



Notice of variation with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

British Sugar PLC
Newark Sugar Factory
Newark
Nottinghamshire
NG24 1DL

Variation application number

EPR/BK9385IH/V005

Permit number

EPR/BK9385IH

Newark Sugar Factory

Permit number EPR/BK9385IH

Introductory note

This introductory note does not form a part of the notice

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

Purpose of Variation EPR/BK9385IH/V005

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 variation notice uses an updated LCP number in accordance with the most recent DEFRA LCP reference numbers. The LCP reference has changed from **LCP 73** is to **LCP 35**

The Operator has chosen to operate **LCP 35** under the Transitional National Plan (**TNP**) compliance route. LCP 35 comprises two boilers, each of 41.54 MW thermal input.

Purpose of original permit

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

The British Sugar factory at Newark produces crystalline sugar, which is despatched in bulk or packaged on site in a packaging plant (which does not form part of the installation). In addition, it produces and sells 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 for construction purposes. 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. Some of the thick juice is processed into crystalline sugar during the campaign and the rest is stored and processed into crystalline sugar during the juice refining period (or juice run), usually between May and July. Outside the campaign and juice refining period the sugar production process closes down and maintenance is carried out.

There are no Sites of Special Scientific Interest (SSSIs) within 2 km or European sites within 10 km of the installation. The site is located in an area of predominantly agricultural use, approximately 3 km to the north-east of Newark. The River Trent flows approximately 400 m to the north-west of the site. The site is underlain by a minor aquifer of intermediate vulnerability.

The sugar production process comprises:

- Receipt, handling, unloading 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. Antifoam, recycled water from the anaerobic digester and alkali if necessary are added to the transport water to maintain the quality of the water and improve the fluming characteristics.
- Beet slicing. The beet is sliced into thin slices known as cosettes using power driven drum 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 from the evaporation stage. 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 pressed 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 carbonatation 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 lime kilns 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 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, flocculents, colour inhibitor, alkali and filtration aids may be added to assist processing.
- Sulphitation. 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. The exhaust gasses from the scrubber are scrubbed in a second packed bed column fed by condensed vapour from the sugar process.
- Evaporation. The thin juice is concentrated from 15% dry solids to 67-69% by a series of evaporators. These are heated by steam from the onsite combined heat and power unit and incorporate a high degree of heat reclamation.
- Filtration and dissolving – sugar end. The thick juice is filtered in a two-stage process using filter aid to remove any small particles prior to crystallisation. 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 some of the 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 in up to three stages. Syrup is boiled under vacuum (to minimise the temperature required). Sugar crystals are removed from the liquid phase by centrifuging and washing with recycled condensate. The syrup is either recycled for further crystallisation or sold as a product. There is extensive scope for reclaiming out of specification sugar and syrup in this process. As well as crystalline sugar, the process produces molasses which is either sold as a product or applied to the animal feed.
- 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 a rotary cooler. Sugar dust from the process is trapped in filters and recycled.
- Bulk sugar is stored on site in 4 silos. Each silo is supplied with conditioned air by an air conditioning unit.

- 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 dried. Syrups may be mixed with the pressed pulp prior to drying to increase the nutritional value of the final feed, and it is substances in the syrups which give rise to the characteristic beet drying odour. The pulp is dried in two rotary dryers, using hot gases generated by the burning of gas with HFO as a standby in the No.1 dryer and coal (with light fuel oil and propane for start-up) in the No.2 dryer. The exhaust gases from the dryers are discharged via cyclones to remove particulates.
- Animal feed pelleting and coating. Dried animal feed (shreds) directly from the dryers are extruded to form pellets. These are cooled in ambient air and graded over a screen. The pellets are transferred by conveyor to the warehouse for despatch. The exhaust gas from the coolers is discharged via cyclones to remove particulates and the solids are discharged into bins for removal from the site.

The factory operates a Combined Heat and Power (CHP) system that produces steam and electricity for the site. The system burns natural gas, with heavy fuel oil (HFO) as a standby with excess electricity exported to the National Grid. Two Sulzer boilers (LCP 35), each of 41.54 MW thermal input, are used to generate steam for the CHP system and discharge via a common stack (A61/62).

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 water. The carbon dioxide produced during calcining is consumed in the sugar production process. A vertical shaft kiln is used due to its suitability for the production of both lime and kiln gas of the required quality.

There is an extensive biological treatment system for waste water, which includes the use of an anaerobic digester and aerobic treatment plant as well as a number of lagoons, some of which also serve as water storage reservoirs. Final effluent is discharged to the River Trent. Methane gas generated from the anaerobic digester can be used in the No 1 animal feed dryer during the campaign.

The installation emits sulphur dioxide, nitrogen oxides, carbon monoxide, ammonia, particulate and volatile organic compounds to air, and ammonia, nitrate and phosphate to water. The main emissions to air from the installation arise from the Sulzer boilers (A61/62, main stack 58 m), animal feed dryers (A48, A49, 1 x 57 m stack), pelleting plant and the carbonation system control valve and vents. Particulate emissions are abated from the lime slaker, animal feed dryers and a number of other associated sources by the use of cyclones.

The site operates an externally-audited environmental management system which is certified to ISO 14001.

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 BK9385IH received (EPR/BK9385IH/A001) | 30/03/05 | Issued under the PPC Regulations |
| Request for further information | 05/11/05 | Response received 01/12/05 |
| Permit determined | 29/03/06 | |
| Variation notice issued EPR/BK9385IH/V002 | 17/12/07 | To implement the National Emissions Reduction Plan Issued under the EPR 2007 Regulations |
| Application for variation EPR/BK9385IH/V003 received | 29/03/10 | Changes to emission points and installation boundary |
| Request for further information | 29/06/10 | Response received 30/06/10 |
| Variation notice determined EPR/BK9385IH/V003 | 09/07/10 | Issued under the EPR 2010 Regulations |
| Variation notice determined EPR/BK9385IH/V004 | 06/08/13 | Environment Agency variation to implement the changes introduced by IED |

| Status log of the permit | | |
|--|-------------|---|
| Description | Date | Comments |
| Regulation 60 Notice sent to the Operator | 31/10/14 | Issue of a Notice under Regulation 60(1) of the EPR. Environment Agency Initiated review and variation to vary the permit 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 | 13/03/15 | Response received from the Operator. |
| Additional information received | 16/06/15 | Response to request for further information (RFI) dated 15/06/15 (Q43 Reg 60) 2005 to 2015 NOx emission test data |
| Additional information received | 24/06/15 | Response to RFI dated 22/06/15 (Q42 Reg 60) Defining start-up and shut-down |
| Additional information received | 12/08/15 | Response to RFI dated 23/07/15 (Q41 Reg 60) Method for derivation of the net rated thermal input |
| Variation determined EPR/BK9385IH/V005 (Billing ref: HP3132AY) | 17/12/15 | Varied permit issued. Variation effective from 01/01/16 |

End of introductory note

Notice of variation

The Environmental Permitting (England and Wales) Regulations 2010

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

Permit number

EPR/BK9385IH

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

Newark Sugar Factory

Newark

Nottinghamshire

NG24 1DL

to the extent set out in the schedules.

The notice shall take effect from 01/01/2016

| Name | Date |
|------------------|------------|
| Anne Nightingale | 17/12/2015 |

Authorised on behalf of the Environment Agency

Schedule 1 – conditions to be deleted

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

Condition 2.11.5 shall be deleted in accordance with the IED:

From 1st January 2008, the operator shall inform the Agency of the closure of a relevant LCP within 28 days of the date of closure.

Condition 6.1.1 refers to the meaning of expressions (*Interpretation*); the following expression shall be deleted:

“NERP Register “ means the register maintained by the Environment Agency in accordance with regulation 6(1) of the Large Combustion Plants (National Emission Reduction Plan) Regulations 2007.

Schedule 2 – conditions to be amended

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

Condition 1.1.1 refers to Table 1.1.1, *Activities* which shall be amended by the inclusion of new descriptions for the LCP activity:

| Table 1.1.1 activities | | | |
|-------------------------------|---|--|--|
| Activity reference | 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 35 Burning natural gas, with heavy fuel oil (HFO) as a standby, in two Sulzer boilers, each of 41.54 MW thermal input, to generate steam and electricity. HFO may be burned only during periods: <ul style="list-style-type: none"> • of interruption by a third party; • when performing testing and trials with the prior written agreement of the Agency; • when the price per therm of natural gas rises to exceed that of HFO, in which case the rate of HFO usage in the boilers (combined) shall not exceed 2.8 tonnes per hour.^{Note 1} | From the receipt and burning of fuel in two Sulzer boilers to the use of steam and electricity in the sugar making process, the export of electricity to the National Grid and 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 slaking in a vertical shaft limekiln to be used in the sugar production process. | From the receipt of fuel and limestone to transfer of lime to the slaker, the use of the kiln gas in the sugar making process, the discharge of kiln gas to air and the disposal of waste arising. |
| 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 arising. |
| A4 | Section 5.4 Part A(1)(a)(i) Disposal of non-hazardous waste in a facility with a capacity of more than 50 tonnes per day by biological treatment | The treatment of waste water by means of an anaerobic plant, aerobic plant, clarifiers and several lagoons. | From the transfer of waste water from the site drains and processes and from the clarifier treating the waste water from the beet fluming process, and the receipt of raw materials and the re-use of treated water in the process or its disposal to river. |

| Table 1.1.1 activities | | | |
|-------------------------------------|--|--|---|
| Activity reference | Activity listed in Schedule 1 of the EP Regulations | Description of specified activity | Limits of specified activity |
| A5 | 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 or to tanker. |
| 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 animal feed from sugar beet in one natural gas-fired dryer (with HFO as a standby and methane as a supplementary fuel) and one coal-fired dryer (with propane and gas oil as a start-up fuel). HFO may be burned only during periods: <ul style="list-style-type: none"> • of interruption by a third party; • when performing testing and trials with the prior written agreement of the Agency; • when the price per therm of natural gas rises to exceed that of HFO. ^{Note 1} | 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 waste, including solid waste from the combustion process used for drying the pulp. |
| 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 sugar crystal from sugar juice. | From the transfer of thick juice from the process or from storage to the despatch of crystal sugar, low green and molasses, the discharge of dust, vapour and incondensable gases to air and the disposal of wastes arising. |
| A8 | 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 wastes arising. |
| Directly Associated Activity | | | |
| A9 | 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). |

| Table 1.1.1 activities | | | |
|-------------------------------|---|--|---|
| Activity reference | Activity listed in Schedule 1 of the EP Regulations | Description of specified activity | Limits of specified activity |
| A10 | Soil settlement | The recovery of water and soil from the transport water by means of a clarifier/mud thickener and soil settlement ponds from which topsoil is recovered. | From the generation of waste water to its return from the clarifier to the beet fluming circuit and its transfer from the clarifier to the soil settlement ponds and the settling of soil within them. |
| A11 | Conditioning, storage and handling of soil | The recovery of soil delivered with the beet by washing and settling, conditioning, blending and, where appropriate, screening for sale. | From the excavation of soil from the settling ponds to its despatch, and the disposal of wastes arising. |
| A12 | Conditioning, storage and handling of stones | The recovery of stones delivered with the beet. | From the separation of stones from beet to their onsite use or despatch, and the disposal of wastes arising. |
| A13 | Manufacture, conditioning and storage of Limex 70 co-product. | The recovery of impure calcium carbonate from the carbonation 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 wastes arising. |
| A14 | Composting | The composting of pressed pulp and 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 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 . |
| A15 | Preparation of wet animal feed as a co-product | The sale of pressed pulp without drying as animal feed. | From the pressing of pulp from diffusion to the despatch of wet animal feed and the disposal of wastes arising. |
| A16 | Conditioning of air | The conditioning of air supplied to the sugar storage silos. | From the filtration of intake air, filtration and heating of reactivation air, dehumidifying, and cooling of air to filtration of exit air and recirculation. |
| A17 | Soil settlement | The recovery of water and soil from the transport water by means of a clarifier/mud thickener and soil settlement ponds from which topsoil is recovered. | From the generation of waste water to its return from the clarifier to the beet fluming circuit and its transfer from the clarifier to the soil settlement ponds and the settling of soil within them. |

| Table 1.1.1 activities | | | |
|-------------------------------|--|---|---|
| Activity reference | Activity listed in Schedule 1 of the EP Regulations | Description of specified activity | Limits of specified activity |
| A18 | Re-melt of raw cane sugar | Intake of raw cane sugar in bulk and dissolved to form a syrup to be refined by crystallisation within existing permitted activities. | Intake of raw cane sugar in bulk via vehicle delivery for dissolving and blending with beet sugar syrups to produce white sugar of cane and beet origin. The operation includes the reprocess of off-specification sugar from the existing manufacturing operations. |

Note1: The maximum number of days or part days that HFO may be burnt at this installation is restricted to 45 days per calendar year.

Condition 2.1.1 refers to Table 2.1.1, *Operating techniques* which shall be amended by the inclusion of operating techniques in the Regulation 60 response:

| Table 2.1.1 Operating techniques | | |
|--|--|----------------------|
| Description | Parts | Date Received |
| Application EPR/BK9385IH/A001 | The response to questions 2.1 and 2.2 and unit activity descriptions in Appendix 9 of the application. | 30/03/05 |
| Email describing limits of mercury and cadmium as trace contaminants of raw materials EPR/BK9385IH/A001 | Whole | 01/12/05 |
| Information in support of IPPC application BK9385IH British Sugar Newark EPR/BK9385IH/A001 | Whole | 14/12/05 |
| Variation Application EPR/BK9385IH/V003 | Application Sections Appendix 8, sub-sections Operating Techniques, Process Controls, Point Source Emissions, Fugitive Emissions and Odour | 29/03/10 |
| Response to Regulation 60(1) Notice – request for information dated 31/10/14 | Compliance route and operating techniques identified in response to questions: 38 (compliance route-TNP) 40 xix (fuel options) 42 (start-up and shut-down load) 44 (derogation; no monitoring on stand-by fuels) | 13/03/15 |
| Receipt of additional information to the Regulation 60(1) Notice - requested by letter dated 22/06/15 | Start-up and shut-down criteria (question 42 of Regulation 60(1) Notice) | 24/06/15 |

Condition 2.2.1.3 refers to Table 2.2.2, *Emission limits to air and monitoring* which shall be amended to change the monitoring requirements at A61/62 in accordance with the IED, to add the standard for the monitoring infrastructure at A61/62 and to update monitoring methods:

| Table 2.2.2 Emission limits to air and monitoring | | | | | | |
|--|---|--|--|-------------------------|-----------------------------|--------------------------------------|
| Emission point ref. & location | Parameter | Source | Limit (including unit)-these limits do not apply during start up or shut down. Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
| A25 | Sulphur dioxide | Sulphur burner scrubber vent | 50 mg/Nm ³ | Hourly average | Annual | BS EN 14791 |
| A48 | Oxides of nitrogen (NO and NO ₂ expressed as NO ₂) | No.1 Animal feed dryer stack (natural gas operation) | 200 mg/Nm ³ | Hourly average | Annual | BS EN 14792 |
| A48 | Sulphur dioxide | | 35 mg/Nm ³ | Hourly average | Annual | BS EN 14791 |
| A48 | Total particulate | | 150 mg/Nm ³ | Hourly average | Monthly | BS EN 13284-1 and MID |
| A48 | Carbon monoxide | | 2600 mg/Nm ³ | Hourly average | Annual | BS EN 15058 |
| A48 | Oxides of nitrogen (NO and NO ₂ expressed as NO ₂) | No.1 Animal feed dryer stack (HFO operation) | 400 mg/Nm ³ | Hourly average | Annual Note 2 | BS EN 14792 |
| A48 | Sulphur dioxide | | 1700 mgN/m ³ | Hourly average | Annual Note 2 | BS EN 14791 |
| A48 | Total particulate | | 150 mg/Nm ³ | Hourly average | Monthly Note 3 | BS EN 13284-1 and MID |
| A48 | Carbon monoxide | | 2600 mg/Nm ³ | Hourly average | Annual Note 2 | BS EN 15058 |
| A49 | Oxides of nitrogen (NO and NO ₂ expressed as NO ₂) | No.2 Animal feed dryer stack | 400 mg/Nm ³ | Hourly average | Annual | BS EN 14792 |
| A49 | Sulphur dioxide | | 3000 mg/Nm ³ | Hourly average | Annual | BS EN 14791 |
| A49 | Total particulate | | 150 mg/Nm ³ | Hourly average | Monthly | BS EN 13284-1 and MID |
| A49 | Carbon monoxide | | 2600 mg/Nm ³ | Hourly average | Annual | BS EN 15058 |
| A52 | Total particulate | Pellets cooler abatement | 50 mg/Nm ³ | Hourly average | Annual Note 4 | BS EN 13284-1 and MID |

| Table 2.2.2 Emission limits to air and monitoring | | | | | | |
|---|---|--|--|------------------|--|--|
| Emission point ref. & location | Parameter | Source | Limit (including unit)-these limits do not apply during start up or shut down. Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
| A54 | Total particulate | Animal feed plant dust cyclones | 50 mg/Nm ³ | Hourly average | Annual | BS EN 13284-1 and MID |
| A61/62 | Oxides of nitrogen (NO and NO ₂ expressed as NO ₂) | LCP 35 No.1 & No.2 Sulzer boilers fired on natural gas | 645 mg/Nm ³ Note 5 | Hourly average | At least every 6 months | BS EN 14792 |
| A61/62 | Carbon monoxide | | 100 mg/Nm ³ Note 5 | Hourly average | At least every 6 months | BS EN 15058 |
| A61/62 | Sulphur dioxide | | - | - | At least every 6 months | Concentration by calculation, as agreed in writing with the Environment Agency |
| A61/62 | Dust | | 5 mg/Nm ³ | - | At least every 6 months | Concentration by calculation, as agreed in writing with the Environment Agency |
| A61/62 | Stack gas volume flow | | LCP 35 No.1 & No.2 Sulzer boilers fired on natural gas | - | - | - |
| A61/62 | Oxygen | | - | - | Periodic as appropriate to reference | BS EN 14789 |
| A61/62 | Water vapour | | - | - | Periodic as appropriate to reference | BS EN 14790 |
| A61/62 | As required by the Method Implementation Document for BS EN 15259 | | - | - | Pre-operation and when there is a significant operational change | BS EN 15259 |

Note 1: See Section 6 of the permit for reference conditions.

Note 2: When there is one or more occurrences of HFO operation during the calendar year, HFO operation shall be monitored at least once during that year.

Note 3: When there is one or more occurrence of HFO operation during the calendar month, HFO operation shall be monitored at least once during that month.

Note 4: A temporary sampling point is permitted for the sampling of this emission point.

Note 5: The limit does not apply when standby fuels are used under condition 2.1.3.

Condition 2.2.1.4 refers to Table 2.2.3, *Annual limits to air (excluding start up and shut down)* which shall be amended in accordance with the IED:

| Substance | Medium | Limit (including unit) | | Emission Points |
|--|---------------|--|---|--|
| Dust, Sulphur dioxide and Oxides of nitrogen | Air | Assessment year | LCP 35 TNP Limit | A61/62 |
| | | 01/01/16 and subsequent years until 31/12/19 | Emission allowance figure shown in the TNP Register as at 30 April the following year | LCP 35 No.1 & No.2 Sulzer boilers |
| | | 01/01/20-30/06/20 | | |

Condition 2.10.10 shall be amended in accordance with the IED:

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.

Condition 4.1.8 shall be amended. This is required for LCPs under the TNP to enable quarterly reporting of mass emissions:

For activity LCP 35 referenced in table 1.1.1; 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 S3, the information specified on the form relating to the site's mass emissions.

Conditions 5.1.1 and 5.1.2 shall be amended in accordance with the IED:

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.

Any information provided under condition 5.1.1 (a)(i), 5.1.1 (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 1 to this permit within the time period specified in that schedule.

Condition 5.1.8 shall be amended in accordance with the IED:

The operator shall inform the Environment Agency in writing of the closure of any LCP within 28 days of the date of closure.

Condition 4.1.2 refers to Table S2, *Reporting of monitoring data* which shall be amended in accordance with the IED (A61/62). Reporting of particulate at A51 and A53 are deleted in accordance with variation EPR/BK9385IH/V003:

| Table S2 Reporting of monitoring data | | | |
|---|-----------------------|---|----------------------|
| Parameter | Emission point | Reporting period | Period begins |
| Sulphur dioxide mg/m ³ | A25, A48, A49 | Annually | 01/04/06 |
| | A61, A62 | 6 monthly | 01/01/16 |
| Oxides of nitrogen mg/m ³ | A48, A49 | Annually | 01/04/06 |
| | A61, A62 | 6 monthly | 01/01/16 |
| Total particulate mg/m ³ | A48, A49 | 01 January to 30 June 01 July to 31 December | 01/04/06 |
| | A52, A54 | Annually | 01/01/16 |
| Dust mg/m ³ | A61, A62 | 6 monthly | 01/01/16 |
| Carbon monoxide mg/m ³ | A48, A49 | Annually | 01/04/06 |
| | A61, A62 | 6 monthly | 01/01/16 |
| Biochemical oxygen demand mg/l (1 st April to 30 th September inclusive) | W1 | 01 January to 30 June 01 July to 31 December | 01/04/06 |

| Table S2 Reporting of monitoring data | | | |
|---|--------|---|----------|
| Biochemical oxygen demand mg/l (1 st October to 31 st March inclusive) | W1 | 01 January to 30 June 01 July to 31 December | 01/04/06 |
| Biochemical oxygen demand mg/l | W2 | 01 January to 30 June 01 July to 31 December | 01/04/06 |
| Total suspended solids | W1, W2 | 01 January to 30 June 01 July to 31 December | 01/04/06 |
| Ammoniacal nitrogen mg/l (1 st April to 30 th September inclusive) | W1 | 01 January to 30 June 01 July to 31 December | 01/04/06 |
| Ammoniacal nitrogen mg/l (1 st October to 31 st March inclusive) | W1 | 01 January to 30 June 01 July to 31 December | 01/04/06 |
| pH | W1 | 01 January to 30 June 01 July to 31 December | 01/04/06 |
| Total mercury mg/l | W1 | 01 January to 30 June 01 July to 31 December | 01/04/06 |
| Total cadmium mg/l | W1 | 01 January to 30 June 01 July to 31 December | 01/04/06 |
| Daily discharge volume m ³ /day | W1, W2 | 01 January to 30 June 01 July to 31 December | 01/04/06 |
| Temperature °C | W2 | 01 January to 30 June 01 July to 31 December | 01/04/06 |
| Water usage | None | 01 January to 31 December | 01/04/06 |
| Energy usage | None | 01 January to 31 December | 01/04/06 |
| Waste disposal and/or recovery | None | 01 January to 31 December | 01/04/06 |

Condition 4.1.3 refers to Table S3, *Reporting forms* which shall be amended to include forms in accordance with the IED:

| Table S3 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 PM1 - discontinuous monitoring and load. | 01/01/16 | Area Office | 31/12/15 |
| OTHER | | | | |
| Air | A1 | - | Area Office | 31/12/15 |
| Water (excluding sewer) | W1 | - | Area Office | 29/03/06 |
| Energy | AAE1 | - | Area Office | 31/12/15 |
| Waste Return | R1 | - | Area Office | 29/03/06 |
| Water usage | WU1 | - | Area Office | 29/03/06 |
| Performance indicators | PI1 | - | Area Office | 31/12/15 |

Condition 4.1.3 refers to Table S4.1, *Annual Production/Treatment* (Reporting of performance data) which shall be amended to include additional parameters for the LCP and HFO usage dates and days/hours:

| Table S4.1 Annual Production/Treatment and Chapter III Performance parameters for reporting to DEFRA | |
|--|--------------------|
| Sugar beet processed | tonnes |
| Production of crystal sugar | tonnes |
| Production of wet animal feed | tonnes |
| Production of dry animal feed | tonnes |
| Production of soil | tonnes |
| Production of stones | tonnes |
| Production of LimeX | tonnes |
| Coke/anthracite consumption | MWh |
| Natural gas consumption | MWh |
| Gas oil consumption | MWh |
| Coal consumption | MWh |
| Electricity exported to National Grid | MWh |
| Heavy fuel oil (HFO) consumption | MWh |
| Thermal input capacity for LCP 35 | MW |
| Annual fuel usage for LCP 35 | TJ |
| Total emissions to air of NO _x for LCP 35 | tonnes |
| Total emissions to air of SO ₂ for LCP 35 | tonnes |
| Total emissions to air of dust for LCP 35 | tonnes |
| Operating hours for LCP 35 | hours |
| Initial date of use of HFO (for activity LCP 35) for any period, and the number of days and hours used before changing back to gaseous fuel. | Date days/hours |

Schedule 3 – conditions to be added

The following conditions and tables are added following an Environment Agency initiated variation:

Condition 1.4.1 refers to Table 1.4.1, *Improvement Programme* which shall include additional conditions for thermal input and submission of emissions data:

| Table 1.4.1 Improvement programme | | |
|-----------------------------------|--|----------|
| Reference | Requirement | Date |
| IC23 | <p>The operator shall provide a report in writing to the Environment Agency for acceptance which provides the net rated thermal input for LCP 35. 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).</p> <p>Evidence to support this figure, in order of preference, shall be in the form of:-</p> <ul style="list-style-type: none"> 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, <p>*Performance test results shall be used if these are available.</p> | 31/12/16 |
| IC24 | <p>For LCPD LCP 73 (now LCP 35 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 LCPD LCP was a NERP plant the final quarter submissions shall be provided on the RTA 1 form to the NERP Registry.</p> | 28/01/16 |

Conditions 2.1.3 and 2.1.4 shall be added in accordance with the IED:

For activity LCP 35 referenced in table 1.1.1, standby fuel HFO may be used for periods of up to 10 days, during times of interruption to the gas supply.

For activity LCP 35 referenced in table 1.1.1, the end of the start-up period and the start of the shut-down period shall conform to the specifications set out in tables 2.1.1 and 2.1.2.

Condition 2.1.4 refers to Table 2.1.2, *Start-up and Shut-down thresholds* which shall be added in accordance with the IED:

| Table 2.1.2 Start-up and Shut-down thresholds | | |
|--|---|--|
| Emission Point and Unit Reference | “Minimum start up load” Load in MW and as percent of rated power output (%) When two of the criteria listed below for the LCP or unit have been met. | “Minimum shut-down load” Load in MW and as percent of rated power output (%) When two of the criteria listed below for the LCP or unit have been met. |
| A61/62 | 1.5 MW; 17% | 1.5 MW; 17% |
| LCP 35 No.1 & No.2 Sulzer boilers | Minimum steam pressure of 32 bar Minimum steam temperature of 290°C Minimum feed water flow rate 15 tonnes per hour | Steam pressure below 32 bar Steam temperature below 290°C Feed water flow rate below 15 tonnes per hour |

Condition 2.1.5 shall be added in accordance with the IED:

For activity LCP 35 referenced in Table 1.1.1; without prejudice to condition 2.1.1, the activity 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.

Condition 2.7.4 shall be added in accordance with the IED:

For activity LCP 35 referenced in Table 1.1.1; the operator shall take appropriate measures to ensure the efficiency of energy generation at the permitted installation is maximised.

Condition 2.10.11 and 2.10.12 shall be added in accordance with the IED:

Monitoring for the purposes of the Industrial Emissions Directive Chapter III

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

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.

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

“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.

“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.

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

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

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

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

Condition 6.1.5 shall be added in accordance with the IED:

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.