Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

British Sugar PLC

Wissington Sugar Factory
Wissington
King's Lynn
Norfolk
PE33 9QG

Variation application number

EPR/BX2108IQ/V009

Permit number

EPR/BX2108IQ

Wissington Sugar Factory
Permit number EPR/BX2108IQ

Introductory note

This introductory note does not form a part of the notice

Under the Environmental Permitting (England & Wales) Regulations 2010 (schedule 5, part 1, paragraph 19) a variation may comprise a consolidated permit reflecting the variations and a notice specifying the variations included in that consolidated permit.

Schedule 1 of the notice specifies the conditions that have been varied and schedule 2 comprises a consolidated permit which reflects the variations being made and contains all conditions relevant to this permit. The permit has been consolidated based on the format of the last consolidation (EPR/BK2108IQ/V006) and therefore has not been fully updated to modern conditions.

Only the variations specified in schedule 1 are subject to a right of appeal.

Purpose of Variation EPR/BK2108IQ/V009

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 LCP 38 (Combined Heat and Power (CHP) system) under the Transitional National Plan (**TNP**) and LCP 36 (three ICL Boilers) under the Limited Lifetime Derogation (**LLD**) compliance routes.

The variation notice uses updated LCP numbers in accordance with the most recent DEFRA LCP reference numbers. The LCP references have changed as follows:

- LCP 106 is changed to LCP 38; and
- LCP 69 is changed to LCP 36.

This variation also adds conditions relating to odour and noise which were deleted in error by consolidation of the permit (EPR/BX2109IQ/V006). It also adds monitoring and amends notification requirements in accordance with the IED.

Purpose of original Permit

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

The British Sugar factory at Wissington produces white sugar that it supplies to customers throughout the UK as a bagged or bulk crystal product, or in the form of a liquid sugar or glucose blend. In addition to the usual sugar products the site is able to extract and sell syrups high in amino acids through the use of a chromatic separation plant. The installation also produces and sells as co-products animal feed (from the beet residues after extraction of the sugar), lime products for agricultural use (from the lime used to purify the sugar juice), topsoil for agricultural and horticultural use (reclaimed from the soil that comes in with the beet) and stones (that come in with the beet) for use by the construction industry. Beet is delivered from September to late February (a period known as the 'campaign'). During the campaign both sugar and concentrated sugar juice (thick juice) are produced in a twenty four hour process. The thick juice is stored and processed into crystalline sugar during the juice refining period, usually between April and July, and for about two weeks prior to the start of the campaign. Outside the campaign and juice refining period the sugar production process closes down and maintenance is carried out.

There are four European habitat sites within 10 km of the installation, namely Ouse Washes Special protection Area (SPA), Ouse Washes candidate Special Area of Conservation (SAC), Ouse Washes Ramsar, and Norfolk Valley Fens (Foulden Common) candidate SAC. A detailed assessment was carried out for these sites which concluded no adverse effect from the installation.

The site is located in a predominantly agricultural area approximately 5 km to the south-east of Downham Market. The River Wissey flows from east to west through the approximate centre of the site.

The sugar production process comprises:

- Receipt, handling, unpacking and storage of sugar beet. The beet is stored on a concrete flat pad until it is required in the process. It is transported to the beet slicing station by water flume.
- Feedstock cleaning. The beet is cleaned during fluming. Soil, stones and weed/leaf material is removed and reclaimed. Pieces of broken beet are recovered via screens and returned to the process. The water used in the flume is known as the transport water and is treated and re-used repeatedly. Alkali and anti-foam are added to the transport water to maintain the quality of the water and improve the fluming.
- Beet slicing. The beet is sliced into cossettes using power driven rotary slicers.
- Extraction (diffusion and pulp pressing). The cossettes and reclaimed broken beet pieces are passed into a continuous counter-current extraction process that uses recycled pressed pulp water supplemented by recycled condensed vapour. The pH is adjusted with sulphuric acid. Microbial growth is inhibited with biocides. Antifoam is added to control foaming caused by saponins from the beet. Wet pulp from the extractor goes to mechanical pulp presses. After the addition of pressing aids, the pulp is mechanically pressed, the dried pulp going on to conversion into animal feed, the water pressed from the process passing through screens to reclaim pieces of pulp, with the water being recycled into the diffuser. The sugar juice emerging from the extraction process is called 'raw juice' and passes to the purification stage.
- Purification, including beet end filtration. Soluble and insoluble impurities are removed by a two stage carbonation process. The raw juice is treated with milk of lime from the lime slaking process, then passed to a gassing tank where carbon dioxide from the limekilns is added. Impurities are removed by the calcium carbonate, which is formed by the reaction between the milk of lime and the carbon dioxide. The calcium carbonate is allowed to settle in a clarifier. The juice from the clarifier goes through a second gassing tank where addition of further carbon dioxide precipitates out the remainder of the milk of lime. The calcium carbonate from this stage is filtered out. Calcium carbonate from the first clarifier is pressed to increase dry substance in the lime cake, which is sold as LimeX. Water from the LimeX filter press ('sweet water') is recycled to make the slaked lime. Small amounts of antifoam, flocculants, colour inhibitor, alkali and filtration aids may be added to assist processing.

- Sulphitation (decolourisation of sugar juices). Solid sulphur is burned in an enclosed stove, to form sulphur dioxide. The sulphur dioxide is added to the sugar juice via a counter-current juice absorption column before the evaporator station to inhibit the colour forming reactions that take place at high temperatures.
- Evaporation. The thin juice is concentrated from 16% dry solids to 68% by a series of evaporators. These are heated by steam from the onsite combined heat and power plant and incorporate a high degree of heat reclamation.
- Filtration and dissolving – sugar end. The thick juice is filtered in a two stage process using a filter aid to remove any small particles prior to crystallisation. Out of specification crystallised sugar and sugar syrups are recycled to the main process flow via a continuous high shear dissolving process.
- Thick juice export. During the campaign thick juice is sent to store for later processing (normally out of campaign). The export system conditions the juice for this by concentrating the juice to within a tightly controlled range of solids content ('brix'), correcting the pH, and reducing its temperature to below 20°C.
- Thick juice import. The thick juice import system ensures the juice is returned in the correct condition for further processing by pre-heating the juice using recycled condensate, correcting the pH with alkali and sometimes the addition of a colour inhibitor.
- Sugar crystallisation and centrifuging. Crystallisation takes place in batch pans with up to three stages. Syrup is boiled under vacuum (to minimise the temperature required). The batch is seeded with very fine sugar crystals dispersed in a small quantity of isopropanol that promotes the formation of sucrose crystals. These are removed from the liquid phase by centrifuging and washing with recycled condensate. The syrup is recycled for further crystallisation. In the event of the sugar crystal being out of specification, it is recycled back into the process stream via the dissolvers. As well as crystalline sugar, the process produces molasses.
- Sugar drying and cooling. The hot, damp sugar is dried in rotary dryers in a counter-current stream of warm air. The dried sugar is cooled with filtered ambient air in rotary or fluidised bed coolers. Sugar dust from the process is trapped in filters and recycled.
- Bulk sugar is stored on site in 7 silos.
- Liquids/blends of sugars are prepared by dissolving granulated sugar in hot water, filtration and cooling. Glucose blends are produced to various customer recipes by inversion of sucrose with acid and subsequent neutralisation with alkali.
- The Phoenix chromatic separation plant is able to extract more sugar out of low grade sugar juice/syrup than the normal crystallisation process. The syrups are sourced from the adjacent crystallisation house and similar off-site facilities. Low grade syrup is pre-treated by heating to 80°C, by dilution and by filtration in a multiple stage filtration station. Separation is carried out by resins acting as molecular sieves. The syrup is separated into four main fractions, namely Extract (similar to thick juice, and refined to white granulated sugar through the same process), Raffinate (similar to molasses with the sugar removed, added to pulp before drying), Betaine (a pro-vitamin added to animal feeds) and the D fraction (which is recycled to dilute the incoming syrup in the pre-treatment stage). Betaine is further refined to a purity suitable for sale.
- Animal feed drying. Following extraction of sugar, the sugar beet cossettes are mechanically pressed to reduce the water content. They may then be sold immediately as wet animal feed, or thermally dehydrated (dried). Syrup may be mixed with the pressed pulp prior to drying to increase the nutritional value of the final feed and to reduce the formation of particulate during drying. The pulp is dried in rotary dryers, using hot gases generated by the burning of natural gas. The exhaust gases from the dryers are discharged via cyclones to remove particulates. Pressed pulp is imported from other British Sugar installations for drying.

- Animal feed pelleting and coating. Dried animal feed (shreds) directly from the driers, is mixed with additional syrup and extruded to form pellets. These are cooled in ambient air and screened to remove fines, which are recycled. The pellets are transferred by a conveyor to the warehouse for despatch. The exhaust gas from the coolers is discharged via cyclones to remove particulates.

LCP 38 (TNP) -The factory operates a CHP system, burning natural gas, with distillate fuel oil (DFO) as a back-up, producing steam and electricity for the site. Excess electricity is exported to the National Grid. The CHP comprises a gas turbine, with a 102 MW thermal input and a Heat Recovery Steam Generator (HRSG) with supplementary firing (106 MW thermal input) discharging via the 60m HRSG stack at emission point A62. The gas turbine discharges via the 30m HRSG by-pass stack at emission point A63 (separate windshield) when the gas turbine operates on its own in open cycle.

LCP 36 (LLD) -There are three ICL Boilers, each of 45 MW thermal input, burning natural gas, with DFO as a back-up, discharging via a common 55m stack/windshield containing emission points A66, A67 and A68.

The ICL boilers can be supplemented by two Maxecon auxiliary steam boilers (**AB1** & **AB2**) of 8 and 10 MW thermal input, discharging via two separate flues at emission points A69 and A70. The units are operated from time to time for limited periods for operational security reasons, and to supply steam to the liquid sugar plant.

Slaked lime is produced on site for use in the sugar production process by calcining limestone with coke or anthracite and then slaking it with sweet water recycled from the sugar making process. The carbon dioxide produced during calcining is partly consumed in the sugar production process.

Sulphur dioxide is produced on site for use in the sugar production process by burning sulphur in a closed reactor.

There is an extensive physical and biological treatment system for waste water. This includes a clarifier (from which soil is reclaimed), settlement ponds (which are dug out annually and the soil reclaimed), an anaerobic digester, an aerobic treatment plant and a final pond from whence the treated waste water is discharged to controlled water, namely the River Wissey. There is extensive recycling of treated waste water within the process. All process water is treated by the effluent treatment plant before discharge.

The installation emits sulphur dioxide, nitrogen oxides, carbon monoxide, ammonia, particulate and volatile organic compounds to air, and ammonia, nitrate and phosphate to water.

Particulate emissions are abated by cyclones. Sulphur dioxide emissions from the sulphur burning stove are abated by a scrubber. Sulphur dioxide emissions from the lime kiln are controlled by the choice of fuel.

There is a single release point to water with continuous monitoring of flow rate, and periodic monitoring of pH, total suspended solids, chemical oxygen demand, biological oxygen demand, ammoniacal nitrogen and total iron. The emissions have no significant environmental impact.

The installation is operated under an EMS which is accredited to ISO14001.

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 BX2108IQ (EPR/BX2108IQ/A001)	31/03/05	Received
Email request for information	14/10/05	Response dated 29/11/05
Email request for information	28/10/05	Response dated 28/10/05
Email request for information	08/11/05	Response dated 01/12/05
Permit determined	20/02/06	Granted
Variation Application EPR/BX2109IQ/V002 (QP3635MH)	27/10/06	Duly made Bioethanol plant
Schedule 7 Notification for further information	18/01/07	Response dated 07/02/07
Advertisement of Draft Variation EPR/BX2109IQ/V002 determination	06/03/07	Consultation on draft
Response received from British Sugar PLC	12/03/07	
Variation EPR/BX2109IQ/V002 determined	13/04/07	Issued
Variation Application EPR/BX2108IQ/V003 (XP3837LP)	07/08/06	Received
Variation Application	22/12/06	Refused
Variation notice EPR/BX2109IQ/V004 (LP3539XJ) determined	18/12/07	Issued National Emission Reduction Plan
Variation Application EPR/BX2108IQ/V005	30/09/08	Environment Agency Withdrawn
Variation Application EPR/BX2108IQ/V006	15/11/10	Received Capture and processing of carbon dioxide from fermentation **Consolidation**
Schedule 5 Notification for further information	06/01/11	Response dated 18/01/11
Variation determined EPR/BX2108IQ/V006	10/02/11	Issued
Variation determined EPR/BX2108IQ/V007	08/01/14	Environment Agency variation to implement the changes introduced by IED
Variation Application EPR/BX2108IQ/V008	01/10/14	Received Optional operating limits on emissions to water
Variation determined EPR/BX2108IQ/V008	21/10/14	Issued
Regulation 60 Notice sent to the Operator (EPR/BX2108IQ/V009)	31/10/14	Issue of a Notice under Regulation 60(1) of the EPR. Environment Agency Initiated review and variation to vary the permit under IED to implement the 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.
Regulation 60 Notice response	25/03/15	Response received from the Operator.
Additional information received	24/07/15	Response to RFI dated 24/07/15 (Q41 Reg 60) Method for derivation of the net rated thermal input

Status log of the permit		
Description	**Date**	**Comments**
Additional information received	02/10/15	Response to email sent 02/10/15 – use of GT stack (HRSG by-pass)
Additional information received	12/10/15	Response to email sent 07/10/15 – GT/HRSG operation and use of DFO
Email received	21/12/15	Confirming abnormal conditions for HRSG only operation
Variation determined EPR/BX2108IQ/V009 (Billing ref: MP3338AA)	22/12/15	Issued Variation effective from 01/01/16 **Consolidation (carried out during administrative variation)**

End of introductory note

Notice of variation and consolidation

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 and consolidates

Permit number

EPR/BX2108IQ

Issued to

British Sugar PLC ("the operator")

whose registered office is

Weston Centre
10 Grosvenor Street
London
W1K 4QY

company registration number **00315158**

to operate a regulated facility at

Wissington Sugar Factory
Wissington
King's Lynn
Norfolk
PE33 9QG

to the extent set out in the schedules.

The notice shall take effect from 01/01/2016

Name	Date
Anne Nightingale	**22/12/2015**

Authorised on behalf of the Environment Agency

Schedule 1

The following conditions have been varied by the consolidated permit as a result of an Environment Agency initiated variation.

DELETIONS:

The following conditions are **deleted** following an Environment Agency initiated variation:

Condition 2.3.4 (2.3.8 added, see below).

Condition 2.4.1 refers to Table S1.3, *Improvement programme,* conditions IP1 to IP3 are complete and shall be deleted from the table.

Condition 2.5.1 for pre-operational measures shall be deleted.

Condition 2.5.1 refers to Table S1.4 *Pre-operational measures,* which shall be deleted following completion of the condition. Table S1.4, *Start-up and Shut-down thresholds,* is added (see below).

Condition 4.4.1 refers to the meaning of expressions (Schedule 6 - *Interpretation*); *"NERP Register"*

shall be deleted.

AMENDMENTS:

The following conditions and tables are **amended** as detailed, following an Environment Agency initiated variation:

Condition 2.1.1 refers to Table S1.1, *Activities* which shall be amended by the inclusion of new source descriptions for the LCP activities and to amend the description for the production of bioethanol from sugar syrups.

Condition 2.3.1 refers to Table S1.2, *Operating techniques* which shall be amended by the inclusion of technical standards in the Regulation 60 response and the abnormal operation email response.

Condition 2.3.2 refers to Table S2.1, *Raw materials and fuels* which shall be amended to remove heavy fuel oil.

Condition 3.1.1 refers to Table S3.1(a), *Point source emissions to air from Gas Turbines-LCP38* and S3.1(b), *Point source emissions to air from ICL boilers-LCP36 & auxiliary boilers-AB1 & AB2*, which shall be amended to change the monitoring requirements in accordance with the IED, to add the standard BS EN 15259 for monitoring infrastructure and to update the periodic monitoring standards for oxides of nitrogen and carbon monoxide.

It also refers to Table S3.1(c), *Point source emissions to air from existing plant,* which shall be amended to remove HFO references from emission points A52, A53 and A54.

Condition 3.1.4 shall be amended to refer to Table S3.1(a).

Condition 3.1.4 refers to Table S3.4, *Annual limits to air (excluding start up and shut down)* which shall be amended in accordance with the IED and to replace emission points A66/67/68 with emission points A62 & A63.

Subsection 3.4 shall be amended to refer to Chapter III of the IED.

Condition 3.4.1 shall be amended in accordance with the IED.

Condition 4.2.2(d) shall be amended to refer to additional conditions.

Condition 4.2.3 refers to Table S4.1, *Reporting of monitoring data* which shall be amended.

Condition 4.2.2 refers to Table S4.3, *Performance Parameters* which shall be amended to include additional parameters for LCP and DFO usage dates and days/hours.

Condition 4.2.3 refers to Table S4.4, *Reporting forms* which shall be amended to update forms for emissions to air.

Conditions 4.3.1 and 4.3.2 shall be amended in accordance with the IED.

Conditions 4.4.2 shall be amended in accordance with the IED.

Condition 6.1.1 refers to the meaning of expressions (*Interpretation*); “large combustion plant” or “LCP” shall be amended.

ADDITIONS:

The following conditions are **added** following an Environment Agency initiated variation:

Condition 1.2.2 shall be added in accordance with the IED.

Condition 2.3.5 shall be added in accordance with Chapter III of the IED.

Condition 2.3.6 shall be added in accordance with Chapter III of the IED.

Condition 2.3.7 shall be added in accordance with Chapter III of the IED.

Condition 2.3.8 shall be added to replace 2.3.4 (see above).

Condition 2.3.9 shall be added in accordance with Chapter III of the IED.

Condition 2.3.10 shall be added in accordance with Chapter III of the IED.

Condition 2.3.11 shall be added in accordance with Chapter III of the IED.

Condition 2.3.11 refers to Table S1.4, *Start-up and Shut-down thresholds,* which shall be added (replaces S1.4 *Pre-operational measures*).

Condition 2.4.1 refers to Table S1.3, *Improvement programme,* which shall include an additional condition IP4 for the thermal input and IP5 for submission of emissions data.

Condition 3.1.7 shall be added in accordance with the IED.

Condition 3.4.7 shall be added in accordance with the IED.

Conditions 3.5.1 and 3.5.2 shall be added (odour conditions omitted in error by consolidation EPR/BX2108IQ/V006).

Conditions 3.6.1 and 3.6.2 shall be added (noise conditions omitted in error by consolidation EPR/BX2108IQ/V006).

Condition 4.2.5 shall be added to enable quarterly reporting of mass emissions.

Condition 6.1.1 refers to the meaning of expressions (*Interpretation*), the following expressions shall be added:

“base load”; “Energy efficiency”; “Industrial Emissions Directive”; “MSDL” ; “MSUL”; “TNP Register”

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- in relation to emissions from gas turbines, the concentration in dry air at a temperature of 273K, at a pressure of 101.3kPa and with an oxygen content of 15% dry for liquid and gaseous fuels; and/or
- 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, unless the waste heat boiler is operating alone, in which case, with an oxygen content of 3% dry for liquid and gaseous fuels; and/or
- in relation to the manufacture of gypsum based products; an oxygen content of 18%, dry, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, for liquid and gaseous fuels.

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number

EPR/BX2108IQ

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/BX2108IQ/V009 authorising,

British Sugar PLC ("the operator"),

whose registered office is

Weston Centre
10 Grosvenor Street
London
W1K 4QY

company registration number **00315158**

to operate a regulated facility at

Wissington Sugar Factory
Wissington
King's Lynn
Norfolk
PE33 9QG

to the extent authorised by and subject to the conditions of this permit.

Name	Date
Anne Nightingale	**22/12/2015**

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.2 Energy efficiency

1.2.1 The operator shall:

(a) take appropriate measures to ensure that energy is used efficiently in the activities;

(b) review and record at least every 4 years whether there are suitable opportunities to improve the energy efficiency of the activities; and

(c) take any further appropriate measures by a review.

1.2.2 For LCP 38 and LCP 36 referenced in schedule 1, table S1.1, the operator shall take appropriate measures to ensure the efficiency of energy generation at the permitted installation is maximised.

1.3 Efficient use of raw materials

1.3.1 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 4 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 appropriate further measures identified by a review.

1.4 Avoidance, recovery and disposal of wastes produced by the activities

1.4.1 The operator shall:

(a) take appropriate measures to ensure that waste produced by the activities is avoided or reduced, or where waste is produced it is recovered wherever practicable or otherwise disposed of in a manner which minimises its impact on the environment;

(b) review and record at least every 4 years whether changes to those measures should be made; and

(c) take any further appropriate measures identified by a review.

2. Operations

2.1 Permitted activities

2.1.1 The operator is authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the plan at schedule 7 to this permit.

2.3 Operating techniques

2.3.1 (a) The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1 table S1.2, unless otherwise agreed in writing by the Environment Agency.

(b) If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan specified in schedule 1, table S1.2 or otherwise required under this permit, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.

2.3.2 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.

2.3.3 Standby fuel, in the form of distillate fuel oil (DFO), may be used but for no more than 45 days per year within the Combined Heat and Power Plant, ICL Boilers and Maxecon Ancillary Steam Boilers. DFO may be used only during:

(a) interruption by a third party

(b) testing and trials, agreed in writing by the Agency

(c) gas interruption, as implemented by a rise in the price of natural gas causing the price/therm to exceed that of DFO.

2.3.4 Deleted.

2.3.5 For LCP 38 and LCP 36 referenced in schedule 1, table S1.1, without prejudice to condition 2.3.1, 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.

2.3.6 For LCP 38 and LCP 36 referenced in schedule 1, table S1.1, standby fuel DFO may be used for periods of up to 10 days during times of interruption to the gas supply.

2.3.7 For LCP 38 referenced in schedule 1, table S1.1, operating in open cycle mode; the activity shall not operate for more than 500 hours per year.

2.3.8 For LCP 36 referenced in schedule 1, table S1.1, the activity shall not operate for more than 500 hours per year unless otherwise agreed in writing by the Environment Agency.

2.3.9 For LCP 36 referenced in schedule 1, S1.1, the activity shall operate for no more than 10,000 hours (excluding start-up and shutdown) from 1 January 2016.

2.3.10 For LCP 36 referenced in schedule 1, table S1.1, the activity shall not be operated for more than 17,500 operating hours starting from 1 January 2016 and ending no later than 31 December 2023.

2.3.11 For LCP 38 and LCP 36 referenced in schedule 1, table S1.1, the end of the start up period and the start of the shutdown period shall conform to the specifications set out in Schedule 1, tables S1.2 and S1.4.

2.4 Improvement programme

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

3. Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1(a), S3.1(b), S3.1(c), S3.1(d), S3.2 and S3.3.

3.1.2 The limits given in schedule 3 shall not be exceeded.

3.1.3 Where a substance is specified in schedule 3 table S3.2 or S3.3 but no limit is set for it, the concentration of such substance in emissions to water from the relevant emission point shall be no greater than the background concentration.

3.1.4 Total annual emissions from the emission points set out in schedule 3 table S3.1(a) of a substance listed in schedule 3 table S3.4 shall not exceed the relevant limit in table S3.4.

3.1.5 For periods of when distillate fuel oil is burned in the Gas Turbine at the same time as natural gas is burned in the Heat Recovery Steam Generator the emission limits for distillate fuel oil will apply.

3.1.6 For periods of when natural gas is burned in the Gas Turbine at the same time as distillate fuel oil is burned in the Heat Recovery Steam Generator the emission limits for distillate fuel oil will apply.

3.1.7 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.

3.2 Emissions of substances not controlled by emission limits

3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan;

(b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Monitoring

3.3.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:

(a) point source emissions specified in tables S3.1(a), S3.1(b), S3.1(c), S3.1(d), S3.2 and S3.3;

(b) surface water or groundwater specified in table S3.2 and S3.3;

(c) process monitoring specified in table S3.5.

3.3.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.3.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.6.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by the Environment Agency.

3.3.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1(a), S3.1(b), S3.1(c), S3.1(d), S3.2 and S3.3 unless otherwise agreed in writing by the Environment Agency.

3.3.5 Any combustion plant that operates between 300 and 500 hours in any 12-month period shall be subject to either discontinuous or continuous measurement systems consistent with MCERTS requirements specified in condition 3.3.3.

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

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

3.4.2 If the monitoring results for more than 10 days a year are invalidated within the meaning set out in Schedule 3, the Operator shall:

(a) 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

(b) implement the approved measures.

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

3.4.4 Unless otherwise agreed in writing by the Environment Agency in accordance with condition 3.4.5 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.

3.4.5 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.

3.4.6 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.

3.4.7 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in schedule 3, tables S3.1(a), the Continuous Emission Monitors shall be used such that:

a) for the continuous measurement systems fitted to the LCP release points defined in Table S3.1(a), 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.

3.5 Odour

3.5.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour.

3.5.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;

(b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.6 Noise and vibration

3.6.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.6.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;

(b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

4. Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and

(d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) off-site environmental effects; and

(ii) matters which affect the condition of the land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:

(a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;

(b) the annual production /treatment data set out in schedule 4 table S4.2;

(c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.

(d) where conditions 3.3.5, 2.3.6, 2.3.7, 2.3.8, 2.3.9 and 2.3.10 apply the hours of operation in any year shall be reported to the Environment Agency by 31 January in the following year.

4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:

(a) in respect of the parameters and emission points specified in schedule 4 table S4.1;

(b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4; and

(c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.2.5 For activity LCP 38 referenced in schedule 1, table S1.1; unless otherwise agreed in writing with the Environment Agency, within 1 month of the end of each quarter, the operator shall submit to the Environment Agency using the form IED RTA1, listed in table S4.4, the information specified on the form relating to the site's mass emissions.

4.3 Notifications

4.3.1 In the event:

(a) that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—

(i) inform the Environment Agency,

(ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and

(iii) take the measures necessary to prevent further possible incidents or accidents;

(b) of a breach of any permit condition the operator must immediately—

(i) inform the Environment Agency, and

(ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;

(c) of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.

4.3.2 Any information provided under condition 4.3.1 (a)(i), 4.3.1 (b)(i) where the information relates to the breach of a condition specified in the permit shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

(a) any change in the operator's trading name, registered name or registered office address; and

(b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

(a) any change in the operator's name or address; and

(b) any steps taken with a view to the dissolution of the operator.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

(a) the Environment Agency shall be notified at least 14 days before making the change; and

(b) the notification shall contain a description of the proposed change in operation.

4.3.6 The Environment Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.3.7 Where the operator has entered into a climate change agreement with the Government, the Environment Agency shall be notified within one month of:

(a) a decision by the Secretary of State not to re-certify the agreement;

(b) a decision by either the operator or the Secretary of State to terminate the agreement; and

(c) any subsequent decision by the Secretary of State to re-certify such an agreement.

4.3.8 from 1 January 2008 the operator shall inform the Environment Agency in writing of the closure of any LCP within 28 days of the date of closure.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made “immediately”, in which case it may be provided by telephone.

Schedule 1 – Operations

Table S1.1 activities			
Activity ref.	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
A1	Section 1.1 Part A(1)(a) – Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more	**LCP 38** Burning natural gas, with distillate fuel oil (DFO) Note 1 as back-up, in a gas turbine with102 MW thermal input and a Heat Recovery Steam Generator (HRSG) with supplementary firing (106 MW thermal input) to generate steam and electricity. **LCP 36** Three ICL boilers, burning natural gas, with DFO Note 1 as back-up, each with 45 MW thermal input (135 MW). **AB1 & AB2** Two Maxecon auxiliary steam boilers, burning natural gas, with DFO Note 1 as back-up, 8 MW and 10 MW thermal input. Note 1 DFO may be burned only during: (a) interruption by a third party; (b) testing and trials with the prior written agreement of the Environment Agency; and (c) gas interruption, as implemented by a rise in the price of natural gas causing the price/therm to exceed that of DFO; up to a maximum of 45 days per year.	From the receipt of fuel to the use of steam and electricity in all listed activities and directly associated activities, the export of steam and electricity to other processes on the site, the export of electricity to the National Grid, the discharge of emissions to air and the disposal of waste arising.
A2	Section 3.1 Part A(1)(b)(i) – Producing lime in kilns or other furnaces with a production capacity of more than 50 tonnes per day	Producing lime for subsequent conversion to slaked lime to be used in the sugar production process.	From the receipt of fuel and limestone to the slaking of the lime produced, the use of the kiln gas in the sugar making process, the discharge of kiln gas to air and the disposal of ash and solid residues.
A3	Section 4.2 Part A(1)(a)(i) – Producing inorganic chemicals such as gases, such as oxides of sulphur	Producing sulphur dioxide to be used in the sugar production process.	From the receipt of sulphur to the use of sulphur dioxide in the sugar making process, the emission of exhaust gas to air and the disposal of waste.

Table S1.1 activities			
Activity ref.	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
A4	Section 5.4 Part A(1)(a)(i) – Disposal of non-hazardous waste in a facility with a capacity exceeding 50 tonnes per day by biological treatment.	The treatment of waste water by means of anaerobic and aerobic plant.	From the transfer of waste water to the effluent storage lagoons to it's re-use in the process or its disposal to river.
A5	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 physical treatment.	The treatment of waste water by means of clarifiers and settlement in several lagoons.	From the transfer of waste water to the effluent storage lagoons to it's re-use in the process or its disposal to river.
A6	Section 6.8 Part A(1)(d)(ii) – Treating and processing materials intended for the production of food products from vegetable raw materials at plant with a finished product production capacity of more than 300 tonnes per day (average value on a quarterly basis)	The production of sugar juice from sugar beet.	From the receipt of sugar beet to the transfer of thick juice to the filtration and dissolving unit, or to storage tank.
A7	Section 6.8 Part A(1)(d)(ii) – Treating and processing materials intended for the production of food products from vegetable raw materials at plant with a finished product production capacity of more than 300 tonnes per day (average value on a quarterly basis)	The production of animal feed from sugar beet.	From the receipt of fuel and the transfer of spent cossettes (pulp) from the sugar diffuser to the despatch of animal feed, emissions to air and disposal of ash and waste, including solid waste from the combustion process used for drying the pulp.
A8	Section 6.8 Part A(1)(d)(ii) – Treating and processing materials intended for the production of food products from vegetable raw materials at plant with a finished product production capacity of more than 300 tonnes per day (average value on a quarterly basis)	The production of sugar crystal from sugar juice.	From the transfer of thick juice from the process or from storage to the dispatch of crystal sugar, the discharge of dust, vapour and incondensable gases to air and the disposal of waste arising.
A9	Section 3.1 Part B(c) – Slaking lime for the purpose of making calcium hydroxide or calcium magnesium hydroxide	The production of slaked lime to be used in the sugar production process.	From the transfer of lime to the slaker to its use in the sugar making process, the emission of dust to air and the disposal of waste arising.

Table S1.1 activities				
Activity ref.	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**		**Limits of specified activity**
A10	Section 4.1 Part A(1)(a)(ii) – Producing organic chemicals such as organic compounds containing oxygen, such as alcohols	The production of bioethanol from sugar syrups.		From the transfer of feed materials from the sugar beet processing and sugar syrup recovery system to the dispatch of bioethanol and by-products; including disposal of waste arising and carbon dioxide capturing and processing.
	Directly Associated Activity			
A11	Production of betaine and raffinate type products	The production of betaine and raffinate type products from sugar juices/syrups high in amino acids, using the Phoenix Chromatic Separation Plant, having a production capacity of less than 300 tonnes/day	From the transfer of syrups from the crystallisation house, and the receipt of syrups from off-site sources to the despatch of betaine and raffinate type products and the disposal of waste arising	
A12	Production of glucose syrup	The production of glucose syrups by an inversion process in plant having a production capacity of less than 300 tonnes/day	From the transfer of crystal sugar and the receipt of raw materials to the despatch of glucose syrup and the disposal of waste arising.	
A13	Production of sugar syrup	The production of sugar syrups by the dissolution of crystal sugar in plant having a production capacity of less than 300 tonnes/day	From the transfer of crystal sugar to the despatch of sugar syrup and the disposal of waste arising.	
A14	Thick juice storage	Conditioning of sugar juice and storage for later processing during the juice run	From the concentration and cooling of thick juice (thick juice export) to the return of thick juice to the sugar end (thick juice import).	
A15	Conditioning, storage and despatch of sugar	Conditioning and storage of sugar, and its bagging or transfer to bulk container and despatch	From transfer of sugar into the silos to its despatch or reuse in the process.	
A16	Generation of conditioned air for the sugar storage silos	The cooling, dehumidifying and filtration of air	From intake of air to its emission, and the disposal of waste.	
A17	Composting	The composting of green leaf and straw delivered with the beet.	From the removal of green leaf and straw from the beet prior to processing to the despatch or use on-site of compost and the transfer of leachate to the waste water treatment system. The maximum quantity of material be processed at any one time is 1000m^3.	
A18	Conditioning, storage and handling of soil	The recovery of soil delivered with the beet by washing and settling (for agricultural use), conditioning, blending and, where appropriate, screening (for horticultural use).	From the excavation of soil from the settling ponds to its despatch, and the disposal of waste arising.	
A19	Conditioning, storage and handling of stones	The recovery of stones delivered with the beet for use by the construction industry.	From the separation of stones from beet to their despatch or use on-site, and the disposal of waste arising.	

Table S1.1 activities			
Activity ref.	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
A20	Preparation of wet animal feed as a co-product.	The production of pressed pulp without drying as animal feed.	From the pressing of pulp from the diffuser to the despatch of wet animal feed and the disposal of waste arising.
A21	Manufacture, conditioning and storage of Limex 70 co-product.	The recovery of impure calcium carbonate from the carbonatation process for use as a treatment to improve agricultural land.	From the filtration of the calcium carbonate from thin juice to its despatch, and the disposal of waste arising.
A22	Operation of the decalcification columns	The operation of the ion exchange columns.	From the receipt of sodium hydroxide to the transfer of calcium carbonate to the Limex process and the disposal of waste arising.
A23	Storage of bioethanol, raw material and by-products	The transfer, and storage, of bioethanol and bioethanol by-products from the bioethanol plant to the bioethanol product storage tank farm.	From the transfer of bioethanol from bioethanol plant to the loading of transport tankers.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application EPR/BX2108IQ/A001	The response to questions 2.1 and 2.2 given in pages 14 to 63 inclusive, supplemented by the unit activity descriptions given in Appendix 9 of the application.	31/03/05
Email regarding production capacity of betaine and glucose syrups EPR/BX2108IQ/A001	Whole	28/10/05
Report on the burning of alternative fuels EPR/BX2108IQ/A001	Whole	29/11/05
Email limits of mercury and cadmium as trace contaminants of raw materials EPR/BX2108IQ/A001	Whole	01/12/05
Variation Application EPR/BX2108IQ/V002	The response to questions C2.1 to C2.12 given in pages 2 to 3 inclusive.	27/10/06
Response given to Schedule 7 Notification dated 18/01/07	Whole	07/02/07
Variation Application EPR/BX2108IQ/V006	The response to question 3 of Part C3 of the application.	15/11/10
Response given to Schedule 5 Notification dated 06/01/11	Whole	18/01/11
Response to Regulation 60(1) Notice – request for information dated 31/10/14	Compliance route and operating techniques identified in response to questions: 47 (TNP-LCP 38 and LLD-LCP 36 compliance routes) 49 xxii (CCGT mode of operation) 49 xxiii (fuel options) 51 (start-up and shut-down load)	25/03/15
Email confirming abnormal conditions for HRSG only operation	For operation of the HRSG during periods of gas turbine breakdown, trip, maintenance, testing and mapping the oxygen reference condition is 15%.	21/12/15

Table S1.3 Improvement programme requirements		
Reference Note 1	**Requirement**	**Date**
IP4	The operator shall provide a report in writing to the Environment Agency for acceptance which provides the net rated thermal input for LCP38 and LCP 36 . 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). Evidence to support this figure, in order of preference, shall be in the form of:- a) Performance test results* during contractual guarantee testing or at commissioning (quoting the specified standards or test codes), b) Performance test results after a significant modification (quoting the specified standards or test codes), c) Manufacturer's contractual guarantee value, d) Published reference data, e.g., Gas Turbine World Performance Specifications (published annually); e) Design data, e.g., nameplate rating of a boiler or design documentation for a burner system; f) Operational efficiency data as verified and used for heat accountancy purposes, g) Data provided as part of Due Diligence during acquisition, *Performance test results shall be used if these are available.	31/12/16
IP5	For LCPD LCP 106 and 69 (now LCP 38 and LCP 36 under IED). 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.	28/01/16

Note 1: IP1 to IP3 are complete.

Table S1.4 Start-up and Shut-down thresholds		
Emission Point and Unit Reference	**"Minimum start up load"** **When two of the criteria listed below for the LCP or unit have been met.**	**"Minimum shut-down load"** **When two of the criteria listed below for the LCP or unit have been met.**
LCP 38	• HRSG Boiler pressure above 26barg (minimum boiler operational pressure) • HRSG Boiler temperature above 400^{o}C • HRSG Boiler feed water flow above 30 tonnes per hour (tph).	• HRSG Boiler pressure below 26barg (minimum boiler operational pressure) • HRSG Boiler temperature below 400^{o}C • HRSG Boiler feed water flow below 30 tph.
LCP 36	• Feed water flow greater than 20 tph, (this is the lowest flow rate that the economiser can be brought into service with) • HP Steam pressure greater than 32 barg • HP Steam temperature greater than 400^{o}C.	• Feed water flow below 20 tph, (this is the lowest flow rate that the economiser can be brought into service with) • HP Steam pressure below 32 barg • HP Steam temperature below 400^{o}C.

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Gas oil / Distillate fuel oil	Less than or equal to 0.1% w/w sulphur content

Schedule 3 – Emissions and monitoring

Table S3.1(a) Point source emissions to air from Gas Turbines - LCP 38						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A62	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	**LCP 38** HRSG stack Firing GT and HSRG on **gas**	50 mg/m^3	Monthly mean of validated hourly averages	Continuous	BS EN 14181
			55 mg/m^3	95% of validated daily means within a calendar year		
			75 mg/m^3	95% of validated hourly averages within a calendar year		
		LCP 38 HRSG stack Firing HSRG alone on **gas**	85 mg/m^3 Note 2	Calendar monthly mean	Continuous	BS EN 14181
			85 mg/m^3 Note 2	95% of validated daily means within a calendar year		
			85 mg/m^3 Note 2	95% of validated hourly averages within a calendar year		
		LCP 38 HRSG stack Firing GT and HSRG on **DFO**	90 mg/m^3	Monthly mean of validated hourly averages	Continuous	BS EN 14181
			99 mg/m^3	95% of validated daily means within a calendar year		
			125 mg/m^3	95% of validated hourly averages within a calendar year		
A62	Oxides of nitrogen	**LCP 38**	125 mg/m^3 Note 2	Monthly mean of validated hourly averages		

Table S3.1(a) Point source emissions to air from Gas Turbines - LCP 38						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
	(NO and NO_2 expressed as NO_2)	HRSG stack Firing HSRG alone on **DFO**	125 mg/m^3 Note 2	95% of validated daily means within a calendar year	Continuous	BS EN 14181
			125 mg/m^3 Note 2	95% of validated hourly averages within a calendar year		
A62	Carbon Monoxide	**LCP 38** HRSG stack Firing GT and HSRG on **gas**	100 mg/m^3	Monthly mean of validated hourly averages	Continuous	BS EN 14181
			100 mg/m^3	Daily mean of validated hourly averages		
			100 mg/m^3	95% of validated hourly averages within a calendar year		
		LCP 38 HRSG stack Firing HSRG alone on **gas**	100 mg/m^3 Note 2	Monthly mean of validated hourly averages	Continuous	BS EN 14181
			100 mg/m^3 Note 2	Daily mean of validated hourly averages		
			100 mg/m^3 Note 2	95% of validated hourly averages within a calendar year		
		LCP 38 HRSG stack Firing GT and HSRG on **DFO**	100 mg/m^3	Monthly mean of validated hourly averages	Continuous	BS EN 14181
			100 mg/m^3	Daily mean of validated hourly averages		
			100 mg/m^3	95% of validated hourly averages within a calendar year		

Table S3.1(a) Point source emissions to air from Gas Turbines - LCP 38						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
		LCP 38 HRSG stack Firing HSRG alone on **DFO**	100 mg/m^{3} Note 2	Monthly mean of validated hourly averages	Continuous	BS EN 14181
			100 mg/m^{3} Note 2	Daily mean of validated hourly averages		
			100 mg/m^{3} Note 2	95% of validated hourly averages within a calendar year		

Table S3.1(a) Point source emissions to air from Gas Turbines - LCP 38						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A62	Oxygen	HRSG stack Firing GT and HSRG on **gas/DFO**	-	-	Continuous As appropriate to reference	BS EN 14181
		HRSG stack Firing HSRG alone on **gas/DFO**				
A62	Water Vapour	HRSG stack Firing GT and HSRG on **gas/DFO**	-	-	Continuous As appropriate to reference	BS EN 14181
		HRSG stack Firing HSRG alone on **gas/DFO**				
A62	Stack gas temperature	HRSG stack Firing GT and HSRG on **gas/DFO**	-	-	Continuous As appropriate to reference	Traceable to national standards
		HRSG stack Firing HSRG alone on **gas/DFO**				
A62	Stack gas pressure	HRSG stack Firing GT and HSRG on **gas/DFO**	-	-	Continuous As appropriate to reference	Traceable to national standards
		HRSG stack Firing HSRG alone on **gas/DFO**				
A62	Stack gas volume flow	HRSG stack Firing GT and HSRG on **gas/DFO**	-	-	At least annually, or as agreed in writing with the	By calculation, or as agreed in writing with the

Table S3.1(a) Point source emissions to air from Gas Turbines - LCP 38						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
		HRSG stack Firing HSRG alone on **gas/DFO**			Environment Agency	Environment Agency
A62	As required by the Method Implementation Document for BS EN 15259	HRSG stack	-	-	Pre-operation and when there is a significant operational change	BS EN 15259
A62	Sulphur Dioxide	HRSG stack Firing GT and HSRG on **gas/DFO**	-	-	At least every 6 months	Concentration by calculation, as agreed in writing with the Environment Agency
		HRSG stack Firing HSRG alone on **gas/DFO**				
A62	Dust	HRSG stack Firing GT and HSRG on **DFO**	-	-		
		HRSG stack Firing HSRG alone on **gas/DFO**				

Table S3.1(a) Point source emissions to air from Gas Turbines - LCP 38						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A63	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	**LCP 38** HRSG by-pass stack Note 1 Firing GT on **gas**	-	-	Concentration by calculation every 4380 operational hours or 2 years, whichever is sooner	Agreed in writing with the Environment Agency
		LCP 38 HRSG by-pass stack Note 1 Firing GT on **DFO**	-	-		
A63	Carbon Monoxide	**LCP 38** HRSG by-pass stack Note 1 Firing GT on **gas**	-		Concentration by calculation every 4380 operational hours or 2 years, whichever is sooner	Agreed in writing with the Environment Agency
		LCP 38 HRSG by-pass stack Note 1 Firing GT on **DFO**	-			
A63	Sulphur Dioxide	**LCP 38** HRSG by-pass stack Note 1 Firing GT on **gas**	-	-	Concentration by calculation every 4380 operational hours or 2 years, whichever is sooner	Agreed in writing with the Environment Agency
		LCP 38 HRSG by-pass stack Note 1 Firing GT on **DFO**				
A63	Dust	**LCP38** HRSG by-pass stack Note 1 Firing GT on **DFO**	-	-	Concentration by calculation every 4380 operational hours or 2 years, whichever is sooner	Agreed in writing with the Environment Agency

Note 1: Refer to condition 2.3.7 of this permit.

Note 2: The Oxygen reference condition is 15% under abnormal operation, where the GT is taken off-line and where there is a credible plan to recover operation of the GT; otherwise 3% oxygen shall apply as detailed in Schedule 7 of this permit. Abnormal operation is incorporated into Table S1.2 of this permit.

Table S3.1(b) point source emissions to air from ICL boilers - LCP 36 & auxiliary boilers - AB1 & AB2						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A66/67/68	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	**LCP 36** Combined stack ICL boilers #1, #2, #3 Firing on **gas**	200	-	Concentration by calculation every 4380 operational hours or 2 years, whichever is sooner	Agreed in writing with the Environment Agency
A66/67/68	Carbon Monoxide		110	-		
A66/67/68	Sulphur Dioxide		35	-		
A66/67/68	Dust		5	-		
A66/67/68	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	**LCP 36** Combined stack ICL boilers #1, #2, #3 Firing on **DFO**	220			
A66/67/68	Sulphur Dioxide		250			
A66/67/68	Dust		25			
A69	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	**AB1** Maxecon boiler #1 flue duct firing on natural gas	300 mg/m^3	Hourly	Monthly if the plant is to operate for two weeks or more, otherwise annually.	BS EN 14792
		AB1 Maxecon boiler #1 flue duct firing on DFO	650 mg/m^3			
A70		**AB2** Maxecon boiler #2 flue duct firing on natural gas	300 mg/m^3			
		AB2 Maxecon boiler #2 flue duct firing on DFO	650 mg/m^3			

Table S3.1(b) point source emissions to air from ICL boilers - LCP 36 & auxiliary boilers - AB1 & AB2						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A69	Carbon Monoxide	**AB1** Maxecon boiler #1 flue duct firing on natural gas	100 mg/m^3	10-minute average	Monthly if the plant is to operate for two weeks or more, otherwise annually.	BS EN 15058
		AB1 Maxecon boiler #1 flue duct firing on DFO				
A70		**AB2** Maxecon boiler #2 flue duct firing on natural gas				
		AB2 Maxecon boiler #2 flue duct firing on DFO				

Table S3.1(c) Point source emissions to air from existing plant						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A1	-	Breather vent from caustic tank	-	-	-	-
A2	-	Transport water antifoam oil tank vent	-	-	-	-
A3	-	Local exhaust ventilation (LEV) from the beet slicing machines	-	-	-	-
A4	-	Knife washing area LEV	-	-	-	-
A5	-	Breather vent from formaldehyde tank	-	-	-	-
A6	-	Breather vent from sulphuric acid storage tank	-	-	-	-
A7	-	Extract Tank Breather	-	-	-	-
A8	-	Vent from depulpers	-	-	-	-
A9	-	Vent from diffuser supply header tank	-	-	-	-
A10	-	Diffuser vapour extraction vents	-	-	-	-
A11	-	ABS storage tank vent	-	-	-	-
A12	-	Breather vent from magnesium oxide storage tank abated by filter	-	-	-	-
A13	-	Breather vent from soda ash storage tank abated by filter	-	-	-	-
A14	-	Magox reaction tank vents	-	-		
A15	CO	Vent from 1st carbonatation tank	-	-	Continuous	As agreed in writing with the Agency
A16	-	Vent from 2nd carbonatation tank	-	-	-	-

Table S3.1(c) Point source emissions to air from existing plant						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A17	-	Clarifier overflow vent	-	-	-	-
A18	-	Hoesch press LEV	-	-	-	-
A19	-	Vent from sweet water tank	-	-	-	-
A20	-	Hoesch wash water tank vent	-	-	-	-
A21	-	Hoesch slurry supply tank vent	-	-	-	-
A22	-	1st carbonatation overflow tank vent	-	-	-	-
A23	-	Hydrochloric acid tank vent abated by scrubber	-	-	-	-
A24	-	Pressure control vent on line taking kiln gas to the carbonatation tanks	-	-	-	-
A25	-	Vent from sulphitation absorption column	-	-	-	-
A26	-	Does not exist	-	-	-	-
A27	-	Incondensable gas vents	-	-	-	-
A28	-	Anti-scalant storage tank vent	-	-	-	-
A29	-	EDTA tank vent	-	-	-	-
A30	-	Vent from dissolver	-	-	-	-
A31	-	Melter vapour extraction	-	-	-	-
A32	-	Thick juice storage tank vents	-	-	-	-
A33	-	Thick juice cooling tower vents	-	-	-	-
A34	-	Vacuum pump vent Waller Nash #1	-	-	-	-
A35	-	Vacuum pump vent Waller Nash #2	-	-	-	-

Table S3.1(c) Point source emissions to air from existing plant						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A36	-	Vacuum pump vent Waller Nash #3	-	-	-	-
A37	-	Vacuum pump vent Siemens	-	-	-	-
A38	-	Does not exist	-	-	-	-
A39	-	White centrifugal scroll vapour extraction	-	-	-	-
A40	-	Vacuum pump cooling tower vents	-	-	-	-
A41	-	V/C cooling tower vents	-	-	-	-
A42	-	Sugar dryer wet scrubber vent	-	-	-	-
A43	-	Sugar cooler wet de-duster vent	-	-	-	-
A44	-	Sugar cooler dry de-duster vent	-	-	-	-
A45	-	Does not exist	-	-	-	-
A46	-	Does not exist	-	-	-	-
A47	-	Does not exist	-	-	-	-
A48	-	Does not exist	-	-	-	-
A49	-	Dry de-duster vents on sugar silos	-	-	-	-
A50	-	Liquid sugar cooling tower vents	-	-	-	-
A51	-	Condenser cooling tower vents	-	-	-	-

Table S3.1(c) Point source emissions to air from existing plant						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A52	Sulphur Dioxide	#1 dryer flue duct abated by cyclones when firing on gas	65 mg/Nm^3	4 hour period expressed as 15 minute average	Annual	BS EN 6069-4.4:1993
A53		#2 dryer flue duct abated by cyclones when firing on gas				
A54		#3 dryer flue duct abated by cyclones when firing on gas				
A52	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	#1 dryer flue duct abated by cyclones when firing on gas	180 mg/Nm^3	4 hour period expressed as 30 minute average	Annual	BS ISO 10849
A53		#2 dryer flue duct abated by cyclones when firing on gas				
A54		#3 dryer flue duct abated by cyclones when firing on gas				
A52	Carbon Monoxide	#1 dryer flue duct abated by cyclones when firing on gas	3500 mg/Nm^3	4 hour period expressed as 10 minute average	Annual	BS ISO12039
A53		#2 dryer flue duct abated by cyclones when firing on gas				
A54		#3 dryer flue duct abated by cyclones when firing on gas				
A52	Total Particulate	#1 dryer flue duct abated by cyclones when firing on gas	150 mg/Nm^3	Minimum of 1-hour period	Annual	BS EN 13284-1 or BS ISO9096
A53		#2 dryer flue duct abated by cyclones when firing on gas				
A54		#3 dryer flue duct abated by cyclones when firing on gas				
A55	-	Pellet cooler cyclone vents	-	-	-	-

Table S3.1(c) Point source emissions to air from existing plant						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A56	-	Animal feed LEV cyclone vents with monitoring	-	-	-	-
A57	-	Airpol bag filter vents with monitoring	-	-	-	-
A58	-	Lime kiln air intake / vent pipe	-	-	-	-
A59	Total Particulate	Lime slaker wet scrubber vent with cyclone	40 mg/Nm^3	Minimum of 1-hour period	Annual	BS EN 13284-1
A60	-	Milk of lime tank vent	-	-	-	-
A61	-	Does not exist	-	-	-	-
A64	-	Duct to glasshouse	-	-	-	-
A65	-	De-aerator vent	-	-	-	-
A71	-	Heavy Fuel Storage Tank Vent	-	-	-	-
A72	-	Gas-Oil Storage Tank Vents	-	-	-	-
A73	-	Does not exist	-	-	-	-
A74	-	Does not exist	-	-	-	-
A75	-	Blowdown tank vent	-	-	-	-
A76	-	Phoenix vacuum pump vent	-	-	-	-
A77	-	Phoenix cooling tower vents	-	-	-	-
A78	-	Phoenix extract storage tank vents	-	-	-	-
A79	-	Phoenix raffinate storage tank vents	-	-	-	-
A80	-	Phoenix betaine molasses storage tank vents	-	-	-	-

Table S3.1(c) Point source emissions to air from existing plant						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A81	-	Phoenix betaine storage tank vents	-	-	-	-
A82	-	Anaerobic digester flare stack	-	-	-	-
A83	-	Caustic soda tank vent	-	-	-	-
A84	-	Antifoam oil tank vent	-	-	-	-
A85	-	De-cal column vents	-	-	-	-
A86	-	De-cal pipe to soft juice breather	-	-	-	-
A87	-	Soft juice tank vent	-	-	-	-
A88	-	Gassing tank vent	-	-	-	-
A89	-	Regenerant tank vent	-	-	-	-
A90	-	Regenerant storage tank vent	-	-	-	-
A91	-	Bioethanol Cooling Tower Vent	-	-	-	-
A92	-	Bioethanol Cooling Tower Vent	-	-	-	-
A93	-	Bioethanol Scrubber Vent	-	-	-	-
A94	-	Bioethanol Scrubber Vent	-	-	-	-
A95	-	Bioethanol Vacuum Pump Vent	-	-	-	-
A96	-	Biofuel Vacuum Pump Vent	-	-	-	-
A97	-	Ethanol Storage Vent	-	-	-	-
A98	-	Methanol Storage Vent	-	-	-	-
A99	-	Fuel Oil Storage Vent	-	-	-	-

Table S3.1(d) Point source emissions to air from new plant						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A101	-	Carbon dioxide scrubber in CO_2 liquefaction plant	-	-	-	-
A102	-	Carbon dioxide scrubber in CO_2 liquefaction plant	-	-	-	-

Table S3.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Emission point ref. & location	Parameter	Source	Limit (including unit)- these limits do not apply during start up or shut down.	Reference period	Monitoring frequency	Monitoring standard or method
W1 on site plan in schedule 2 emission to River Wissey	Volume in the period 1 July – 31 October	Final pond of the waste water treatment plant	5000m^3/ 24 hours	24 hour period beginning 00.01	Continuous	Electro-magnetic flow
	Volume in the period, Optional for peak processing 1 October – 31 October		5000m^3 - 8000m^3/ 24 hours			
	Volume in the period 1 April – 30 June		8000m^3/ 24 hours			
	Volume in the period 1 November – 31 March		12000m^3/ 24 hours			
W1 on site plan in schedule 2 emission to River Wissey	Rate of discharge in the period 1 July – 31 October	Final pond of the waste water treatment plant	64 litres / sec	Instantaneous	Continuous	Electro-magnetic flow
	Rate of discharge in the period, Optional for peak processing 1 October – 31 October		64 -103 litres / sec			
	Rate of discharge in the period 1 April – 30 June		103 litres / sec			
	Rate of discharge in the period 1 November – 31 March		139 litres / sec			
W1 on site plan in schedule 2 emission to River Wissey	BOD_5 in the period 1 July – 31 October	Final pond of the waste water treatment plant	ELV (mg/Litre) = -0.39 x Flow Rate (litres/sec) + 34. ELV must not be greater than 25mg/litre	Spot Sample		
	Optional for peak processing period BOD_5 in the period 1 October – 31 October		14mg/litre			

	BOD_5 in the period 1 April – 30 June		ELV (mg/Litre) = -0.20 x Flow Rate (litres/sec) + 33. ELV must not be greater than 25mg/litre			
	BOD_5 in the period 1 November – 31 march		ELV (mg/Litre) = -0.30 x Flow Rate (litres/sec) + 56. ELV must not be greater than 40mg/litre			
W1 on site plan in schedule 2 emission to River Wissey	Ammonia in the period 1 July – 31October	Final pond of the waste water treatment plant	ELV (mg/Litre) = -0.15 x Flow Rate (litres/sec) + 13.5. ELV must not be greater than 10mg/litre	Spot Sample		
	Optional for peak processing period Ammonia in the period 1 October – 31 October		Absolute Ammonia of 7mg/litre with limit of 3.5mg/litre requiring 95% compliance			
	Ammonia in the period 1 April – 30 June		ELV (mg/Litre) = -0.12 x Flow Rate (litres/sec) + 16.5. ELV must not be greater than 12mg/litre			
	Ammonia in the period 1 November – 31 March		ELV (mg/Litre) = -0.14 x Flow Rate (litres/sec) + 28. ELV must not be greater than 20mg/litre			
W1 on site plan in schedule 2 emission to River Wissey	Suspended Solids in the period 1 July – 31 October	Final pond of the waste water treatment plant	ELV (mg/Litre) = -0.80 x Flow Rate (litres/sec) + 70. ELV must not be greater than 50mg/litre	Spot sample		
	Optional for peak processing period Suspended solids in the period 1 October – 31 October		48mg/litre			
	Suspended Solids in the period 1 April – 30 June		ELV (mg/Litre) = -0.40 x Flow Rate (litres/sec) + 66.5. ELV must not be greater than 50mg/litre			

	Suspended Solids in the period 1 November – March 31		ELV (mg/Litre) = -0.35 x Flow Rate (litres/sec) + 80. ELV must not be greater than 60mg/litre			
W1 on site plan in schedule 2 emission to River Wissey	pH	Final pond of the waste water treatment plant	7.0-9.0	Spot sample	Daily	
	Total Iron		5mg/Litre	Spot sample	Weekly	
	Total Mercury		0.005mg/Litre	Mass balance	Annual	
	Total Cadmium		0.010mg/Litre	Mass balance	Annual	

Table S3.3 Point Source emissions to sewer, effluent treatment plant or other transfers off-site – emission limits and monitoring requirements

Emission point ref. & location	Parameter	Source	Limit (including unit)- these limits do not apply during start up or shut down.	Reference period	Monitoring frequency	Monitoring standard or method
E1	-	Factory Drains	-	-	-	-
E2	-	Beet Fluming	-	-	-	-
E3	-	Beet Fluming Clarifier	-	-	-	-
E4	-	Aerobic Plant	-	-	-	-
E5	-	Bioethanol Plant Drains	-	-	-	-

Table S3.4 Annual limits (excluding start up and shut down except where otherwise stated).				
Substance	**Medium**	**Limit (including unit)**		**Emission Points**
Dust, Sulphur dioxide and Oxides of nitrogen	Air	Assessment year	**LCP 38** TNP Limit	A62 & A63 **LCP 38** Gas turbine with102 MW thermal input and a Heat Recovery Steam Generator (HRSG) with supplementary firing (106 MW thermal input)
		01/01/16 and subsequent years until 31/12/19 01/01/20-30/06/20	Emission allowance figure shown in the TNP Register as at 30 April the following year	

Table S3.5 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
A56	Particulate Matter	Continuous	Not applicable	Alarmed in the event of cyclone failure.
A57	Particulate Matter	Continuous	Not applicable	Alarmed to automatic shut-down system in the event of filter bag failure.

Schedule 4 – Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data			
Parameter	**Emission point**	**Reporting period**	**Period begins**
Sulphur dioxide mg/Nm^3	A52, A53, A54, A62, A63, A66, A67, A68	Annual	01/01/07
Total particulate mg/Nm^3	A52, A53, A54, A59	Annual	01/01/07
Dust mg/Nm^3	A62, A63, A66, A67, A68	Annual	01/01/07
Carbon monoxide mg/Nm^3	A52, A53, A54, A63, A66, A67, A68, A69, A70	Annual	01/01/07
Oxides of nitrogen (as NO_2) mg/Nm^3	A52, A53, A54, A63, A66, A67, A68, A69, A70	Annual	01/01/07
Carbon monoxide mg/Nm^3	A62	Every three months	1 January, 1 April, 1 July, 1 October
Oxides of nitrogen (as NO_2) mg/Nm^3	A62	Every three months	1 January, 1 April, 1 July, 1 October
Biochemical oxygen demand mg/l	W1	By 1st August for period 1st April to 30th June By 1st December for period 1st July to 31st October By 1st May for period 1st November to 31st March	01/07/07
Suspended solids mg/l	W1	By 1st August for period 1st April to 30th June By 1st December for period 1st July to 31st October By 1st May for period 1st November to 31st March	01/07/07
Ammonia (as N) mg/l	W1	By 1st August for period 1st April to 30th June By 1st December for period 1st July to 31st October By 1st May for period 1st November to 31st March	01/07/07
Total iron mg/l	W1	By 1st August for period 1st April to 30th June By 1st December for period 1st July to 31st October By 1st May for period 1st November to 31st March	01/07/07

Table S4.1 Reporting of monitoring data			
Daily volume m^3/24 hours	W1	By 1st August for period 1st April to 30th June By 1st December for period 1st July to 31st October By 1st May for period 1st November to 31st March	01/07/07
Flow rate (litres/second)	W1	By 1st August for period 1st April to 30th June By 1st December for period 1st July to 31st October By 1st May for period 1st November to 31st March	01/07/07

Table S4.2: Annual production/treatment	
Parameter	**Units**
Bioethanol produced	cubic metres
Sugar beet processed	tonnes
Production of crystal sugar	tonnes
Production of wet animal feed	tonnes
Production of dry animal feed	tonnes
Production of glucose syrup	tonnes
Production of betaine/raffinate	tonnes
Production of soil	tonnes
Production of stones	tonnes

Table S4.3 Chapter III Performance parameters for reporting to DEFRA and other Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Net energy use	Annually	MWh/t beet processed
Power generated	Annually	GWhr
Potable water use	Annually	m^3/t beet processed
Non potable water use	Annually	m^3/t beet processed
Waste disposal and/or recovery.	Annually	Tonnes
Annual energy input to GT/HRSG	Annually	MWh
Annual energy input to ICL boilers	Annually	MWh
Thermal input capacity for LCP 38 & LCP 36	Annually	MW
Annual fuel usage for LCP 38 & LCP 36	Annually	TJ
Total emissions to air of NO_x for LCP 38 & LCP 36	Annually	tonnes
Total emissions to air of SO_2 for LCP 38 & LCP 36	Annually	tonnes
Total emissions to air of dust for LCP 38 & LCP 36	Annually	tonnes
Operating hours for LCP 38 & LCP 36	Annually	hours
Initial date of use of DFO (for activity LCP 38 and LCP36) for any period, and the number of days and hours used before changing back to gaseous fuel	Annually	Date Days/hours
Number of hours operating in open cycle mode (A62, A63)	Annually	hours

Table S4.4 Reporting forms				
Media/ parameter	**Reporting format**	**Starting Point**	**Agency recipient**	**Date of form**
LCP				
Air & Energy	Form IED AR1 – SO_2, NO_x and dust mass emission and energy	01/01/16	National	31/12/15
Air	Form IED RTA1 –TNP quarterly emissions summary log	01/01/16	National	31/12/15
LCP	Form IED HR1 – operating hours	01/01/16	National	31/12/15
Air	Form IED CON 1 – continuous monitoring.	01/01/16	Area Office	31/12/15
Air	Form IED CON 2 – continuous monitoring	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 and load.	01/01/16	Area Office	31/12/15
OTHER				
Air (periodic)	Form BX2108IQ/A2/01042007 or other form as agreed in writing by the Environment Agency		Area Office	01/04/2007
Water	Form BX2108IQ/A7/01042007 or other form as agreed in writing by the Environment Agency		Area Office	01/04/2007
Water usage	Form BX2108IQ/A8/01042007 or other form as agreed in writing by the Environment Agency		Area Office	01/04/2007
Energy usage	Form BX2108IQ/A10/01042007 or other form as agreed in writing by the Environment Agency		Area Office	01/04/2007
Other performance indicators	Form BX2108IQ/A11/01042007 or other form as agreed in writing by the Environment Agency		Area Office	01/04/2007

Schedule 5 - Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	**EPR/BX2108IQ**
Name of operator	**British Sugar PLC**
Location of Installation	**Wissington Sugar Factory, Wissington**
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	**Notification period**

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B - to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the installation in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of British Sugar PLC

Schedule 6 - Interpretation

"a*ccident*" means an accident that may result in pollution.

"a*pplication*" means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

"authorised officer" means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

"base load" means: (i) as a mode of operation, operating for >4000hrs pa; and (ii) as a load, the maximum load under ISO conditions that can be sustained continuously, i.e. maximum continuous rating.

"*biomass*" means:

(a) vegetable matter from agriculture and forestry;

(b) vegetable waste from the food processing industry, if the heat generated is recovered;

(c) fibrous vegetable waste from virgin pulp production and from production of paper from pulp, if it is co-incinerated at the place of production and the heat generated is recovered;

(d) cork waste; and

(e) wood waste with the exception of wood waste which may contain halogenated organic compounds or heavy metals as a result of treatment with wood preservatives or coating, and which includes in particular such wood waste originating from construction and demolition waste.

"calendar monthly mean" means the value across a calendar month of all validated hourly means.

"*CEN*" means Commité Européen de Normalisation.

"Combustion Technical Guidance Note" means IPPC Sector Guidance Note Combustion Activities, version 2.03 dated 27th July 2005 published by Environment Agency.

"*DLN*" means dry, low NO_x burners.

"emissions to land", includes emissions to groundwater.

"*Energy efficiency*" the annual net plant energy efficiency means the value calculated from the operational data collected over the year.

"*EP Regulations*" means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"*emissions of substances not controlled by emission limits*" means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission or background concentration limit.

"groundwater" means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

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

"*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.

"Large Combustion Plant Directive" means Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants.

"MCERTS" means the Environment Agency's Monitoring Certification Scheme*.*

"mcr" means maximum continuous rating*.*

"*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.

"ncv" means net calorific value.

"operational hours" are whole hours commencing from the first unit ending start up and ending when the last unit commences shut down.

"*quarter*" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

"*TNP Register*" means the register maintained by the Environment Agency in accordance with regulation regulation 4 of the Large Combustion Plants (Transitional National Plan) Regulations 2015 SI2015 No.1973.

"year" *means calendar year ending 31 December.*

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- in relation to emissions from gas turbines, the concentration in dry air at a temperature of 273K, at a pressure of 101.3kPa and with an oxygen content of 15% dry for liquid and gaseous fuels; and/or
- 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, unless the waste heat boiler is operating alone, in which case, with an oxygen content of 3% dry for liquid and gaseous fuels; and/or
- in relation to the manufacture of gypsum based products; an oxygen content of 18%, dry, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, for liquid and gaseous fuels.

Schedule 7 – Site plan

END OF PERMIT