LCP393 (CCGT, OCGT and biomass boilers) and LCP392 (Aalborg boilers)	-	-	-	Continuous As appropriate to reference	BS EN 14181

Table 2.2.2 Point source emissions to air and monitoring *(continuous monitoring section)*							
			Limit (including unit and reference period) - these limits do not apply during start up or shut down[note2]			**Monitoring frequency**	**Monitoring standard or method**
Emission point ref.	**Parameter**	**Source**	**Monthly average of validated hourly averages (mg/m^3)**	**Daily mean of validated hourly averages (mg/m^3)**	**95% of validated hourly averages within a calendar year (mg/m^3)**		
A1, A2, A3 and A57	Stack gas temperature (^oC)	LCP393 (CCGT, OCGT and biomass boilers) and LCP392 (Aalborg boilers)	-	-	-	Continuous As appropriate to reference	Traceable to national standards
A1, A2, A3 and A57	Stack gas pressure (Pa)	LCP393 (CCGT, OCGT and biomass boilers) and LCP392 (Aalborg boilers)	-	-	-	Continuous As appropriate to reference	Traceable to national standards
A1, A2, A3 and A57	As required by the Method Implementation Document for BS EN 15259	LCP393 (CCGT, OCGT and biomass boilers) and LCP392 (Aalborg boilers)		-	-	Pre-operation and when there is a significant operational change	BS EN 15259

Table 2.2.2 Point source emissions to air and monitoring *(periodic section)*					
Emission point ref.	**Parameter**	**Source**	**Daily average (and units) - determined over the sample period appropriate to the monitoring method** note2	**Monitoring frequency**	**Monitoring standard or method**
A57 flue within A2 stack	VOC	CHP LCP393 Biomass Boiler	$20mg/m^3$	Periodic six- monthly	BS EN 12619
A57 flue within A2 stack	Dioxins	CHP LCP393 Biomass Boiler	$0.5ng/m^3$	Periodic six monthly	BS EN 1948

Table 2.2.2 Point source emissions to air and monitoring *(periodic section)*					
Emission point ref.	**Parameter**	**Source**	**Daily average (and units) - determined over the sample period appropriate to the monitoring method** note2	**Monitoring frequency**	**Monitoring standard or method**
A11	Dust	Building 23 – A cooler exhaust, abated by wet scrubber	50mg/m^3	Annually	BS EN 13284
A12	Dust	Building 23 – B cooler exhaust, abated by wet scrubber	50mg/m^3	Annually	BS EN 13284
A28	Dust	Building 53 G1-G4 drier exhaust, abated by Rotoclone	50mg/m^3	Annually	BS EN 13284
A31	Dust	Building 52 R121 Rotoclone exhaust, abated by Rotoclone	50mg/m^3	Annually	BS EN 13284
A32	Dust	Building 52 R122 Rotoclone exhaust, abated by Rotoclone	50mg/m^3	Annually	BS EN 13284
Note 1: No limits but may require emissions 6 monthly concentration by calculation as agreed in writing with the Environment Agency. Note 2: Unless otherwise indicated the limits apply MSUL/MSDL to base load. Note 3: When an LCP has operated on standby gas oil fuel for more than 10 days during periods of gas supply interruption and where the source is indicated as firing on gas oil, periodic monitoring for dust and SO_2 shall be required. Note 4 WHB Auxiliary firing in an emergency is referenced to 15% O_2.					

Condition 2.2.8.1 refers to table 2.2.11 Equivalent parameters and technical measures. Reference to Table 2.2.11 shall be replaced by reference to Table 2.1.12 Raw materials and fuel.

Table S2 referred to in condition 4.1.2.1 is amended as follows:

Table S2 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Oxides of nitrogen	A1, A2, A3, A57	Every 3 months	1 January, 1 April, 1 July, 1 October
Carbon monoxide	A1, A2, A3, A57	Every 3 months	1 January, 1 April, 1 July, 1 October
Sulphur dioxide	A1, A2, A3, A57	Every 3 months	1 January, 1 April, 1 July, 1 October
Dust	A1, A2, A3, A57	Every 3 months	1 January, 1 April, 1 July, 1 October
Operating hours	A2 (CCGT), A1 (boilers) and A57 (biomass)	Every 3 months	1 January, 1 April, 1 July, 1 October
Operating hours split between <70% load and >70% load	A3 (OCGT)	Every 3 months	1 January, 1 April, 1 July, 1 October
Operating hours	A2 (WHB – Auxiliary firing)	Every 3 months	1 January, 1 April, 1 July, 1 October
Hydrogen Chloride	A57	Every 3 months	01/07/08
VOC (as carbon)	A57	Every 6 months	01/07/08
Dioxins and Furans1 (I-TEQ & WHO-TEQ)	A57	Every 6 months	01/07/08
Dust	A11, A12, A28, A31, A32	Annually	01/01/06
Temperature	W1	Annually	01/01/06
Sucrose	W1	Annually	01/01/06
Water Discharge	W1	Annually	01/01/06
Total Energy (Water Discharge)	W1	Annually	01/01/06
Waste disposal and/or recovery.		Annually	01/01/06

Table S3 referred to in conditions 4.1.2.2 and 4.1.3 is amended as follows

Table S3 Reporting forms				
Media/ parameter	**Reporting format**	**Starting Point**	**Agency recipient**	**Date of form**
LCP	Form IED HR1 – operating hours	01/01/16	National	31/12/15
Air & Energy	Form IED AR1 – SO_2, NOx and dust mass emission and energy	01/01/16	National	31/12/15

Table S3 Reporting forms				
Media/ parameter	**Reporting format**	**Starting Point**	**Agency recipient**	**Date of form**
Air	Form IED CON 1 – continuous monitoring for Boilers	01/01/16	Area Office	31/12/15
Air	Form IED CON 2 – continuous monitoring for CCGTs	01/01/16	Area Office	31/12/15
CEMs	Form IED CEM – Invalidation Log	01/01/16	Area Office	31/12/15
Air	Form IED PM1 - discontinuous monitoring for SO_2, NOx, dust and load.	01/01/16	Area Office	31/12/15
Resource Efficiency	Form REM2 or other form as agreed in writing by the Environment Agency – resource efficiency annual report	01/01/16	Area Office	31/12/15
W1	Water (excluding sewer)	01/01/16	Area Office	31/12/15

Table S4.1 referred to in condition 4.1.3 is amended as follows:

Table S4.1: Annual Production/Treatment	
Parameter	**Units**
Production of sugar	t
Power generated (on site use)	GWhr
Power generated exported	GWhr

Table S4.2 referred to in condition 4.1.3 is amended as follows:

Table S4.2 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Total sugar losses	Annually	Kg/t
Potable water use	Annually	m^3/t
Energy consumption	Annually	MW/t
Hazardous Waste Disposed	Annually	t/t
Non-hazardous Waste Disposed	Annually	t/t
Inert Waste Disposed	Annually	t/t
Thermal Input Capacity for each LCP	Annually	MW
Annual Fuel Usage for each LCP	Annually	TJ
Total Emissions to Air of NOx for each LCP	Annually	t
Total Emissions to Air of SO_2 for each LCP	Annually	t
Total Emissions to Air of CO for each LCP	Annually	t

Table S4.2 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Total Emissions to Air of dust for each LCP	Annually	t
Operating Hours for each LCP	Annually	hr

Schedule 3 – conditions to be added

The following conditions are added following an Environment Agency initiated variation

2.1.3 For the following activities referenced in table 1.1.1: LCP392 and LCP393. Without prejudice to condition 2.1.1, the activities shall be operated in accordance with the "Electricity Supply Industry IED Compliance Protocol for Utility Boilers and Gas Turbines" revision 1 dated February 2015 or any later version unless otherwise agreed in writing by the Environment Agency.

2.1.4 For the following activities referenced in table 1.1.1: LCP392 and LCP393 the end of the start up period and the start of the shutdown period shall conform to the specifications set out in tables 2.1.13.

Table 2.1.13 Start-up and Shut-down thresholds		
Emission Point and Unit Reference	**"Minimum Start-Up Load"** **Load in MW and as percent of rated power output (%)** unless otherwise agreed in writing with the Environment Agency, following the outcome of improvement conditions IC13, IC14 & IC16.	**"Minimum Shut-Down Load"** **Load in MW and as percent of rated power output (%)** unless otherwise agreed in writing with the Environment Agency, following the outcome of improvement conditions IC13, IC14 & IC16.
A1 – LCP392 Aalborg Boilers	17.5MW 29.2% (of 60MW) 17.5MW is 20t/hr steam at 4.5MPa and 377°C	17.5MW 29.2% (of 60MW) 17.5MW is 20t/hr steam at 4.5MPa and 377°C
A2 – LCP393 GT/WHB CCGT	26.2MW 42.3% (of 62MW) 26.2MW is 30t/hr steam at 4.5MPa and 377°C	26.2MW 42.3% (of 62MW) 26.2MW is 30t/hr steam at 4.5MPa and 377°C
A2 – LCP393 WHB Auxiliary firing (FD)	17.5MW 30.7% (of 57MW) 17.5MW is 20t/hr steam at 4.5MPa and 377°C	17.5MW 30.7% (of 57MW) 17.5MW is 20t/hr steam at 4.5MPa and 377°C
A3 – LCP393 OCGT.	$3MW_{elec}$ 50.0% (of $6.0MW_{elec}$)	$3MW_{elec}$ 50.0% (of $6.0MW_{elec}$)
A57 – LCP393 Biomass	17.5MW 23.0% (of 76MW) 17.5MW is 20t/hr steam at 4.5MPa and 377°C	17.5MW 23.0% (of 76MW) 17.5MW is 20t/hr steam at 4.5MPa and 377°C

2.2.1.6 For the release points referenced in table 2.2.2 A1, A2 and A3 those limits which refer to the source firing on gas oil shall not apply providing the LCP is operating on standby gas oil fuel for less than 10 days during periods of gas supply interruption.

2.4.1.4 Any raw materials or fuels listed in table 2.1.12 shall conform to the specifications set out in that table.

Table 2.1.12 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Gas oil	Not exceeding 0.1% w/w sulphur content

2.4.1.5 Fuel for combustion in the biomass boilers shall only be accepted if:

(a) it is of a type listed in table 2.1.13 and

(b) it conforms to the description in the documentation supplied by the producer and holder.

Table 2.1.13 Permitted waste types for combustion in Large Combustion Plant	
Waste code	Description
02 01 03	WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING - Plant-Tissue waste. This shall be in the form of wheat husks.

2.7.4 The operator shall:

(a) take appropriate measures to ensure that energy is used efficiently in the activities;
(b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and
(c) take any further appropriate measures identified by a review.

2.4.2 The operator shall:

(a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;
(b) maintain records of raw materials and water used in the activities;
(c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and
(d) take any further appropriate measures identified by a review.

2.10.11 Monitoring for the purposes of the Industrial Emissions Directive Chapter III

2.10.11.1 All monitoring required by this permit for the LCPs shall be carried out in accordance with the provisions of Annex V of the Industrial Emissions Directive.

2.10.11.2 If the monitoring results for more than 10 days a year are invalidated within the meaning set out in condition 2.10.11.7, the operator shall:

(1) within 28 days of becoming aware of this fact, review the causes of the invalidations and submit to the Environment Agency for approval, proposals for measures to improve the reliability of the continuous measurement systems, including a timetable for the implementation of those measures; and

(2) implement the approved proposals.

2.10.11.3 Continuous measurement systems on emission points from the LCPs shall be subject to quality control by means of parallel measurements with reference methods at least once every calendar year.

2.10.11.4 Unless otherwise agreed in writing by the Environment Agency in accordance with condition 2.10.11.5 below, the operator shall carry out the methods, including the reference measurement methods, to use and calibrate continuous measurement systems in accordance with the appropriate CEN standards.

2.10.11.5 If CEN standards are not available, ISO standards, national or international standards which will ensure the provision of data of an equivalent scientific quality shall be used, as agreed in writing with the Environment Agency.

2.10.11.6 Where required by a condition of this permit to check the measurement equipment, the operator shall submit a report to the Environment Agency in writing, within 28 days of the completion of the check.

2.10.11.7 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in table 2.2.2; the Continuous Emission Monitors shall be used such that:

(a) for the continuous measurement systems fitted to the LCP release points defined in table 1.1.1 the validated hourly, monthly and daily averages shall be determined from the measured valid hourly average values after having subtracted the value of the 95% confidence interval;
(b) the 95% confidence interval for nitrogen oxides and sulphur dioxide of a single measured result shall be taken to be 20%;
(c) the 95% confidence interval for dust releases of a single measured result shall be taken to be 30%;
(d) the 95% confidence interval for carbon monoxide releases of a single measured result shall be taken to be 10%;
(e) an invalid hourly average means an hourly average period invalidated due to malfunction of, or maintenance work being carried out on, the continuous measurement system. However, to allow some discretion for zero and span gas checking, or cleaning (by flushing), an hourly average period will count as valid as long as data has been accumulated for at least two thirds of the period (40 minutes). Such discretionary periods are not to exceed more than 5 in any one 24-hour period unless agreed in writing. Where plant may be operating for less than the 24-hour period, such discretionary periods are not to exceed more than one quarter of the overall valid hourly average periods unless agreed in writing; and
(f) any day, in which more than three hourly average values are invalid shall be invalidated.

2.10.12 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

The following expressions are added to the interpretation in Schedule 6 referred to in condition 6.1.1:

"Large combustion plant" or "LCP" is a combustion plant or group of combustion plants discharging waste gases through a common windshield or stack, where the total thermal input is 50 MW or more, based on net calorific value. The calculation of thermal input, excludes individual combustion plants with a rated thermal input below 15MW.

"Monthly average of validated hourly averages" means the value across a calendar month of all validated hourly averages.

"biomass" means: vegetable matter from agriculture and forestry.

"MSDL" means minimum shut-down load as defined in Implementing Decision 2012/249/EU.

"MSUL" means minimum start-up load as defined in Implementing Decision 2012/249/EU.

"Natural gas" means naturally occurring methane with no more than 20% by volume of inert or other constituents.

"Standby fuel" means alternative liquid fuels that are used in emergency situations when the gas fuel which is normally used, is not available.

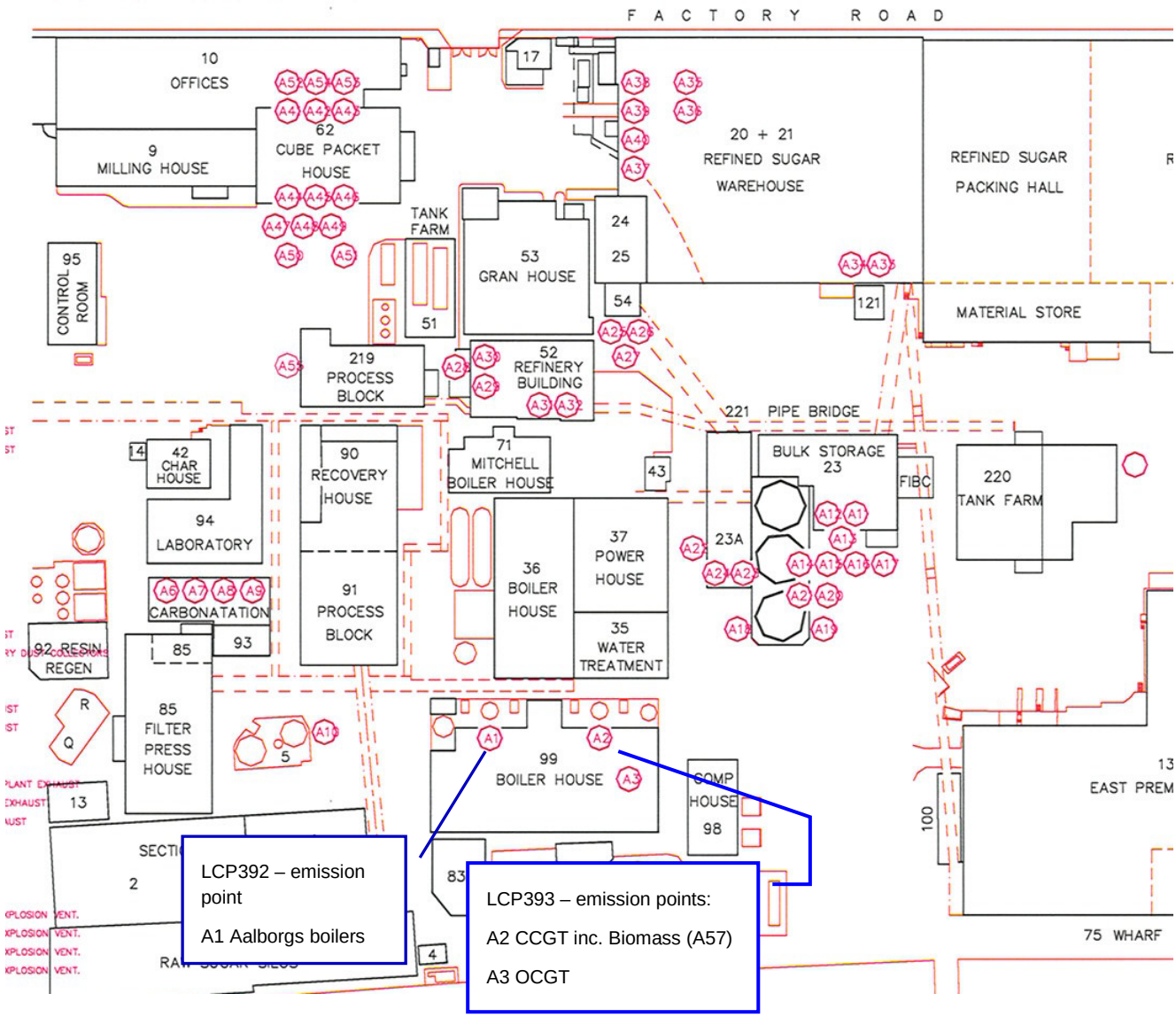
"Industrial Emissions Directive" or "IED" means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions.

6.1.3.3 In relation to emissions from combustion processes comprising a gas turbine with a waste heat boiler, the concentration in dry air at a temperature of 273K, at a pressure of 101.3kPa and with an oxygen content of 15% dry.

6.1.3.4 In relation to emissions from combustion processes comprising the waste heat boiler operating alone (in auxiliary, FD mode) and for emergency purposes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3kPa and with an oxygen content of 15% dry.

Schedule 5 – additional plan

Additional plan confirming emission points referred to in Table 2.2.2.


FACTORY ROAD
10
OFFICES
9
MILLING HOUSE
62
CUBE PACKET
HOUSE
TANK
FARM
17
20 + 21
REFINED SUGAR
WAREHOUSE
REFINED SUGAR
PACKING HALL
95
CONTROL
ROOM
51
53
GRAN HOUSE
24
25
54
121
MATERIAL STORE
219
PROCESS
BLOCK
52
REFINERY
BUILDING
221 PIPE BRIDGE
42
CHAR
HOUSE
90
RECOVERY
HOUSE
71
MITCHELL
BOILER HOUSE
43
BULK STORAGE
23
FIBC
220
TANK FARM
94
LABORATORY
36
BOILER
HOUSE
37
POWER
HOUSE
23A
CARBONATATION
91
PROCESS
BLOCK
35
WATER
TREATMENT
92 RESIN
REGEN
85
93
85
FILTER
PRESS
HOUSE
R
Q
5
99
BOILER HOUSE
COMP
HOUSE
98
13
EAST PREM
100
SECTI
2
83
4
75 WHARF
LCP392 – emission point
A1 Aalborgs boilers
LCP393 – emission points:
A2 CCGT inc. Biomass (A57)
A3 OCGT