Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

VPI Immingham LLP

Immingham CHP Power Plant
Rosper Road
Immingham
North Lincolnshire
DN40 3DZ

Variation application number

EPR/BJ8022IZ/V014

Permit number

EPR/BJ8022IZ

Immingham CHP Power Plant
Permit number EPR/BJ8022IZ

Introductory note

This introductory note does not form a part of the notice

Under the Environmental Permitting (England & Wales) Regulations (EPR) 2016 (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. All the conditions of the permit have been varied and are subject to the right of appeal.

The schedules specify the changes made to the permit.

The site is located at national grid reference TA1668717150 and is predominantly surrounded by industrial areas with the nearest human dwelling approximately 420 m to the east of the site boundary. The Humber Estuary Ramsar, Special Area of Conservation (SAC), Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI) site is 1.4 km to the east of the site boundary and there are a number of Local Wildlife Sites within 2 km of the installation.

Prior to this variation, the principal activity undertaken by the site fell under the following EPR Schedule 1 listed activity description:

Section 1.1 Part A(1)(a) - Burning any fuel in an appliance with a rated thermal input of 50 or more megawatts

The installation consists of a combined heat and power plant (CHP), to supply steam to two adjacent oil refineries with the option for future potential local industries, and electricity to one of the adjacent refineries and to the National Grid.

Purpose of this variation

This variation is to authorise the retrofit of two trains of Post-Combustion Carbon Capture (PCC) plants treating the flue gas emitted from the installation's existing two gas turbines (GT1 & GT2) and the two auxiliary boilers (AB1 & AB2), removing carbon dioxide (CO_2) for subsequent compression and storage.

GT1 flue gas will only be directed to PCC plant 1, whilst GT2 flue gas will only be directed to PCC plant 2. The two auxiliary boilers will be manifolded such that either boiler flue gas source can be directed to either PCC plant.

The PCC plants fall under the following EPR Schedule 1 listed activity descriptions:

Section 6.10 Part A(1)(a) - Capture of carbon dioxide streams from an installation for the purposes of geological storage

Hydrogen production is required for conditioning of the CO_2 to remove oxygen prior to transfer of the CO_2 to the pipeline network. Oxygen will be removed in a palladium/platinum deoxygenation unit using hydrogen produced on site by the dissociation of water. The hydrogen production activity falls under the following EPR Schedule 1 listed activity description:

Section 4.2 Part A(1)(a)(i) - Producing inorganic chemicals such as gases: hydrogen

The installation boundary has been extended to accommodate the PCC plants which will be located to the south of the existing boundary.

The activities undertaken at the installation, following this variation, are as follows:

Large Combustion Plant (LCP) – LCP188 and LCP415

The CHP comprises two LCPs, as defined by articles 28 and 29 of the IED: LCP188 and LCP415.

LCP188 comprises two sets of gas turbines (GT1 & GT2) with rated thermal inputs of 730 and 743 MWth, with associated heat recovery steam generating (HRSG) boilers (HRSG1 and HRGS2) each with rated thermal inputs of 111 MWth, and two auxiliary boilers (AB1 & AB2) each with 290 MWth nominal inputs, for backup steam supplies if any of the other CHP capacity are unavailable.

GT1, GT2, HRSG1 and HRGS2 use natural gas only.

AB1 and AB2 use natural gas for start-up and are normally on hot standby using natural gas or refinery off-gas (ROG). They are kept on hot standby ready to ramp up to maintain the steam demand in the event of loss of operating steam generating units. Distillate oil can be used as a fuel if there is a natural gas interruption.

When the PCC plants are operational, emissions will be via the dedicated stacks on top of the PCC plant absorber towers at emission points A6 and A7 each at a height of 110m. Otherwise, they will be released to atmosphere via four existing flues at emission points A1, A2, A3, A4 in a 90m high single windshield.

LCP415 comprises one gas turbine (GT3) with a rated thermal input of 751 MWth, with associated HRSG boiler (HRSG3) with a rated thermal input of 193 MWth.

The steam generated by the combustion plants is expanded through three steam turbines.

Electricity is generated by the electrical generator of the gas turbine combusting fuel gas. The hot exhaust gas then passes through an associated HRSG boiler to raise steam which can then be passed through a steam turbine with generator attached to generate additional electricity. Additional fuel can be burned in the HRSG boiler supplementary burners to supply steam to customers in excess of that resulting from electricity generation.

GT3 uses natural gas only.

HRSG3 uses natural gas or ROG for normal operations.

Emissions to air are via a single 90 m high stack at emission point A5.

Emissions to air from the combustion process of oxides of nitrogen (NO_x) are minimised using low NO_x combustion technology. Emissions of sulphur dioxide (SO_2) are controlled by setting a sulphur specification of the fuel. Emissions of carbon monoxide (CO) are minimised by efficient fuel use in excess air (oxygen (O_2)).

Post-combustion Carbon Capture (PCC) plants

There are two trains of PCC plants treating the flue gas emitted from the installation's existing two gas turbines (GT1 & GT2) and the two auxiliary boilers (AB1 & AB2), removing carbon dioxide (CO_2) for subsequent compression and storage.

The flue gas from the combustion equipment will be cooled by direct contact with recirculating water within the direct contact cooler (DCC). The recirculating water will be cooled against air in the DCC water cooler.

The PCC plants will use an amine-based proprietary solvent (Shell Cansolv DC-103) to strip CO_2 from the flue gas within packed absorber columns, via a weak acid-base reaction.

The CO_2-depleted flue gas will then pass through emissions abatement equipment (a water wash and mist eliminator) prior to its release to atmosphere. This will be via dedicated stacks on top of the PCC plant absorber towers at new emission points to air A6 (PCC plant 1) and A7 (PCC plant 2).

The main PCC stack emissions will comprise residual pollutants from the GTs and auxiliary boilers, including oxides of nitrogen (NOx), carbon monoxide (CO), sulphur dioxide (SO_2), particulates and some residual CO_2. SO_2 and particulates are present due to the potential use of Refinery Off Gas (ROG), as a fuel in the auxiliary boilers and will only be present in trace amounts.

The PCC plants will be designed to optimise CO_2 capture and to achieve 95% capture rates during normal operation. There may also be trace pollutants within the flue gas, including trace levels of amine from the solvent and amine break-down products from within the carbon capture process. These amine emissions will be monitored and minimised using a water wash section and mist eliminator at the top of the PCC plant absorbers prior to final release to air of the flue gas.

In addition to the main PCC plant emission points A6 and A7, there will be a CO_2 vent (emission point A8) on the CO_2 compression plant for use during start-up and shut-down, and in the event of abnormal operation.

The gaseous CO_2 stream from the PCC plants will be saturated with water and will contain traces of oxygen which will need to be removed prior to export to the CO_2 pipeline and transport and storage network. Prior to dehydration, oxygen will be removed in a palladium/platinum deoxygenation unit using hydrogen produced on site by the dissociation of water.

The CO_2 will be removed from the CO_2-rich solvent in a CO_2 stripper (or regeneration column) by heat, using steam provided by the VPI Combined Heat and Power (CHP) Power Plant, enabling the lean amine-solvent to be recycled back into the absorption process for reuse.

The CO_2 gas will undergo low-pressure (LP) compression, with dehydration and de-oxygenation also carried out. It will then undergo high-pressure (HP) compression on-site, to dense phase before being exported off-site to the third-party operator for transport to permanent underground storage.

Solvent impurities will be removed via a solvent thermal reclaiming process which will be carried out continuously within the PCC plant area.

GT1 flue gas will only be treated by PCC plant 1, whilst GT2 flue gas will only be treated by PCC plant 2. The two auxiliary boilers will be manifolded such that either boiler flue gas source can be treated by either PCC plant 1 or 2.

The main PCC stack emissions will comprise residual pollutants from the GTs and auxiliary boilers, including NOx, CO, SO_2, particulates and some residual CO_2. SO_2 and particulates are present due to the potential use of ROG, as a fuel in the auxiliary boilers and will only be present in trace amounts.

Water use and discharge

Raw water is required to produce demineralised water to replace condensate that cannot be recovered. Treated waste-water from one of the refineries is processed in the water treatment plant and used in the cooling water circuit. The water discharged from the process is predominantly blow-down from the cooling water circuit to prevent a build-up of dissolved solids, which result from evaporative losses from the hybrid cooling towers which serve LCP188.

Clean water condensed from the flue gas in the bottom section of the DCC will be sent to the existing Raw Water Tank and subsequent treatment in the demineralisation plant for reuse on site. In the event the Raw Water Tank is full, the condensed water will be sent to a new holding pond in the PCC plant area from where it will be discharged through a new emission point W2, to the South Killingholme Drain.

Process drains, including routine draining of equipment and pipework for maintenance operations will, as far as practical, allow for the retention of drained fluids so that these can be returned to the appropriate system for reuse.

Equipment that does not contain amines will have liquid levels reduced as far as practical before being drained to a drain drum. Any fluids collected in the drain drum will be tested and be removed from site by tanker if they are contaminated, or if they are uncontaminated, will discharge to the drainage system and the class 2 oil/water separator prior to discharge to the holding point M4 for release at emission point W2.

Drainage for amine contaminated wastewater will be separate to the other drainage systems at the PCC plants to prevent it from entering the surface water drainage system. Amine contaminated wastewater will drain to a sump tank where it will be recovered for reuse in the amine process or tankered off-site for treatment/disposal.

Uncontaminated surface water from the PCC plant areas will be routed via an oily water separator to a new balancing/holding pond prior to being discharged via a new emission point to water, W2, to the South Killingholme Drain.

Releases to water from the process are discharged via two outfalls (W1 and W2 (PCC plant area)) into the South Killingholme drain. The discharge comprises uncontaminated surface water arising during rainfall.

Environmental Management System (EMS)

VPI Immingham LLP has an EMS externally certified to ISO 14001:2015, which is also regularly internally audited as per the ISO 14001 standard.

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 EPR/BJ8022IZ/A001	Duly made 08/02/2001	Application for a new CHP Power Plant.
Permit determined EPR/BJ8022IZ	16/08/2001	Permit issued to Immingham CHP Ltd.
Transfer application EPR/BJ8022IZ/T002	27/03/2003	Application to transfer permit to Immingham CHP LLP.
Transfer application determined EPR/BJ8022IZ/T002	01/05/2003	Transfer issued to Immingham CHP LLP.
Application variation EPR/BJ8022IZ/V003	Duly made 23/07/2004	Application to implement detailed design changes and LCPD conditions.
Variation determined EPR/BJ8022IZ/V003	28/10/2004	Varied permit issued to Immingham CHP LLP.
Application variation EPR/BJ8022IZ/V004	Duly made 04/01/2006	Application for ‘Phase II’ development including new Gas turbine/Heat Recovery Steam Generator 3 and new steam turbine.
Variation determined EPR/BJ8022IZ/V004	30/04/2007	Varied permit issued to Immingham CHP LLP.
Application variation EPR/BJ8022IZ/V005	Duly made 31/03/2009	Application to implement changes to the design of ‘Phase II’ effluent handling.
Additional information received	29/05/2009	Additional information on operating techniques.
Variation determined EPR/BJ8022IZ/V005	04/06/2009	Varied permit issued to Immingham CHP LLP.
Notified of change of company name and registered office address	12/11/2014	Name changed to VPI Immingham LLP.
Variation determined EPR/BJ8022IZ/V006	14/11/2014	Varied permit issued to VPI Immingham LLP.

Status log of the permit		
Description	**Date**	**Comments**
Regulation 60 Notice sent to the Operator	17/12/2014	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. The permit is also updated to modern conditions.
Regulation 60 Notice response	27/03/2015	Response received from the Operator dated 27/03/2015.
Regulation 60 Notice, request for additional information sent 05/06/2015	29/06/2015	Additional information received.
Additional information received	04/08/2015	-
Additional information received	27/11/2015	Relating to the net rated thermal input.
Variation determined EPR/BJ8022IZ/V007	29/12/2015	Varied and consolidated permit issued in modern condition format. Variation effective from 01/01/2016.
Additional information received	17/11/2016	Response to Improvement Condition 16 regarding net rated thermal inputs.
Application variation EPR/BJ8022IZ/V008	Withdrawn 19/12/2017	Application withdrawn and superseded by application for variation EPR/BJ8022IZ/V009.
Application variation EPR/BJ8022IZ/V009	Returned 31/01/2018	Application returned as not duly made.
Application variation EPR/BJ8022IZ/V010	Duly made 08/03/2018	Application for upgrades to two gas turbines associated with LCP188, including conversion to Dry Low NO_x (DLN) 2.6+ low pressure drop combustion system, Advanced Gas Path upgrade and installation of a range of OpFlex products including resultant change to dynamic MSUL and MSDL.
Regulation 61 Notice sent to the Operator	01/05/2018	Issue of a Notice under Regulation 61(1) of the EPR. Environment Agency initiated review and variation to vary the permit under IED to implement Chapter II following the publication of the revised Best Available Techniques (BAT) Reference Document for LCP.
Variation determined EPR/BJ8022IZ/V010	12/07/2018	Varied and consolidated permit issued in modern condition format.
Regulation 61 Notice response	30/08/2018	Response received from the Operator.
Application variation EPR/BJ8022IZ/V011	Duly made 12/08/2019	Variation application to amend the MSUL and MSDL points for GT1, GT2 and Auxiliary Boilers 1 and 2 of LCP 188.
Additional information received	28/10/2019	Revised proposal for MSUL and MSDL points for GT1, GT2 and Auxiliary Boilers 1 and 2 of LCP 188.
Variation determined EPR/BJ8022IZ/V011	14/11/2019	Varied and consolidated permit issued.

Status log of the permit		
Description	**Date**	**Comments**
Regulation 61 Notice sent to the Operator	19/11/2019	Issue of a Notice under Regulation 61(1) of the EPR. Request for additional information on the Environment Agency initiated review and variation to vary the permit under IED to implement Chapter II following the publication of the revised Best Available Techniques (BAT) Reference Document for LCP, the applicable requirements of the revised Best Available Techniques (BAT) Reference Document for refining of mineral oil and gas and operating techniques for combustion of multi-fuels.
Regulation 61 Notice response	20/12/2019	Response received from the Operator.
Additional information received	05/02/2020	Additional information and clarification on the Regulation 61 Notice responses received on 20/12/2019.
Additional information received	18/02/2020	Confirmation of operation in accordance with Joint Environmental Programme (JEP) document 'Characterisation of power plant fuels for compliance with LCP BREF Conclusion BAT 9'.
Variation determined EPR/BJ8022IZ/V012	28/02/2020	Varied and consolidated permit issued.
Application variation EPR/BJ8022IZ/V013	Returned 05/07/2023	Application for carbon capture and storage returned as not duly made.
Application variation EPR/BJ8022IZ/V014	Duly made 21/02/2024	Application for carbon capture and storage.
Schedule 5 Notice requesting information dated 16/07/2024	26/09/2024	Points 1 to 4 and 6 to 9: Acid wash, SCR, solvent, capture performance, drainage, monitoring standards (emissions to air), air emissions risk assessment, site plan and flood risk.
	03/10/2024	Point 5: Storage of bulk raw materials.
Schedule 5 Notice requesting information dated 16/07/2024, additional information requested 09/10/2024	10/10/2024	N-amines cumulative assessment model input file.
	05/11/2024	Updated site plan (installation boundary) with site infrastructure.
Further information provided	15/08/2024	Clarification on effluent discharge at W2.
Schedule 5 Notice requesting information dated 20/08/2024	08/10/2024	Hydrogen production for CO_2 conditioning.
Schedule 5 Notice requesting information dated 16/07/2024, additional information requested 24/10/2024	07/11/2024	Monitoring standards for emission points A2, A6 and A7.
Schedule 5 Notice requesting information dated 16/07/2024, additional information requested 09/12/2024	09/12/2024	Model input file for SCR scenario.
Letter requesting corrections, updates and amendments	18/12/2024	Air emissions tables.
Further information provided	15/01/2025	Human health receptor R2 evidence.

Status log of the permit		
Description	**Date**	**Comments**
Schedule 5 Notice requesting information dated 16/07/2024, additional information requested 21/01/2025	04/02/2025	N-amine model, k2 parameter evidence.
Schedule 5 Notice requesting information dated 16/07/2024, additional information requested 19/02/2025	10/03/2025	Evidence to support the assessment of impacts from amides.
	31/03/2025 17/04/2025	Evidence to support the assessment of impacts from nitrosamines (k values).
Further information provided	20/02/2025	Letter from the operator requesting corrections, updates and amendments to air emissions tables.
Updated site plan provided	21/07/2025	Emission points A6 and A7 swapped around.
Variation determined EPR/BJ8022IZ/V014	12/08/2025	Varied and consolidated permit issued.

End of introductory note

Notice of variation and consolidation

The Environmental Permitting (England and Wales) Regulations 2016

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2016 varies

Permit number

EPR/BJ8022IZ

Issued to

VPI Immingham LLP ("the operator")

whose registered office is

Vpi
10th Floor
Nova South
160 Victoria Street
London
SW1E 5LB

company registration number **OC300980**

to operate a regulated facility at

Immingham CHP Power Plant
Rosper Road
Immingham
North Lincolnshire
DN40 3DZ

to the extent set out in the schedules.

The notice shall take effect from 12/08/2025

Name	Date
Eleanor Blackeby	**12/08/2025**

Authorised on behalf of the Environment Agency

Schedule 1

All conditions have been varied by the consolidated permit EPR/BJ8022IZ as a result of the application made by the operator and an Environment Agency initiated variation.

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/BJ8022IZ

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/BJ8022IZ/V014 authorising,

VPI Immingham LLP ("the operator"),

whose registered office is

Vpi
10th Floor
Nova South
160 Victoria Street
London
SW1E 5LB

company registration number **OC300980**

to operate an installation at

Immingham CHP Power Plant
Rosper Road
Immingham
North Lincolnshire
DN40 3DZ

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

Name	Date
Eleanor Blackeby	**12/08/2025**

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) take appropriate measures to ensure the efficiency of energy generation at the permitted installation is maximised;

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

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

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 four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and

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

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

1.4.1 The operator shall take appropriate measures to ensure that:

(a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities;

(b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and

(c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only 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 site plan at schedule 7 to this permit.

2.3 Operating techniques

2.3.1 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.

2.3.2 For the following activities referenced in schedule 1, table S1.1: LCP188 and LCP 415. The activities shall be operated in accordance with the "Electricity Supply Industry IED Compliance Protocol for Utility Boilers and Gas Turbines" dated November 2022 or any later version unless otherwise agreed in writing by the Environment Agency.

2.3.3 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 or other documentation ("plan") specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan , 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.

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

2.3.5 For the following activities referenced in schedule 1, table S1.1: LCP188 Auxiliary Boilers AB1 and AB2. Standby fuel gas oil may be used but for no more than 500 hours per year.

2.3.6 For the following activities referenced in schedule 1, table S1.1: LCP188 Auxiliary Boilers AB1 and AB2. Standby fuel gas oil may be used for periods of up to 10 days during times of interruption to the gas supply.

2.3.7 For the following activities referenced in schedule 1, table S1.1: LCP188 and LCP415. The end of the start-up period and the start of the shut-down period shall conform to the specifications set out in Schedule 1, tables S1.2 and S1.5.

2.3.8 For the following activities referenced in schedule 1, table S1.1: LCP188 (GT1, GT2) and LCP415 (GT3). The effective Dry Low NOx threshold shall conform to the specifications set out in Schedule 1, tables S1.2 and S1.6.

2.3.9 The emission limit values from emission points A1, A2, A3, A4, A5, A6 and A7 listed in tables S3.1 and S3.1a of Schedule 3 following the issue of a Black Start Instruction by the National Grid shall be disregarded for the purposes of compliance whilst that instruction remains effective and in accordance with the report submitted in response to improvement condition IC29.

2.3.10 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:

(a) the nature of the process producing the waste;

(b) the composition of the waste;

(c) the handling requirements of the waste;

(d) the hazardous property associated with the waste, if applicable; and

(e) the waste code of the waste.

2.3.11 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

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.

2.5 Pre-operational conditions

2.5.1 The operations specified in schedule 1 table S1.4 shall not commence until the measures specified in that table have been completed.

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, S3.1a and S3.2.

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

3.1.3 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.

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

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 which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;

(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 Odour

3.3.1 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 management plan, to prevent or where that is not practicable to minimise the odour.

3.3.2 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.

3.4 Noise and vibration

3.4.1 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.

3.5 Monitoring

3.5.1 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, S3.1a and S3.2; and

(b) process monitoring specified in table S3.4.

3.5.2 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 continuous), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency.

3.5.4 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, S3.1a and S3.2 unless otherwise agreed in writing by the Environment Agency.

3.6 Monitoring for Large Combustion Plant

3.6.1 All monitoring required by this permit shall be carried out in accordance with the provisions of Annex V of the Industrial Emissions Directive and the Large Combustion Plant Best Available Techniques Conclusions.

3.6.2 If the monitoring results for more than 10 days a year are invalidated within the meaning set out in condition 3.6.7, 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 proposals.

3.6.3 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.

3.6.4 Unless otherwise agreed in writing by the Environment Agency in accordance with condition 3.6.5 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.

3.6.5 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.

3.6.6 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.

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

(a) for the continuous measurement systems fitted to the LCP release points defined in tables S3.1 and 3.1a the validated hourly, monthly, yearly 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;

(f) any day, in which more than three hourly average values are invalid shall be invalidated;

(g) 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:

(i) 20 minutes of the period for open cycle turbines and engines; and

(ii) 40 minutes of the period for all other combustion appliances.

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.

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 resource efficiency metrics 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 condition 2.3.5 applies, the hours of operation in any year;

(e) where condition 2.3.6 applies, the start date and time, and the days and hours of operation for each period of standby fuel operation; and

(f) the function and monitoring of the carbon capture plants in a format agreed with the Environment Agency. The report shall, as a minimum requirement give an account of the running of the process (including a summary of records of process monitoring requirements of table S3.4 of this permit), the emissions into air compared with the emission limits in table S3.1 and details of the waste generated.

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.

4.3 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 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:

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

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

In any other case:

(e) the death of any of the named operators (where the operator consists of more than one named individual);

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

(g) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

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 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 reference	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
AR1	**Section 1.1 Part A(1)(a)** Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more.	**LCPs** Production of electrical power and steam in a Combined Heat and Power (CHP) plant comprising the following LCPs: **LCP188** • Gas turbine (GT1) and Heat Recovery Steam Generator (HRSG1), Combined Cycle Gas Turbine (CCGT) mode, GT1: 730 MWth, natural gas fired; HRSG1: 111 MWth, natural gas supplementary firing. • Gas turbine (GT2) and Heat Recovery Steam Generator (HRSG2), CCGT mode, GT2: 743 MWth, natural gas fired; HRSG2: 111 MWth, natural gas supplementary firing. • Two auxiliary boilers AB1 & AB2 for production of steam, 290MWth each, fired by natural gas (start-up) and/or refinery off-gas (ROG) or gas oil as stand-by fuel if there is a natural gas interruption in accordance with permit conditions 2.3.5 and 2.3.6. **LCP415** • Gas turbine (GT3) and Heat Recovery Steam Generator (HRSG3), CCGT mode, GT3: 751 MWth, natural gas fired; HRSG3: 193 MWth, natural gas and/or ROG supplementary firing.	From receipt of natural gas, ROG or gas oil to discharge of exhaust gases to air or the PCC plants and wastes, and the generation of electricity and steam for export.

Table S1.1 activities			
Activity reference	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
AR2	**Section 6.10 Part A(1)(a)** Capture of carbon dioxide streams from an installation for the purposes of geological storage	**Carbon capture for geological storage** Operation of two trains of post-combustion carbon capture (PCC) plants retrofitted to GT1, GT2, AB1 and AB2 (LCP188). GT1 flue gas treated by PCC plant 1. GT2 flue gas treated by PCC plant 2. AB1 and AB2 boiler flue gas treated by either PCC plant 1 or 2.	From the treatment of exhaust gas from HRSG1, HRSG2, AB1 and AB2 in the PCC plants using an amine based solvent to extract the CO_2, to compression and dehydration of the treated CO_2 for off-site transfer and geological storage and release of CO_2 abated flue gas to atmosphere via emission points A6 (PCC plant 1) and A7 (PCC plant 2). Including a CO_2 vent stack for the CO_2 compression systems releasing to atmosphere via emission point A8, for the safe venting of CO_2 during start-up and shut-down, and in the event of other than normal operating conditions (OTNOC). Only Shell Cansolv DC-103 shall be used as the solvent to capture CO_2. Only flue gases that are compliant with the limits in table S3.1 of this permit shall be accepted.
AR3	**Section 4.2 Part A(1)(a)(i)** Producing inorganic chemicals such as gases: hydrogen	**Treatment of carbon dioxide (CO_2) for transport and storage** Hydrogen production by electrolysis of water (using Polymer Electrolyte Membrane (PEM) hydrogen production technology) for the removal of oxygen from the CO_2.	From the production of hydrogen by electrolysis to the removal of oxygen from the CO_2 in a palladium/platinum deoxygenation unit using the hydrogen. The activity shall be operated in accordance with the Low Impact Installation criteria specified in the Environment Agency's Environmental Permitting application form at the time the permit application was duly made.

Table S1.1 activities			
Activity reference	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
	Directly Associated Activity		
AR4	Directly associated activity	Processing of raw water to produce water of quality fit for use in LCP188 cooling tower system and process waters from the refineries being demineralised for demineralised water production.	Treatment of water supplied from the adjacent oil refinery for use in the LCP.
AR5	Directly associated activity	Oil storage	From receipt of raw materials to dispatch for use.
AR6	Directly associated activity	Surface water drainage	Handling and storage of site drainage including the additional PCC area, until discharge to the site surface water system, and discharge to the South Killingholme Drain.
AR7	Directly associated activity	Water treatment	From receipt of raw materials to dispatch to chemical effluent and waste-water system.
AR8	Directly associated activity	Raw materials handling and storage	From receipt of raw materials for the PCC plants to storage and dispatch for use.
AR9	Directly associated activity	Solvent reclaiming	From receipt of used solvent in the PCC plants' thermal reclaimer unit to discharge for storage for re-use or storage of waste before off-site disposal.
AR10	Directly associated activity	High pressure compression plant to compress CO_2 prior to exporting it to an offshore storage facility.	From receipt of treated CO_2 to compression of CO_2 to dispatch from site.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application EPR/BJ8022IZ/A001	The response to questions 2.3 given in pages 19-27 of the application.	08/02/2001
Variation application EPR/BJ8022IZ/V003	Ref. Psm274V2	23/07/2004
Variation application EPR/BJ8022IZ/V004	Ref. 221924	04/01/2006
Variation application EPR/BJ8022IZ/V004 Supplementary information	Ref. 221490	October 2006
Variation application EPR/BJ8022IZ/V004 Supplementary information	Ref. 221490	January 2007
Variation application EPR/BJ8022IZ/V005	Ref. Immingham CHP SSV01	31/03/2009
Supplementary information EPR/BJ8022IZ/V005	Ref. Immingham CHP SSV01 rev B and CHP/SH/017	29/05/2009
Response to regulation 60(1) Notice – request for information dated 17/12/2014	Compliance route(s) and operating techniques identified in response to questions 1 (the DEFRA LCP identifier for each LCP plant and it's date of operational commencement), 2 (for each LCP state which compliance route you have selected), 3 (provide evidence of any notification you have already made in relation to the TNP or LLD), 5 (the net rated thermal input of the LCP and the method by which it was derived), 6 (details of the derivation of minimum start-up load and minimum shut-down load), 7 (provide your proposed emission limit values), 8 (do you wish to apply for the derogation not to undertake monitoring when on standby fuels).	27/03/2015
Receipt of additional information to the regulation 60(1) Notice. requested by letter dated 05/06/2015	Compliance route(s) and operating techniques identified in response to questions 1 (date of operational commencement of each LCP), 2 (rated thermal input), 6 (details of the derivation of minimum start-up load and minimum shut-down load), 7 (provide justification for the emission limit values requested), 8 (provide justification for the Article 30(6) derogation).	29/06/2015
Receipt of additional information to the regulation 60(1) Notice.	An update to the introductory note describing the installation. An update to waste stored on site. A new definition of raw materials and fuels. Details of the fuel option for the combustion units. Start-up and shut-down thresholds. IED emission limit values and monitoring requirements.	04/08/2015
Receipt of additional information in response to Improvement Condition 16.	Net rated thermal inputs for gas turbines associated with each LCP and auxiliary boilers associated with LCP188.	17/11/2016

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Variation application EPR/BJ8022IZ/V010	The response to question 6 (environmental risk assessment) of the Part C2 application form and referenced supporting documents 012 and 013. The responses to questions 3a (technical standards), 3c (types and amounts of raw materials), 3d (information for specific sectors – combustion), 6b (resource efficiency and climate change) and 6d (raw materials) of the Part C3 application form and referenced documents 007, 016, 017 and 023. Also, operating techniques described in supporting documents 000, 005, 008, 014, 015, 018, 019 and 021.	08/03/2018
Variation application EPR/BJ8022IZ/V011 Additional information	Application document titled: 'Doc Ref: 003 Table 1 - Proposed changes', provided in response to Application Form Part C2 and revised in response to request for additional information served on 03/10/19.	28/10/2019
Response to regulation 61(1) Notice – request for information dated 01/05/2018 EPR/BJ8022IZ/V012	Compliance and operating techniques identified in response to the BAT Conclusions for large combustion plant published on 17/08/2017.	30/08/2018
Additional information in response to regulation 61(1) Notice – request for information dated 19/11/2019, version received 05/02/2020 EPR/BJ8022IZ/V012	• Compliance and operating techniques identified in response to BAT conclusions 1, 2, 3, 4, 9, 10, 12, 13, 14, 40, 41, 42, 44 of the BAT Conclusions for large combustion plant published on 17th August 2017. • Compliance and operating techniques identified in response to BAT conclusions 4, 34, 35, 36 and 37 of the BAT Conclusion document for the refining of mineral oil and gas published on 9th October 2014, for combustion equipment burning refinery off-gas. • Compliance and operating techniques for multi-fuel firing combustion equipment.	05/02/2020
Confirmation received from the operator of operation in accordance with Joint Environmental Programme (JEP) document EPR/BJ8022IZ/V012	JEP report – 'Characterisation of power plant fuels for compliance with LCP BREF Conclusion BAT 9' Issued October 2019, or any later version agreed in writing by the Environment Agency.	18/02/2020
Discharge of improvement condition IC18 in table S1.3 of this permit	Multi Fuel Firing Plan (MFFP), Rev 001, dated 20/10/20	Approved 10/11/2020

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Variation application EPR/BJ8022IZ/V014	Sections 3 and 4 of Application Form Part C3, received on 21/02/2024, including the referred application document titled 'Environmental Permit Variation Application Main Supporting Document', received on 21/02/2024, as amended by subsequent responses to Schedule 5 Notices and requests for information listed in the following: Schedule 5 Notice responses received 26/09/2024 and 03/10/2024 in response to Notice dated 16/07/2024. Further information provided 15/08/2024. Schedule 5 Notice response received 08/10/2024 in response to Notice dated 20/08/2024. Schedule 5 Notice response received 07/11/2024 in response to Notice dated 16/07/2024 and additional information request sent 24/10/2024. <u>Noise</u> Noise Management Plan (NMP) (IMM-ENV-7013, Rev 1.0, issue date 08/12/2023). Note 1 Noise impact assessment (NIA), version 1 dated November 2023, including mitigation measures. Note 1 Note 1: The approved NMP and NIA shall be subject to the outcome of pre-operational condition PO05 in table S1.4 of this permit.	21/02/2024
Variation application EPR/BJ8022IZ/V014	<u>CO_2 venting</u> Operating techniques and vent management plant provided in response to pre-operational condition PO06 in table S1.4 of this permit.	-
Variation application EPR/BJ8022IZ/V014	<u>Response to Schedule 5 request for information issued 16/07/2024</u> Item 1 - Acid wash Item 4 - Capture performance Item 6 - Drainage Item 5 - Storage of solvent and bulk raw materials	26/09/2024 03/10/2024
Variation application EPR/BJ8022IZ/V014	<u>Response to Schedule 5 request for information dated 20/08/2024</u> Hydrogen production for CO_2 conditioning. This response confirms that the hydrogen production plant will be operated within the low impact installation criteria of a standard rules permit.	08/10/2024

Table S1.3 Improvement programme requirements		
Ref.	**Requirement**	**Date**
IC1 to IC17 have been completed.		
IC18	The operator shall develop and submit for approval by the Environment Agency a Multi-Fuel Firing Plan, detailing the procedures to demonstrate that the operation multi-fuel firing equipment complies with the requirements of Article 40 of the Industrial Emissions Directive. In particular, since the installation uses refinery off-gas (ROG) as a fuel, the operator shall develop a plan to report and assess compliance of the emissions from the multi-fuel combustion equipment of LCP188 and LCP415 against the multi-fuel weighted emission limits calculated from the limits specified in Tables S3.1 and S3.1a of this permit, according to the formulae provided in IED Article 40(2), following the methodologies described in the 'MFF Protocol'. The Multi-Fuel Firing Plan shall either: - Include details of the proposed reporting of emissions from multi-fuel equipment for assessment of compliance against the dynamic multi-fuel weighted emission limit values (DELV) calculated according to the formulae provided in IED Article 40(2); or - Propose for approval by the Environment Agency fixed multi-fuel weighted emission limit values, worked out according to the methodology described in 'MFF Protocol'. In this case the Multi-Fuel Firing Plan shall be accompanied by appropriate technical documentation including: 1. Historic fuel firing data from a recent representative period (e.g. three years of operations); 2. The equivalent emission limit values, calculated for each point within that data set, using the article 40(2) formulae; 3. The proposed representative fixed multi-fuel emission limits, based on the median values from the range of emission limit values calculated as per item #2 above; 4. A mechanism, to be included within the site EMS procedures, to repeat this process annually, using measurements of actual fuel use and calorific value obtained throughout the year, to assess whether the set values remain representative of the fuels burnt; 5. A mechanism, to be included within the site EMS procedures, to inform the Environment Agency in writing within 28 days of a significant change in fuel mix, in order that the suitability of the ELVs, determined in item #1 to item #3 above, can be reviewed; 6. The proposed annual mass emission limit to be set based on the actual mass emissions measured and reported for that combustion plant, over a recent representative period (e.g. the last 3 years) for each relevant pollutant.	Completed
IC19	<u>LCP BAT Conclusion 2</u> The operator shall install and put into operation devices for continuous measurement of flue gas pressure in the flues of GT/HRSG 1 and GT/HRSG 2, part of LCP188. The operator shall confirm in writing completion of this Improvement Condition.	Completed
IC20	<u>Black start operations</u> A written report shall be submitted to the Environment Agency for approval. The report shall contain an impact assessment demonstrating that there is no significant environmental risk associated with black start operations and propose a methodology for minimisation of environmental impact during such a period of operation and for reporting instances of black start operation. The plant can be operated as set out in condition 2.3.9 of the permit once the report has been approved by the Environment Agency. The methodology for operation and reporting set out in the report shall be implemented by the Operator from the date of approval by the Environment Agency.	Completed

Table S1.3 Improvement programme requirements		
Ref.	**Requirement**	**Date**
IC21	PCC plants commissioning The operator shall submit a written report to the Environment Agency for assessment and written approval on the commissioning of the PCC plants. The report shall summarise the environmental performance of the installation as set out in the commissioning plan required by pre-operational condition PO02 in table S1.4 of this permit. The report shall include: • a summary of the environmental performance of the PCC plants as installed against the design parameters and risk assessments set out in Application EPR/BJ8022IZ/V014 and updated in response to the pre-operational conditions in this permit; and • a review of the performance of the facility against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions and confirmation that the Environmental Management System (EMS) has been updated accordingly.	Within 3 months from completion of commissioning of the PCC plants
IC22	Monitoring locations (A2, A6, A7 and LCP compliance monitoring locations pre-PCC plants) The operator shall submit a written report to the Environment Agency for assessment and written approval on the assessment of air emissions monitoring locations A2, A6 and A7 and the LCP compliance monitoring locations pre-PCC plants. The report shall include: • for emission point A2, confirmation whether the requirements of BS EN 15259 are applicable, in accordance with pre-operational condition PO09 in table S1.4 of this permit; • the results of tests carried out during commissioning to assess whether the air monitoring locations meet the requirements of BS EN 15259 and supporting Method Implementation Document (MID); • analysis of the results and conclusions of the assessment; and • where necessary, proposals for improvements to meet the requirements and timescales for implementation. Where notified in writing by the Environment Agency that the requirements are not met, the operator shall submit proposals or further proposals for rectifying this in accordance with the timescale in the notification. The proposals shall be implemented in accordance with Environment Agency's written approval.	Within 3 months of completion of commissioning of the PCC plants

Table S1.3 Improvement programme requirements		
Ref.	**Requirement**	**Date**
IC23	PCC plants carbon capture performance The operator shall submit a written report to the Environment Agency for assessment and written approval detailing the carbon capture efficiency of the PCC plants under normal operating conditions (calculated using the methodology as approved in accordance with pre operational condition PO02 in table S1.4 of this permit) averaged over one year of operation as specified in table S3.4 of this permit. Should the carbon capture efficiency during normal operating conditions be reported to be less than the design capture performance specification of 95%, the operator shall carry out an analysis of the issues affecting the performance of the plant with respect to achievement of the 95% carbon capture rate and either: • submit written proposals for remedial actions designed to improve capture efficiency to the Environment Agency for approval; or • provide an acceptable written justification to the Environment Agency that a 95% capture rate is not reasonably achievable, and that no further remedial action is to be taken. The operator shall implement any proposals identified within the report in accordance with the Environment Agency's written approval and within the approved timescales.	Within 15 months from completion of commissioning of the PCC plants
IC24	PCC plants amine solvent degradation The operator shall submit a written report to the Environment Agency for assessment and written approval on the degradation of the PCC plants absorber solvent quality. The report shall review the findings from the monitoring of absorber solvent quality over 12 months of operation, including but not limited to the monitoring carried out in accordance with table S3.4 of this permit. The report shall include: • an investigation into the reasons for solvent degradation and how degradation affects the performance of the PCC plants over time; • a review of the options for reducing the rate of solvent degradation; and • proposals for the implementation of any measures identified from the review. The proposals shall be implemented in accordance with Environment Agency's written approval.	Within 15 months from completion of commissioning of the PCC plants

Table S1.3 Improvement programme requirements		
Ref.	**Requirement**	**Date**
IC25	Review of PCC plants air emissions risk assessment The operator shall submit a written report to the Environment Agency for technical assessment and written approval. The report shall contain an emissions to air risk assessment in line with the Environment Agency's guidance which is based on sampled and monitored emissions data from emission points A6 and A7 in table S3.1 of this permit. Emissions monitoring data obtained during the first year of operation shall be used to compare the actual emissions with those predicted in the impact assessment submitted with the permit application EPR/BJ8022IZ/V014. For any parameters not included in the original impact assessment, or those showing to be at concentrations higher than those assumed in the impact assessment submitted with the application, an assessment shall be made of the impact to human health and habitats of each parameter using the 'Air emissions risk assessment for your environmental permit - GOV.UK (www.gov.uk)' guidance. Where Environmental Assessment Levels (EALs) for emitted substances are not available on the current published EAL list on gov.uk, the operator shall propose a new EAL. To derive a new EAL, the operator should follow the Environment Agency's published guidance on air emissions risk assessments. For the parameters at emission points A6 and A7, where a monthly monitoring frequency is specified in table S3.1 of this permit and until completion of this improvement condition: • when the assessment shows that the emission parameters are sufficiently stable over the first year of operation; and • when the environmental risk is demonstrated to be insignificant; The operator may propose reduced monitoring frequencies for approval by the Environment Agency. However, the reduced monitoring shall not be less frequent than '6 monthly'. Where the updated environmental risk assessment shows a risk of causing exceedances of the EALs, the operator shall propose remedial actions to reduce the emissions of these pollutants to acceptable levels agreed in writing with the Environment Agency. The operator must implement the proposals in the report in line with the timescales agreed with the Environment Agency's written approval.	Within 15 months of commencement of operation of the PCC plants
IC26	PPC plants leak detection and repair (LDAR) programme The operator shall submit a written plan to the Environment Agency for assessment and written approval detailing the volatile organic compounds (VOC) LDAR programme for the PCC plants, including how the operator intends to detect leaks from and carry out repairs to equipment that is inaccessible. The LDAR programme shall be implemented in accordance with the Environment Agency's written approval.	Within 3 months from completion of commissioning of the PCC plants
IC27	ROG control system The operator shall review options for ensuring that the ROG sulphur content does not exceed the limit set out in table S2.1 of this permit. The review shall include consideration of an automatic shut-off control system for the ROG supply to the installation. The chosen option shall be implemented in accordance with the Environment Agency's written approval.	28/02/2026

Table S1.3 Improvement programme requirements		
Ref.	**Requirement**	**Date**
IC28	PCC plants monitoring at W2 The operator shall submit a written report to the Environment Agency for assessment and written approval for monitoring of amines in emissions to water from the PCC plants at emission point W2 in table S3.2 of this permit. The report shall contain: • the results of amine monitoring over a 12-month period; • assessment of the results and conclusions of the assessment; and • proposals for any ongoing monitoring for inclusion in table S3.2 of the permit. The proposals shall be implemented in accordance with Environment Agency's written approval.	Within 15 months of commencement of operation of the PCC plants
IC29	Black start operations A written report shall be submitted to the Environment Agency for approval. The report shall contain an impact assessment demonstrating that there is no significant environmental risk associated with black start operations and propose a methodology for minimisation of environmental impact during such a period of operation and for reporting instances of black start operation. The plant can be operated as set out in condition 2.3.9 of the permit once the report has been approved by the Environment Agency. The methodology for operation and reporting set out in the report shall be implemented by the operator from the date of approval by the Environment Agency.	31/08/2026

Table S1.4 Pre-operational measures for future development – PCC plants		
Reference	**Operation**	**Pre-operational measures**
PO01	Activities permitted by variation EPR/BJ8022IZ/V014 PCC plants, activity AR2 in table S1.1 of this permit	PCC plants Environment Management System (EMS) Prior to the commencement of commissioning of the PCC plants, the operator shall submit for approval by the Environment Agency a report confirming that the installation's EMS includes the operation of the PCC plants. The operator shall not begin the commissioning operations of the PCC plants, including any associated activities, prior to obtaining written approval by the Environment Agency to this report. The operator shall make available for inspection all documents and procedures which form part of the updated EMS. The updated EMS shall be developed/extended in line with the requirements set out in Environment Agency web guide on developing a management system for environmental permits (found on www.gov.uk). The documents and procedures set out in the EMS shall form the written management system referenced in condition 1.1.1 (a) of the permit. As part of the above, the following aspects shall be addressed in detail in the report and updated EMS documentation: • the extension of the existing installation and equipment inspection, testing and maintenance programme for the PCC plants; and

Table S1.4 Pre-operational measures for future development – PCC plants		
Reference	**Operation**	**Pre-operational measures**
		• the update to the existing Accident Management Plan and/or Emergency Response Plan to cover the risks from potential accidental events associated with the operations of the PCC plants (including amine solvent storage) and their interactions with the pre-existing activities.
PO02	Activities permitted by variation EPR/BJ8022IZ/V014 PCC plants, activity AR2 in table S1.1 of this permit	<u>PCC plants commissioning plan</u> At least three months prior to the commencement of commissioning of the PCC plants, the operator shall submit a written commissioning plan for assessment and written approval by the Environment Agency. The commissioning plan shall include, but not be limited to: • the timelines for the commissioning and the expected durations of these activities; • the expected emissions to the environment during the different stages of commissioning; • additional monitoring to be carried out during commissioning; • any changes to the monitoring techniques set out in table S3.1 of this permit, for amines and degradation products; • risk assessment demonstrating that the environmental risks are not significant throughout all the phases of commissioning; the expected durations of commissioning activities and the actions to be taken to protect the environment and report to the Environment Agency in the event that actual emissions exceed expected emissions; • a methodology for approval to demonstrate the carbon capture efficiency of the PCC plants. The approved methodology shall be used to demonstrate the carbon capture efficiency of the plants as part of the commissioning activities, and, after the commissioning phase, for process monitoring and reporting purposes in compliance with the conditions of the permit; • a methodology for approval for quantifying total mass of CO_2 emissions during short duration venting that may be required during the start-up sequence of the PCC plants and during OTNOC. The commissioning activities shall be carried out in accordance with the commissioning plan approved by the Environment Agency.
PO03	Activities permitted by variation EPR/BJ8022IZ/V014 PCC plants, activity AR2 in table S1.1 of this permit	<u>PCC plants containment infrastructure</u> Following the completion of the detailed engineering design for the PCC plants, and prior to the commencement of commissioning operations, the operator shall submit an updated report on the containment infrastructure to the Environment Agency for assessment and written approval. The report shall include information on the detailed design and construction specification of the primary, secondary and tertiary containment infrastructure associated with the PCC plants. The report shall demonstrate that the containment systems have been designed and specified by suitably qualified and experienced engineers to comply with the requirements of CIRIA Report 736 – 'Containment systems for the prevention of pollution' 736, addressing the key

Table S1.4 Pre-operational measures for future development – PCC plants		
Reference	**Operation**	**Pre-operational measures**
		elements which include: • updating the risk assessment and classification to identify the class of containment required; • developing the specification and design of the primary, secondary and tertiary containment appropriate to the class of containment, taking into account CIRIA 736 guidance on bunding, further containment and transfer systems; • demonstrating that design has taken into account the capacity requirements, including the capacity of the inventory to be contained, allowance for rainfall, firefighting and cooling water provision; and • demonstrating that the isolation and operating philosophy for the secondary and tertiary containment infrastructure prevents accidental emissions to the environment. The operator shall not begin the commissioning operations of the PCC plants, including any associated activities, prior to obtaining written approval by the Environment Agency to this pre-operational condition.
PO04	Activities permitted by variation EPR/BJ8022IZ/V014 PCC plants, activity AR2 in table S1.1 of this permit	<u>PCC plants drainage plan</u> Following the completion of the final design of the PCC plants and at least 6 months prior to the commencement of their commissioning, the operator shall submit to the Environment Agency a drainage plan based on the final design of the PCC plants.
PO05	Activities permitted by variation EPR/BJ8022IZ/V014 PCC plants, activity AR2 in table S1.1 of this permit	<u>PCC plants Noise Impact Assessment (NIA) and Noise Management Plan (NMP)</u> Following the completion of the detailed engineering design for the PCC plants, and at least six months prior to the commencement of their commissioning operations, the operator shall submit a revised NIA and NMP to the Environment Agency for assessment and written approval. The revised NIA shall be informed by updated and final noise emissions data provided by equipment manufacturers during the detailed engineering design of the plant, taking into account the detailed noise attenuation measures included in the design according to BAT. The revised NIA shall be carried out by an experienced and suitably qualified person (i.e. a noise consultant with an appropriate qualification accredited by the Institute of Acoustics), in accordance with the procedures given in BS4142:2014 (Rating industrial noise affecting mixed residential and industrial areas) and BS7445: 2003 (Description and measurement of environmental noise). The revised NIA shall include: • updated sound source data, with appropriate references for all plant; • updated detailed mitigation proposals, with detailed performance specifications for all proposed mitigation options in octave frequency bands, evidenced by manufacturer's data;

Table S1.4 Pre-operational measures for future development – PCC plants		
Reference	**Operation**	**Pre-operational measures**
		• updated discussion of acoustic feature corrections depending on final plant specifications, with evidence provided to justify corrections for tonality, impulsivity or intermittency (if applicable); • updated discussion of context; • updated discussion of uncertainty; • updated BS4142 impact for the PCC plants in isolation and cumulatively in the context of the existing site operations; • consideration of the possibility of lower background sound levels at noise sensitive receptor (NSR) 4; and • applicability of acoustic feature corrections (AFCs); The report shall: • consider the background levels in the locality, and assess the potential impact that the PCC plants are likely to have upon identified sensitive receptors; • provide a comparison with the predictions and conclusions of the preliminary NIA submitted with the application for variation EPR/BJ8022IZ/V014 (document titled 'Noise Assessment VPI', dated November 2023); • include an interpretation of the results and conclusions drawn; and • demonstrate that the detailed acoustic design of the PCC plants permitted by variation EPR/BJ8022IZ/V014 consists of BAT and includes appropriate noise mitigation measures suitable to confirm the predictions and conclusions of the of the preliminary NIA as a minimum, or incorporates further reductions in sound levels from those identified in that study. The revised NMP shall reflect the updated NIA and shall include where relevant, but not be limited to, updated: • references to the revised NIA conclusions; • specific noise control measures to be implemented with associated attenuation levels; • confirmation that the noise attenuation levels stated in the preliminary NMP submitted with the application for variation EPR/BJ8022IZ/V014, titled Noise Management Plan (Revision 1.0, dated 08/12/2023) for the equipment which are part of the PCC plants permitted by variation EPR/BJ8022IZ/V014, will be attained as a minimum, or further noise attenuation will be achieved when this is practical, according to BAT; • description of on-site processes that will ensure impacts do not increase on site; and • actions to be taken if noise is detected outside optimum process parameters. The operator shall not begin the commissioning operations of the PCC plants, including any associated activities, prior to obtaining written approval by the Environment Agency to the revised NIA and NMP.

Table S1.4 Pre-operational measures for future development – PCC plants		
Reference	**Operation**	**Pre-operational measures**
PO06	Activities permitted by variation EPR/BJ8022IZ/V014 PCC plants, activity AR2 in table S1.1 of this permit	<u>PCC plants CO_2 assessment</u> Following the completion of the final design of the PCC plants and at least 12 months prior to the commencement of their commissioning, the operator shall submit to the Environment Agency for assessment and written approval: A report that validates the outcomes of the CO_2 venting emissions to air risk assessment presented in the application EPR/BJ8022IZ/V014. This report shall include but not be limited to: • confirmation of the vent location(s); • information on how modelling has been used to inform the process design and manage risks associated with CO_2 venting. This should include a description of the different potential venting scenarios; • confirmation that the design is in line with industry best practice, such as that produced by the Energy Institute, or other equivalent guidance; • description of the operating techniques that will minimise the risks associated with venting CO_2 to atmosphere and limit venting scenarios to those considered in their application; and • a vent management plan which is in keeping with our published guidance on emerging techniques for post-combustion carbon capture and industry best practice, such as that produced by the Energy Institute, or other equivalent guidance.
PO07	Activities permitted by variation EPR/BJ8022IZ/V014 PCC plants, activity AR2 in table S1.1 of this permit	<u>PCC plants process monitoring methods</u> Following the completion of the final design of the PCC plants and at least 6 months prior to the commencement of their commissioning, the operator shall submit to the Environment Agency for assessment and written approval, methodologies for the following process monitoring requirements for absorber amine solvent quality as required in table S3.4 of this permit: • opacity/colour; • concentration of active amines; • carbon dioxide loading (rich amine); • foaming tendency; • amine and organic non-ionic degradation products – including but not limited to amines, nitrosamines, nitramines (in absorber amine solvent prior to reclaiming and after reclaiming); • organic acids; • heat stable salts; • metals including soluble iron concentration; • soluble iron concentration – rich amine; • soluble iron concentration – lean amine following stripper.

Table S1.4 Pre-operational measures for future development – PCC plants		
Reference	**Operation**	**Pre-operational measures**
PO08	Activities permitted by variation EPR/BJ8022IZ/V014 PCC plants, activity AR2 in table S1.1 of this permit	PCC plants BAT for cooling options Note 1 Following the completion of the final design of the PCC plants and at least 12 months prior to the commencement of their commissioning, the operator shall submit a report on the cooling options for assessment and written approval by the Environment Agency. The report shall include: • an updated BAT assessment for the choice of cooling system for the PCC plants; and • justification for any changes to the initial BAT assessment submitted with application EPR/BJ8022IZ/V014. Note 1: Only required in the event that the dry air-cooling option changes following the completion of the final design.
PO09	Activities permitted by variation EPR/BJ8022IZ/V014 PCC plants, activity AR2 in table S1.1 of this permit	Monitoring arrangements (A2, A6 and A7) Following the completion of the final design of the PCC plants and at least 12 months prior to the commencement of their commissioning, the operator shall submit a written report to the Environment Agency, and obtain the Environment Agency's written approval for it, specifying arrangements for continuous and periodic monitoring of emissions to air from emission points A2, A6 and A7 to comply with EN 15259 and Environment Agency guidance notes on: • monitoring stack emissions measuring locations, techniques and standards for periodic monitoring; • monitoring stack emissions: carbon capture plants with solvent-based abatement (Monitoring stack emissions: carbon capture plants with solvent-based abatement - GOV.UK); and • Monitoring stack emissions: quality assurance of continuous monitoring, version 28/3/2025, for quality assurance of CEMS. The report shall include: • the monitoring locations required to demonstrate LCP compliance (pre-PCC plants) and those for PCC plants compliance (emission points A6 and A7); • how the monitoring locations and design will comply with the BS EN 15259 standard; • results of the computational fluid dynamics (CFD) modelling and analysis (pre-PCC plants) and those for PCC plants compliance (emission points A6 and A7); • confirmation that the design of the sampling platforms meet the requirements of our guidance 'Monitoring stack emissions: measurement locations' (version published 14/12/2022 or more recent version); • a method to demonstrate whether there are mist or water droplets present at emission point A2; • evidence that CEMS are MCERTS certified at the appropriate range;

Table S1.4 Pre-operational measures for future development – PCC plants		
Reference	**Operation**	**Pre-operational measures**
		• evidence that data handling and acquisition systems are MCERTS certified; • procedures for the quality assurance of CEMS, which includes evidence of completion of CEMS' functional tests and setting up quality assurance level (QAL) 3 checks, prior to completing a QAL2; and • methods and standards for periodic monitoring, including techniques for amines and degradation products from the PCC plant absorber stacks at emission points A6 and A7.
PO10	Activities permitted by variation EPR/BJ8022IZ/V014 PCC plants, activity AR2 in table S1.1 of this permit	<u>PCC plants other than normal operating conditions (OTNOC) plan</u> Following the completion of the final design of the PCC plants and prior to the commencement of their commissioning, the operator shall submit to the Environment Agency for assessment and written approval a post combustion carbon capture (PCC) plant OTNOC management plan. The plan shall include: i. Any potential 'OTNOC' for the PCC plants, taking into consideration both internal and external causes of OTNOC. ii. Details of measures to: • minimise the occurrence of OTNOC that are within the operator's control; and • reduce the impact of all OTNOC events. iii. Proposals for reviewing and optimising capture performance periodically so capture rates are as high as reasonably practicable during these periods. The OTNOC plan shall be included in the EMS.
PO11	Activities permitted by variation EPR/BJ8022IZ/V014 PCC plants, activity AR2 in table S1.1 of this permit	<u>Emissions from storage of solvent</u> Following the completion of the final design of the PCC plants and prior to the commencement of their commissioning, the operator shall submit a written report to the Environment Agency for assessment and written approval. The report shall contain confirmation that the final design of all the tanks containing fresh and used amine-based solvent Shell Cansolv DC-103 consist, as a minimum, of white painted or milled finish to reduce emissions of Volatile Organic Compounds (VOCs), or propose alternative/additional measures to reduce emissions from storage from these tanks.

Table S1.5 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 (%)** **And/or 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 (%)** **And/or when two of the criteria listed below for the LCP or unit have been met.**
A1 LCP188 GT1	Whichever is lower between: • Output load: 151 MW, 54.3% rated power output; and • The point at which the combustion system switches into stable combustion mode (DLN Mode 6.3 – Enumerator 3).	Whichever is lower between: • Output load: 97 MW; 34.8% rated power output; and • The point at which the combustion system switches out of stable combustion mode (DLN Mode 6.3 – Enumerator 3)
A2 LCP188 GT2	Whichever is lower between: • Output load 148 MW, 52.1% rated power output; and • The point at which the combustion system switches into stable combustion mode (DLN Mode 6.3 – Enumerator 3)	Whichever is lower between: • Output load 99 MW, 34.8% rated power output; and • The point at which the combustion system switches out of stable combustion mode (DLN Mode 6.3 – Enumerator 3)
A3 LCP188 AB1	When two of the criteria listed below for the unit have been met: • Steam rate: 20% of Maximum Continuous Rate • Fuel Flow: 20% of maximum flow rate • Steam Temperature: 460°C	When two of the criteria listed below for the unit have been met: • Steam rate: 20% of Maximum Continuous Rate • Fuel Flow: 20% of maximum flow rate • Steam Temperature: 460°C
A4 LCP188 AB2	When two of the criteria listed below for the unit have been met: • Steam rate: 20% of Maximum Continuous Rate • Fuel Flow: 20% of maximum flow rate • Steam Temperature: 460°C	When two of the criteria listed below for the unit have been met: • Steam rate: 20% of Maximum Continuous Rate • Fuel Flow: 20% of maximum flow rate • Steam Temperature: 460°C
A5 LCP415 GT3	Output Load: 115MW, 40.2% rated power output	Output Load: 97MW, 33.9% rated power output

Table S1.6 Dry low NOx effective definition	
Emission Point and Unit Reference	**Dry Low NOx effective definition** **Load in MW and as percent of rated power output (%) or when the criteria listed below for the LCP or unit have been met**
A1 LCP188 GT1	Whichever is lower between: • Output load: 151 MW, 54.3% rated power output; and • The point at which the combustion system switches into (or out of) stable combustion mode (DLN Mode 6.3 – Enumerator 3).
A2 LCP188 GT2	Whichever is lower between: • Output load 148 MW, 52.1% rated power output; and • The point at which the combustion system switches into (or out of) stable combustion mode (DLN Mode 6.3 – Enumerator 3)
A5 LCP415 GT3	Output Load: 115MW, 40.2% rated power output

Schedule 2 – Raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Refinery off-gas (ROG)	Not exceeding 0.02% w/w max sulphur content (hourly average limit)
Gas oil, or other equivalent fuel as agreed in writing with the Environment Agency	Not exceeding 0.1% w/w sulphur content
Natural gas	-
Carbon capture solvent used for activity AR2 in table S1.1 of this permit	Shell Cansolv DC-103, formulation consistent with emission profile assessed in variation application EPR/BJ8022IZ/V014 (emissions of amines and their degradation products reported in Annex A of application document 'Environmental Permit Variation Application Appendix F - Air Impact Assessment', dated 08/12/2023).

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
GT1/HRSG1 Note 3									
A6 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT1/HRSG1 via PCC Plant 1 absorber stack	40 mg/m^3 Note 3 When DLN is effective Note 6	No ROG firing	No gas oil firing	Not applicable	Yearly average	Continuous	BS EN 14181
A6 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT1/HRSG1 via PCC Plant 1 absorber stack	50 mg/m^3 Note 3 When DLN is effective Note 6	No ROG firing	No gas oil firing	Not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A6 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT1/HRSG1 via PCC Plant 1 absorber stack	50 mg/m^3 Note 3 When DLN is effective Note 6 50 mg/m^3 Note 3 MSUL/MSDL to base load Note 7	No ROG firing	No gas oil firing	Not applicable	Daily average	Continuous	BS EN 14181

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT1/HRSG1 via PCC Plant 1 absorber stack	100 mg/m^3 Note 3 When DLN is effective Note 6	No ROG firing	No gas oil firing	Not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A6 Note 3	Carbon Monoxide	LCP188 GT1/HRSG1 via PCC Plant 1 absorber stack	50 mg/m^3 Note 3 When DLN is effective Note 6	No ROG firing	No gas oil firing	Not applicable	Yearly average	Continuous	BS EN 14181
A6 Note 3	Carbon Monoxide	LCP188 GT1/HRSG1 via PCC Plant 1 absorber stack	100 mg/m^3 Note 3 When DLN is effective Note 6	No ROG firing	No gas oil firing	Not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A6 Note 3	Carbon Monoxide	LCP188 GT1/HRSG1 via PCC Plant 1 absorber stack	110 mg/m^3 Note 3 When DLN is effective Note 6 110 mg/m^3 Note 3 MSUL/MSDL to base load Note 7	No ROG firing	No gas oil firing	Not applicable	Daily average	Continuous	BS EN 14181

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 Note 3	Carbon Monoxide	LCP188 GT1/HRSG1 via PCC Plant 1 absorber stack	200 mg/m^3 Note 3 When DLN is effective Note 6	No ROG firing	No gas oil firing	Not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A6 Note 3	Sulphur Dioxide	LCP188 GT1/HRSG1 via PCC Plant 1 absorber stack	No limit applies	No ROG firing	No gas oil firing	Not applicable	-	At least every 6 months	Concentration by calculation, as agreed in writing with the Environment Agency
A6 Note 3	Dust	LCP188 GT1/HRSG1 via PCC Plant 1 absorber stack	No limit applies	No ROG firing	No gas oil firing	Not applicable	-	-	-

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
GT2/HRSG2 Note 3									
A7 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT2/HRSG2 via PCC Plant 2 absorber stack	40 mg/m^3 Note 3 When DLN is effective Note 6	No ROG firing	No gas oil firing	Not applicable	Yearly average	Continuous	BS EN 14181
A7 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT2/HRSG2 via PCC Plant 2 absorber stack	50 mg/m^3 Note 3 When DLN is effective Note 6	No ROG firing	No gas oil firing	Not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A7 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT2/HRSG2 via PCC Plant 2 absorber stack	50 mg/m^3 Note 3 When DLN is effective Note 6 50 mg/m^3 MSUL/MSDL to base load Note 7	No ROG firing	No gas oil firing	Not applicable	Daily average	Continuous	BS EN 14181
A7 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT2/HRSG2 via PCC Plant 2 absorber stack	100 mg/m^3 Note 3 When DLN is effective Note 6	No ROG firing	No gas oil firing	Not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A7 Note 3	Carbon Monoxide	LCP188 GT2/HRSG2 via PCC Plant 2 absorber stack	50 mg/m^3 Note 3 When DLN is effective Note 6	No ROG firing	No gas oil firing	Not applicable	Yearly average	Continuous	BS EN 14181
A7 Note 3	Carbon Monoxide	LCP188 GT2/HRSG2 via PCC Plant 2 absorber stack	100 mg/m^3 Note 3 When DLN is effective Note 6	No ROG firing	No gas oil firing	Not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A7 Note 3	Carbon Monoxide	LCP188 GT2/HRSG2 via PCC Plant 2 absorber stack	110 mg/m^3 Note 3 When DLN is effective Note 6 110 mg/ m^{3}Note 3 MSUL/MSDL to base load Note 7	No ROG firing	No gas oil firing	Not applicable	Daily average	Continuous	BS EN 14181
A7 Note 3	Carbon Monoxide	LCP188 GT2/HRSG2 via PCC Plant 2 absorber stack	200 mg/m^3 Note3 When DLN is effective Note 6	No ROG firing	No gas oil firing	Not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A7 Note 3	Sulphur Dioxide	LCP188 GT1/HRSG1 via PCC Plant 2 absorber stack	No limit applies	No ROG firing	No gas oil firing	Not applicable	-	At least every 6 months	Concentration by calculation, as agreed in writing with the Environment Agency
A7 Note 3	Dust	LCP188 GT2/HRSG2 via PCC Plant 2 absorber stack	No limit applies	No ROG firing	No gas oil firing	Not applicable	-	-	-
AB1 Note 3									
A6 or A7 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	100 mg/m^3 Note 3 From MSUL / MSDL point and above Notes 7 and 13	No limit applies	No limit applies	Not applicable	Yearly average	Continuous	BS EN 14181
A6 or A7 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	100 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	150 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	100 mg/m^3 to 150 mg/m^3 Note 3 From MSUL / MSDL point and above Notes 2 and 7	Monthly mean of validated hourly averages	Continuous	BS EN 14181

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 or A7 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	110 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	220 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	110 mg/m^3 to 220 mg/m^3 Note 3 From MSUL / MSDL point and above Notes 2 and 7	Daily average	Continuous	BS EN 14181
A6 or A7 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	200 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	400 mg/m^3 Note3 From MSUL / MSDL point and above Note 7	No limit applies	200 mg/m^3 to 400 mg/m^3 Note 3 From MSUL / MSDL point and above Notes 2 and 7	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A6 or A7 Note 3	Carbon Monoxide	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	40 mg/m^3 Note 3 From MSUL / MSDL point and above Notes 7 and 13	No limit applies	No limit applies	Not applicable	Yearly average	Continuous	BS EN 14181

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 or A7 Note 3	Carbon Monoxide	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	100 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	100 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	For Natural-gas + ROG: 100 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7 For ROG + oil: not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A6 or A7 Note 3	Carbon Monoxide	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	110 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	No limit applies	Not applicable	Daily average	Continuous	BS EN 14181
A6 or A7 Note 3	Carbon Monoxide	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	200 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	No limit applies	Not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 or A7 Note 3	Sulphur Dioxide	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	35 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	35 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	35 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A6 or A7 Note 3	Sulphur Dioxide	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	38.5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	38.5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	38.5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	Daily average	Continuous	BS EN 14181
A6 or A7 Note 3	Sulphur Dioxide	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	70 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	70 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	70 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 or A7 Note 3	Dust	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies [Operation for no more than 500 hours per calendar year with a maximum period of 240 hours]	For Natural-gas + ROG: 5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7 For ROG + oil: not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181 and BS EN 13284-2
A6 or A7 Note 3	Dust	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	5.5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	5.5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies [Operation for no more than 500 hours per calendar year with a maximum period of 240 hours]	For Natural-gas + ROG: 5.5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7 For ROG + oil: not applicable	Daily average	Continuous	BS EN 14181 and BS EN 13284-2

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 or A7 Note 3	Dust	LCP188 AB1 via PCC Plant 1 or 2 absorber stack	10 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	10 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies [Operation for no more than 500 hours per calendar year with a maximum period of 240 hours]	For Natural-gas + ROG: 10 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7 For ROG + oil: not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181 and BS EN 13284-2
AB2 Note 3									
A6 or A7 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	100 mg/m^3 Note 3 From MSUL / MSDL point and above Notes 7 and 13	No limit applies	No limit applies	Not applicable	Yearly average	Continuous	BS EN 14181
A6 or A7 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	100 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	150 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	100 mg/m^3 to 150 mg/m^3 Note 3 From MSUL / MSDL point and above Notes 2 and 7	Monthly mean of validated hourly averages	Continuous	BS EN 14181

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 or A7 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	110 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	220 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	110 mg/m^3 to 220 mg/m^3 Note 3 From MSUL / MSDL point and above Notes 2 and 7	Daily average	Continuous	BS EN 14181
A6 or A7 Note 3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	200 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	400 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	200 mg/m^3 to 400 mg/m^3 Note 3 From MSUL / MSDL point and above Notes 2 and 7	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A6 or A7 Note 3	Carbon Monoxide	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	40 mg/m^3 Note 3 From MSUL / MSDL point and above Notes 7 and 13	No limit applies	No limit applies	Not applicable	Yearly average	Continuous	BS EN 14181

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 or A7 Note 3	Carbon Monoxide	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	100 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	100 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	For Natural-gas + ROG: 100 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7 For ROG + oil: not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A6 or A7 Note 3	Carbon Monoxide	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	110 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	No limit applies	Not applicable	Daily average	Continuous	BS EN 14181
A6 or A7 Note 3	Carbon Monoxide	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	200 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	No limit applies	Not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A6 or A7 Note 3	Sulphur Dioxide	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	35 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	35 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	35 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	Monthly mean of validated hourly averages	Continuous	BS EN 14181

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 or A7 Note 3	Sulphur Dioxide	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	38.5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	38.5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	38.5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	Daily average	Continuous	BS EN 14181
A6 or A7 Note 3	Sulphur Dioxide	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	70 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	70 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies	70 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A6 or A7 Note 3	Dust	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies [Operation for no more than 500 hours per calendar year with a maximum period of 240 hours]	For Natural-gas + ROG: 5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7 For ROG + oil: not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181 and BS EN 13284-2

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 or A7 Note 3	Dust	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	5.5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	5.5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies [Operation for no more than 500 hours per calendar year with a maximum period of 240 hours]	For Natural-gas + ROG: 5.5 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7 For ROG + oil: not applicable	Daily average	Continuous	BS EN 14181 and BS EN 13284-2
A6 or A7 Note 3	Dust	LCP188 AB2 via PCC Plant 1 or 2 absorber stack	10 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	10 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7	No limit applies [Operation for no more than 500 hours per calendar year with a maximum period of 240 hours]	For Natural-gas + ROG: 10 mg/m^3 Note 3 From MSUL / MSDL point and above Note 7 For ROG + oil: not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181 and BS EN 13284-2
A5 to A7 Note 12	Stack gas flow rate	LCP188 via PCC Plant 1 and 2 absorber stack LCP415	-	-	-	-	-	Continuous	EN ISO 16911-2

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A5 to A7 Note 12	Oxygen	LCP188 via PCC Plant 1 and 2 absorber stack LCP415	-	-	-	-	-	Continuous as appropriate to reference	BS EN 14181
A5 to A7 Note 12	Water Vapour	LCP188 via PCC Plant 1 and 2 absorber stack LCP415	-	-	-	-	-	Continuous as appropriate to reference	BS EN 14181
A5 to A7 Note 12	Stack gas temperature	LCP188 via PCC Plant 1 and 2 absorber stack LCP415	-	-	-	-	-	Continuous as appropriate to reference	Traceable to national standards
A5 to A7 Note 12	Stack gas pressure	LCP188 via PCC Plant 1 and 2 absorber stack LCP415	-	-	-	-	-	Continuous as appropriate to reference	Traceable to national standards

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A5 to A7 Note 12	As required by the Method Implementation Document for BS EN 15259	LCP188 via PCC Plant 1 and 2 absorber stack LCP415	-	-	-	-	-	Pre-operation and when there is a significant operational change	BS EN 15259

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
PCC Plants 1 and 2 Notes 4 and 10									
A6 and A7 **Note 4**	Ammonia	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	2 mg/m^3 **Note 4**	2 mg/m^3 **Note 4**	2 mg/m^3 **Note 4**	2 mg/m^3 **Note 4**	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed	EN ISO 21877 Note 11
Amines Note 5									
A6 and A7 **Note 4**	Total amines	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	0.3 mg/m^3 **Note 5**	0.3 mg/m^3 **Note 5**	0.3 mg/m^3 **Note 5**	0.3 mg/m^3 **Note 5**	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	EN ISO 21877 Notes 9 and 11
A6 and A7 **Note 4**	1-Piperazineethanol CAS 103-76-4	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit applies	No limit applies	No limit applies	No limit applies	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	EN ISO 21877 Notes 9 and 11

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 and A7 **Note 4**	Piperazine CAS 110-85-0	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit applies	No limit applies	No limit applies	No limit applies	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	EN ISO 21877 Notes 9 and 11
A6 and A7 **Note 4**	1,4-Piperazinediethanol CAS 122-96-3	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit applies	No limit applies	No limit applies	No limit applies	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	EN ISO 21877 Notes 9 and 11
A6 and A7 **Note 4**	Monoethanolamine (MEA) CAS No 141-43-5	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit set	No limit set	No limit set	No limit set	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	EN ISO 21877 Notes 9 and 11
Nitrosamines and nitramines Note 4									

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 and A7 **Note 4**	Total nitrosamines and nitramines	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	0.0013 mg/m^3 **Note 4**	0.0013 mg/m^3 **Note 4**	0.0013 mg/m^3 **Note 4**	0.0013 mg/m^3 **Note 4**	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	Isokinetic impinger method based on EN ISO 21877 Notes 9 and 11
A6 and A7 **Note 4**	4-Nitroso-1-piperazineethanol Note 8 CAS No 48121-20-6	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit set	No limit set	No limit set	No limit set	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	Isokinetic impinger method based on EN ISO 21877 Notes 9 and 11
A6 and A7 **Note 4**	1-nitrosopiperazine CAS No 5632-47-3	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit set	No limit set	No limit set	No limit set	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	Isokinetic impinger method based on EN ISO 21877 Notes 9 and 11
Heterocyclic organic compounds Note 4									

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 and A7 **Note 4**	4-(2-Hydroxyethyl) piperazin-2-one CAS No 23936-04-1	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit set	No limit set	No limit set	No limit set	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	EN ISO 21877 Notes 9 and 11
A6 and A7 **Note 4**	Piperazin-2-one CAS No 5625-67-2	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit set	No limit set	No limit set	No limit set	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	EN ISO 21877 Notes 9 and 11
A6 and A7 **Note 4**	1-formyl-4-(2-hydroxyethyl) Piperazine CAS No 25209-64-7	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit set	No limit set	No limit set	No limit set	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	EN ISO 21877 Notes 9 and 11

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 and A7 Note 5	1-formylpiperazine CAS No 7755-92-2	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit set	No limit set	No limit set	No limit set	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	EN ISO 21877 Notes 9 and 11
Other degradation products Note 4									
A6 and A7 **Note 4**	Total amides and formamides	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	0.03 mg/m^3 **Note 4**	0.03 mg/m^3 **Note 4**	0.03 mg/m^3 **Note 4**	0.03 mg/m^3 **Note 4**	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	EN ISO 21877 Notes 9 and 11
A6 and A7 **Note 4**	Acetaldehyde	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	0.2 mg/m^3 **Note 4**	0.2 mg/m^3 **Note 4**	0.2 mg/m^3 **Note 4**	0.2 mg/m^3 **Note 4**	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	CEN TS 17638 Notes 9 and 11

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 and A7 **Note 4**	Acetone	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit set	No limit set	No limit set	No limit set	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	CEN TS 13649 Note 11
A6 and A7 **Note 4**	Acetonitrile	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit set	No limit set	No limit set	No limit set	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	CEN TS 13649 Note 11
A6 and A7 **Note 4**	Ethanol	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit set	No limit set	No limit set	No limit set	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	CEN TS 13649 Notes 9 and 11

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 and A7 **Note 4**	Formaldehyde	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	0.07 mg/m^3 **Note 4**	0.07 mg/m^3 **Note 4**	0.07 mg/m^3 **Note 4**	0.07 mg/m^3 **Note 4**	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	CEN TS 17638 Notes 9 and 11
A6 and A7 **Note 4**	Acetic acid	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit applies	No limit applies	No limit applies	No limit applies	Average over the sampling period Note 5	Monthly until the requirements of IC25 have been agreed, then six monthly.	CEN TS 13649 Notes 9 and 11
Other parameters Note 4									
A6 and A7 **Note 4**	Carbon dioxide	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit applies	No limit applies	No limit applies	No limit applies	-	Continuous	BS EN 14181

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 and A7 Note 4	Oxygen	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit applies	No limit applies	No limit applies	No limit applies	Continuous as appropriate to reference	Continuous	BS EN 14181
A6 and A7 Note 4	Flow	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit applies	No limit applies	No limit applies	No limit applies	-	Continuous	EN ISO 16911-2
A6 and A7 Note 4	Water vapour	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit applies	No limit applies	No limit applies	No limit applies	Continuous as appropriate to reference	Continuous	BS EN 14181
A6 and A7 Note 4	Stack gas temperature	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit applies	No limit applies	No limit applies	No limit applies	Continuous as appropriate to reference	Continuous	Traceable to national standards
A6 and A7 Note 4	Stack gas pressure	PCC Plant 1 absorber stack and PCC Plant 2 absorber stack	No limit applies	No limit applies	No limit applies	No limit applies	Continuous as appropriate to reference	Continuous	Traceable to national standards

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location [Note 1]	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A8	Carbon dioxide	Emergency relief vent	No limit set	No limit set	No limit set	No limit set	-	-	-

Table S3.1 Point source emissions to air - emission limits and monitoring requirements – CO_2 abated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**

Note 1: Emission point on site plan in Schedule 7 of this permit.

Note 2: Where there is the simultaneous use of two types of fuel (i.e. ROG and natural gas or ROG and distillate fuel oil) in a combustion plant with different emission limit values for the different fuels, the emissions shall be reported in accordance with the approved MFFP, submitted in response to IC18 and incorporated into table S1.2 of this permit.

Note 3: For LCP188, to demonstrate compliance with Chapter III of the IED and the LCP BAT Conclusions for air emissions from GT1, GT2, AB1 and AB2, monitoring shall be undertaken at a compliant location before the flue gases are discharged to the PCC Plant 1 and Plant 2 absorber columns, in accordance with IC22 in table S1.3 of this permit.

Note 4: For PCC Plant 1 and Plant 2 absorber columns, emission limits and monitoring requirements shall apply to each individual emission point, A6 and A7.

Note 5: "average over the sampling period" means the average value of three consecutive measurements of at least 30 minutes each or as agreed in writing with the Environment Agency.

Note 6: This limit applies between the effective dry low NOx threshold and baseload, as defined in table S1.6 of this permit.

Note 7: This limit applies when the load varies between MSUL/MSDL and baseload, MSUL and MSDL are defined in table S1.5 of this permit.

Note 8: Also referred to as 1-Nitroso-(4-hydroxyethyl)-piperazine depending on nomenclature used.

Note 9: The monitoring standard or method shall be in accordance with our guidance for monitoring stack emissions: carbon capture plants with solvent-based abatement (Monitoring stack emissions: carbon capture plants with solvent-based abatement - GOV.UK) and our standard monitoring guidance at: Monitoring stack emissions: techniques and standards for periodic monitoring - GOV.UK

Note 10: PCC plants emission limits are normalised to reference conditions of temperature 273K, at a pressure of 101.3kPa and with an oxygen content of 15% dry.

Note 11: Isokinetic sampling shall be undertaken unless it is demonstrated that no mist or droplets are present at the monitoring location.

Note 12: For emission points A6 and A7, measurements of these parameters applies to the continuous emissions monitoring at the top of the absorber stacks and at the point of measurement to demonstrate compliance with IED chapter III and LCP BAT conclusions.

Note 13: In absence of yearly average emission limits for multi-fuel operation, the yearly average emission limit specified for natural gas firing applies above 1,500 hours of operation with this sole fuel during the year.

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
GT1/HRSG1									
A1	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT1/HRSG1	40 mg/m^3 When DLN is effective Note 4	No ROG firing	No gas oil firing	Not applicable	Yearly average	Continuous	BS EN 14181
A1	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT1/HRSG1	50 mg/m^3 When DLN is effective Note 4	No ROG firing	No gas oil firing	Not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A1	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT1/HRSG1	50 mg/m^3 When DLN is effective Note 4 50 mg/m^3 MSUL/MSDL to base load Note 5	No ROG firing	No gas oil firing	Not applicable	Daily average	Continuous	BS EN 14181
A1	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT1/HRSG1	100 mg/m^3 When DLN is effective Note 4	No ROG firing	No gas oil firing	Not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A1	Carbon Monoxide	LCP188 GT1/HRSG1	50 mg/m^3 When DLN is effective Note 4	No ROG firing	No gas oil firing	Not applicable	Yearly average	Continuous	BS EN 14181
A1	Carbon Monoxide	LCP188 GT1/HRSG1	100 mg/m^3 When DLN is effective Note 4	No ROG firing	No gas oil firing	Not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A1	Carbon Monoxide	LCP188 GT1/HRSG1	110 mg/m^3 When DLN is effective Note 4 110 mg/m^3 MSUL/MSDL to base load Note 5	No ROG firing	No gas oil firing	Not applicable	Daily average	Continuous	BS EN 14181
A1	Carbon Monoxide	LCP188 GT1/HRSG1	200 mg/m^3 When DLN is effective Note 4	No ROG firing	No gas oil firing	Not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A1	Sulphur Dioxide	LCP188 GT1/HRSG1	No limit applies	No ROG firing	No gas oil firing	Not applicable	-	At least every 6 months	Concentration by calculation, as agreed in writing with the Environment Agency
A1	Dust	LCP188 GT1/HRSG1	No limit applies	No ROG firing	No gas oil firing	Not applicable	-	-	-

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
GT2/HRSG2									
A2	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT2/HRSG2	40 mg/m^3 When DLN is effective Note 4	No ROG firing	No gas oil firing	Not applicable	Yearly average	Continuous	BS EN 14181
A2	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT2/HRSG2	50 mg/m^3 When DLN is effective Note 4	No ROG firing	No gas oil firing	Not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A2	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT2/HRSG2	50 mg/m^3 When DLN is effective Note 4 50 mg/m^3 MSUL/MSDL to base load Note 5	No ROG firing	No gas oil firing	Not applicable	Daily average	Continuous	BS EN 14181
A2	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 GT2/HRSG2	100 mg/m^3 When DLN is effective Note 4	No ROG firing	No gas oil firing	Not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A2	Carbon Monoxide	LCP188 GT2/HRSG2	50 mg/m^3 When DLN is effective Note 4	No ROG firing	No gas oil firing	Not applicable	Yearly average	Continuous	BS EN 14181
A2	Carbon Monoxide	LCP188 GT2/HRSG2	100 mg/m^3 When DLN is effective Note 4	No ROG firing	No gas oil firing	Not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A2	Carbon Monoxide	LCP188 GT2/HRSG2	110 mg/m^3 When DLN is effective Note 4 110 mg/ m^3 MSUL/MSDL to base load Note 5	No ROG firing	No gas oil firing	Not applicable	Daily average	Continuous	BS EN 14181
A2	Carbon Monoxide	LCP188 GT2/HRSG2	200 mg/m^3 When DLN is effective Note 4	No ROG firing	No gas oil firing	Not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A2	Sulphur Dioxide	LCP188 GT2/HRSG2	No limit applies	No ROG firing	No gas oil firing	Not applicable	-	At least every 6 months	Concentration by calculation, as agreed in writing with the Environment Agency

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location [Note 1]	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A2	Dust	LCP188 GT2/HRSG2	No limit applies	No ROG firing	No gas oil firing	Not applicable	-	-	-

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
GT3/HRSG3									
A5	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP415 GT3/HRSG3	40 mg/m^3 When DLN is effective Notes 3 and 4	No limit applies	No gas oil firing	40 mg/m^3 When DLN is effective Notes 3 and 4	Yearly average	Continuous	BS EN 14181
A5	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP415 GT3/HRSG3	50 mg/m^3 When DLN is effective Note 4	120 mg/m^3 When DLN is effective Note 4	No gas oil firing	50 mg/m^3 When DLN is effective Note 4	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A5	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP415 GT3/HRSG3	50 mg/m^3 When DLN is effective Note 4 50 mg/m^3 MSUL/MSDL to base load Note 5	132 mg/m^3 When DLN is effective Note 4 132 mg/m^3 MSUL/MSDL to base load Note 5	No gas oil firing	50 mg/m^3 When DLN is effective Note 4 50 mg/m^3 MSUL/MSDL to base load Note 5	Daily average	Continuous	BS EN 14181
A5	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP415 GT3/HRSG3	100 mg/m^3 When DLN is effective Note 4	240 mg/m^3 When DLN is effective Note 4	No gas oil firing	100 mg/m^3 When DLN is effective Note 4	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A5	Carbon Monoxide	LCP415 GT3/HRSG3	50 mg/m^3 When DLN is effective Note 3	No limit applies	No gas oil firing	Not applicable	Yearly average	Continuous	BS EN 14181
A5	Carbon Monoxide	LCP415 GT3/HRSG3	100 mg/m^3 When DLN is effective Note 4	100 mg/m^3 When DLN is effective Note 4	No gas oil firing	100 mg/m^3 When DLN is effective Note 4	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A5	Carbon Monoxide	LCP415 GT3/HRSG3	110 mg/m^3 When DLN is effective Note 4 110 mg/m^3 MSUL/MSDL to base load Note 5	No limit applies	No gas oil firing	Not applicable	Daily average	Continuous	BS EN 14181
A5	Carbon Monoxide	LCP415 GT3/HRSG3	200 mg/m^3 When DLN is effective Note 4	No limit applies	No gas oil firing	Not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A5	Sulphur Dioxide	LCP415 GT3/HRSG3	No limit applies	No limit applies	No gas oil firing	No limit applies	-	-	-
A5	Sulphur Dioxide	LCP415 GT3/HRSG3	No limit applies	No limit applies	No gas oil firing	No limit applies	-	-	-
A5	Sulphur Dioxide	LCP415 GT3/HRSG3	No limit applies	No limit applies	No gas oil firing	No limit applies	-	-	-
A5	Dust	LCP415 GT3/HRSG3	No limit applies	No limit applies	No gas oil firing	Not applicable	-	-	-

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
AB1									
A3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB1	100 mg/m^3 From MSUL / MSDL point and above Notes 3 and 5	No limit applies	No limit applies	Not applicable	Yearly average	Continuous	BS EN 14181
A3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB1	100 mg/m^3 From MSUL / MSDL point and above Note 5	150 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	100 to 150 mg/m^3 From MSUL / MSDL point and above Notes 2 and 5	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB1	110 mg/m^3 From MSUL / MSDL point and above Note 5	220 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	110 to 220 mg/m^3 From MSUL / MSDL point and above Notes 2 and 5	Daily average	Continuous	BS EN 14181
A3	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB1	200 mg/m^3 From MSUL / MSDL point and above Note 5	400 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	200 to 400 mg/m^3 From MSUL / MSDL point and above Notes 2 and 5	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A3	Carbon Monoxide	LCP188 AB1	40 mg/m^3 From MSUL / MSDL point and above Notes 3 and 5	No limit applies	No limit applies	Not applicable	Yearly average	Continuous	BS EN 14181
A3	Carbon Monoxide	LCP188 AB1	100 mg/m^3 From MSUL / MSDL point and above Note 5	100 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	For Natural-gas + ROG: 100 mg/m^3 From MSUL / MSDL point and above Note 5 For ROG + oil: not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A3	Carbon Monoxide	LCP188 AB1	110 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	No limit applies	Not applicable	Daily average	Continuous	BS EN 14181
A3	Carbon Monoxide	LCP188 AB1	200 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	No limit applies	Not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A3	Sulphur Dioxide	LCP188 AB1	35 mg/m^3 From MSUL / MSDL point and above Note 5	35 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	35 mg/m^3 From MSUL / MSDL point and above Note 5	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A3	Sulphur Dioxide	LCP188 AB1	38.5 mg/m^3 From MSUL / MSDL point and above Note 5	38.5 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	38.5 mg/m^3 From MSUL / MSDL point and above Note 5	Daily average	Continuous	BS EN 14181
A3	Sulphur Dioxide	LCP188 AB1	70 mg/m^3 From MSUL / MSDL point and above Note 5	70 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	70 mg/m^3 From MSUL / MSDL point and above Note 5	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A3	Dust	LCP188 AB1	5 mg/m^3 From MSUL / MSDL point and above Note 5	5 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies [Operation for no more than 500 hours per calendar year with a maximum period of 240 hours]	For Natural-gas + ROG: 5 mg/m^3 From MSUL / MSDL point and above Note 5 For ROG + oil: not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181 and BS EN 13284-2
A3	Dust	LCP188 AB1	5.5 mg/m^3 From MSUL / MSDL point and above Note 5	5.5 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies [Operation for no more than 500 hours per calendar year with a maximum period of 240 hours]	For Natural-gas + ROG: 5.5 mg/m^3 From MSUL / MSDL point and above Note 5 For ROG + oil: not applicable	Daily average	Continuous	BS EN 14181 and BS EN 13284-2

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A3	Dust	LCP188 AB1	10 mg/m^3 From MSUL / MSDL point and above Note 5	10 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies [Operation for no more than 500 hours per calendar year with a maximum period of 240 hours]	For Natural-gas + ROG: 10 mg/m^3 From MSUL / MSDL point and above Note 5 For ROG + oil: not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181 and BS EN 13284-2
AB2									
A4	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB2	100 mg/m^3 From MSUL / MSDL point and above Notes 3 and 5	No limit applies	No limit applies	Not applicable	Yearly average	Continuous	BS EN 14181
A4	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB2	100 mg/m^3 From MSUL / MSDL point and above Note 5	150 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	100 mg/m^3 to 150 mg/m^3 From MSUL / MSDL point and above Notes 2 and 5	Monthly mean of validated hourly averages	Continuous	BS EN 14181

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A4	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB2	110 mg/m^3 From MSUL / MSDL point and above Note 5	220 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	110 mg/m^3 to 220 mg/m^3 From MSUL / MSDL point and above Notes 2 and 5	Daily average	Continuous	BS EN 14181
A4	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP188 AB2	200 mg/m^3 From MSUL / MSDL point and above Note 5	400 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	200 mg/m^3 to 400 mg/m^3 From MSUL / MSDL point and above Notes 2 and 5	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A4	Carbon Monoxide	LCP188 AB2	40 mg/m^3 From MSUL / MSDL point and above Notes 3 and 5	No limit applies	No limit applies	Not applicable	Yearly average	Continuous	BS EN 14181

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A4	Carbon Monoxide	LCP188 AB2	100 mg/m^3 From MSUL / MSDL point and above Note 5	100 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	For Natural-gas + ROG: 100 mg/m^3 From MSUL / MSDL point and above Note 5 For ROG + oil: not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A4	Carbon Monoxide	LCP188 AB2	110 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	No limit applies	Not applicable	Daily average	Continuous	BS EN 14181
A4	Carbon Monoxide	LCP188 AB2	200 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	No limit applies	Not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A4	Sulphur Dioxide	LCP188 AB2	35 mg/m^3 From MSUL / MSDL point and above Note 5	35 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	35 mg/m^3 From MSUL / MSDL point and above Note 5	Monthly mean of validated hourly averages	Continuous	BS EN 14181
A4	Sulphur Dioxide	LCP188 AB2	38.5 mg/m^3 From MSUL / MSDL point and above Note 5	38.5 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	38.5 mg/m^3 From MSUL / MSDL point and above Note 5	Daily average	Continuous	BS EN 14181
A4	Sulphur Dioxide	LCP188 AB2	70 mg/m^3 From MSUL / MSDL point and above Note 5	70 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies	70 mg/m^3 From MSUL / MSDL point and above Note 5	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A4	Dust	LCP188 AB2	5 mg/m^3 From MSUL / MSDL point and above Note 5	5 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies [Operation for no more than 500 hours per calendar year with a maximum period of 240 hours]	For Natural-gas + ROG: 5 mg/m^3 From MSUL / MSDL point and above Note 5 For ROG + oil: not applicable	Monthly mean of validated hourly averages	Continuous	BS EN 14181 and BS EN 13284-2
A4	Dust	LCP188 AB2	5.5 mg/m^3 From MSUL / MSDL point and above Note 5	5.5 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies [Operation for no more than 500 hours per calendar year with a maximum period of 240 hours]	For Natural-gas + ROG: 5.5 mg/m^3 From MSUL / MSDL point and above Note 5 For ROG + oil: not applicable	Daily average	Continuous	BS EN 14181 and BS EN 13284-2

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A4	Dust	LCP188 AB2	10 mg/m^3 From MSUL / MSDL point and above Note 5	10 mg/m^3 From MSUL / MSDL point and above Note 5	No limit applies [Operation for no more than 500 hours per calendar year with a maximum period of 240 hours]	For Natural-gas + ROG: 10 mg/m^3 From MSUL / MSDL point and above Note 5 For ROG + oil: not applicable	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181 and BS EN 13284-2
A1 to A5	Stack gas flow rate	LCP188 LCP415	-	-	-	-	-	Continuous As appropriate to reference	EN ISO 16911-2
A1 to A5	Oxygen	LCP188 LCP415	-	-	-	-	-	Continuous as appropriate to reference	BS EN 14181
A1 to A5	Water vapour	LCP188 LCP415	-	-	-	-	-	Continuous as appropriate to reference	BS EN 14181
A1 to A5	Stack gas temperature	LCP188 LCP415	-	-	-	-	-	Continuous as appropriate to reference	Traceable to national standards

Table S3.1a Point source emissions to air - emission limits and monitoring requirements – CO_2 unabated mode									
Emission point ref. & location Note 1	**Parameter**	**Source**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Natural gas firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Refinery Off Gas (ROG)**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Distillate fuel oil firing**	**Limit (including unit) - these limits do not apply during start up or shut down.** **Multi-fuel firing**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A1 to A5	Stack gas pressure	LCP188 LCP415	-	-	-	-	-	Continuous as appropriate to reference	Traceable to national standards
A1 to A5	As required by the Method Implementation Document for BS EN 15259	LCP188 LCP415	-	-	-	-	-	Pre- operation and when there is a significant operational change	BS EN 15259

Note 1: Emission point on site plan in Schedule 7 of this permit.

Note 2: Where there is the simultaneous use of two types of fuel (i.e. ROG and natural gas or ROG and distillate fuel oil) in a combustion plant with different emission limit values for the different fuels, the emissions shall be reported in accordance with the approved MFFP, submitted in response to IC18 and incorporated into table S1.2 (operating techniques).

Note 3: In absence of yearly average emission limits for multi-fuel operation, the yearly average emission limit specified for natural gas firing applies above 1,500 hours of operation with this sole fuel during the year.

Note 4: This limit applies between the effective dry low NOx threshold and baseload, as defined in table S1.6 of this permit.

Note 5: This limit applies when the load varies between MSUL/MSDL and baseload, MSUL and MSDL are defined in table S1.5 of this permit.

Table S3.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements									
Emission point ref. & location Note 1	**Parameter**	**Source**	**M1** Note 3 **Limit**	**M3** Note 3 **Limit**	**M2** Note 3 **Limit**	**M4** Note 4	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
W1	Flow	Site process effluent and surface water drainage	10,000 m^3 per day		-	-	24-hour total	-	MCERTS self-monitoring of effluent flow scheme
W1	pH	Site process effluent and surface water drainage	6.5 – 8.5 Note2	6.5 – 8.5 Note 2	6 - 9	-	Instantaneous	Continuous	BS ISO 10523
W1	Temperature	Site process effluent and surface water drainage	30 °C Note 2	30 °C Note 2	30 °C	-	Instantaneous	Continuous	Traceable to national standards
W1	Oil	Site process effluent and surface water drainage	5 mg/l	5 mg/l	-	-	Instantaneous	Weekly	As agreed in writing with the Environment Agency
W1	Ammoniacal Nitrogen	Site process effluent and surface water drainage	10 mg/l	10 mg/l	-	-	Instantaneous	Weekly	BS EN ISO 11732
W1	Total suspended solids	Site process effluent and surface water drainage	50 mg/l	50 mg/l	50 mg/l	-	Instantaneous	Weekly	BS EN 872
W1	Chemical oxygen demand (COD)	Site process effluent and surface water drainage	200 mg/l	200 mg/l	-	-	Instantaneous	Weekly	BS ISO 15705
W1	Dissolved oxygen	Site process effluent and surface water drainage	>50%	-	-	-	Instantaneous	Weekly	As agreed in writing with the Environment Agency
W2	Oil and grease Note 5	Un-contaminated site surface water drainage from PCC plants 1 and 2 (M4 holding pond) Note 4	-	-	-	None visible	-	Daily	Visual inspection

Table S3.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements									
Emission point ref. & location Note 1	**Parameter**	**Source**	**M1** Note 3 **Limit**	**M3** Note 3 **Limit**	**M2** Note 3 **Limit**	**M4** Note 4	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**

Note 1: W1 - Discharge to South Killingholme drain at NGR 517000, 417190.
W2 - Discharge to South Killingholme drain at NGR 517130 417000.

Note 2: A target for typical operation, but not subject to notification requirements.

Note 3: M1, M2 and M3 are holding ponds, part of the drainage system. Water from M1 and M3 is sent to M2, from where it is discharged to emission point W1.

Note 4: During abnormal operation, when the raw water tank is full, direct contact cooler (DCC) blow-down water may be diverted to the M4 holding pond and discharged through W2 to the South Killingholme drain. Each discharge shall be limited to no more than two hours. Additional process monitoring requirements are included in table S3.4 of this permit.

Note 5: Formal reporting shall not be required; however monitoring reports shall be made available for inspection by the Environment Agency.

Table S3.3 Annual limits		
Substance	**Medium**	**Limit (including unit)**
Oxides of Nitrogen (NO and NO_2 expressed as NO_2) from emission point A3, A6 and/or A7 Note 2	Air	tonnes/year Note 1
Oxides of Nitrogen (NO and NO_2 expressed as NO_2) from emission point A4, A6 and/or A7 Note 2	Air	tonnes/year Note 1
Oxides of Nitrogen (NO and NO_2 expressed as NO_2) from emission point A5	Air	tonnes/year Note 1
Note 1: Annual mass emission limits for multi-fuel firing equipment were not set upon completion of improvement condition IC18 in this permit, as a dynamic approach was undertaken as opposed to fixed multi-fuel weighted emission limit values. Note 2: Emissions from A3 (AB1) and A4 (AB2) (LCP188) shall be via emission points A6 and/or A7 when the PCC plants are operational, in accordance with table S3.1 of this permit.		

Table S3.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
LCP process monitoring requirements				
LCP 188 and LCP 415	Net Electric efficiency and/or Net Total Fuel Utilisation	After each modification which that could significantly affect these parameters	EN Standards or equivalent	Note 1
PCC plants process monitoring requirements				
Absorber amine solvent quality, activity AR2 in table S1.1 of this permit	Opacity and colour	Daily (on start-up), then weekly or otherwise agreed in writing with the Environment Agency	As agreed in writing with the Environment Agency in accordance with PO07 in table S1.4 of this permit.	-
Absorber amine solvent quality, activity AR2 in table S1.1 of this permit	Concentration of active amines	Daily (on start-up), then weekly or otherwise agreed in writing with the Environment Agency	As agreed in writing with the Environment Agency in accordance with PO07 in table S1.4 of this permit.	-
Absorber amine solvent quality, activity AR2 in table S1.1 of this permit	Carbon dioxide loading (rich amine)	Daily (on start-up), then weekly or otherwise agreed in writing with the Environment Agency	As agreed in writing with the Environment Agency in accordance with PO07 in table S1.4 of this permit.	-
Absorber amine solvent quality, activity AR2 in table S1.1 of this permit	Foaming tendency	Daily (on start-up), then weekly or otherwise agreed in writing with the Environment Agency	As agreed in writing with the Environment Agency in accordance with PO07 in table S1.4 of this permit.	-
Absorber amine solvent quality, activity AR2 in table S1.1 of this permit	Amine and organic non-ionic degradation products – including but not limited to amines, nitrosamines, nitramines (in absorber amine prior to reclaiming and after reclaiming)	Weekly (on start-up), then monthly in steady-state operation or otherwise agreed in writing with the Environment Agency	Liquid chromatography–mass spectrometry (LC-MS) or as otherwise agreed with the Environment Agency in accordance with PO07 in table S1.4 of this permit.	-

Table S3.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Absorber amine solvent quality, activity AR2 in table S1.1 of this permit	Organic acids	Weekly (on start-up), then monthly in steady-state operation or otherwise agreed in writing with the Environment Agency	Ionic Chromatography or as otherwise agreed with the Environment Agency in accordance with PO07 in table S1.4 of this permit.	-
Absorber amine solvent quality, activity AR2 in table S1.1 of this permit	Heat stable salts	Every day during the first month of operation then once per week, or otherwise agreed in writing with the Environment Agency	Ionic Chromatography or as otherwise agreed with the Environment Agency in accordance with PO07 in table S1.4 of this permit.	-
Absorber amine solvent quality, activity AR2 in table S1.1 of this permit	Metals including soluble iron concentration	Weekly (on start-up), then monthly in steady-state operation or otherwise agreed in writing with the Environment Agency	Inductively Coupled Plasma (ICP) or as otherwise agreed with the Environment Agency in accordance with PO07 in table S1.4 of this permit.	-

Table S3.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Absorber amine solvent quality, activity AR2 in table S1.1 of this permit	Soluble iron concentration – rich amine	Every day during the first month of operation then once per week, or otherwise agreed in writing with the Environment Agency.	As agreed in writing with the Environment Agency in accordance with PO07 in table S1.4 of this permit.	-
Absorber amine solvent quality, activity AR2 in table S1.1 of this permit	Soluble iron concentration – lean amine following stripper	Once per week, or otherwise agreed in writing with the Environment Agency	As agreed in writing with the Environment Agency in accordance with PO07 in table S1.4 of this permit.	-
Carbon capture plants performance	Carbon capture efficiency (%) during normal operation	Continuous	Calculation by method traceable to national standards, to be agreed in writing with the Environment Agency as part of PO02 in table S1.4 of this permit.	Note 2
Venting of CO_2 from carbon capture plants at emission point A8	• duration of event • total mass of CO_2 emissions (tonnes / event)	Event specific, total annual	Calculation by method traceable to national standards compliant with UK Emissions Trading Scheme (ETS), to be agreed in writing with the Environment Agency as part of PO02 in table S1.4 of this permit.	The operator shall identify the root cause of the venting event and consider ways to prevent or reduce the frequency and duration of reoccurrence.
CO_2 metering package	Exported CO_2 mass flow (tonnes/hour)	Continuous	Mass flow metering traceable to national standards compliant with UK ETS, to be agreed in writing with the Environment Agency as part of PO02 in table S1.4 of this permit	-

Table S3.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
CO_2 custody transfer point	Composition of exported CO_2, including but not necessarily limited to: • water content • hydrogen content	To be agreed in writing with the Environment Agency	By method traceable to national standards compliant with UK ETS, to be agreed in writing with the Environment Agency as part of PO02 in table S1.4 of this permit	CO_2 transport and storage system specification
W2 process monitoring requirements				
W2 (DCC blow-down water)	• number of events • duration of events	Event specific, total annual	-	Refer to note 4 in table S3.2 of this permit.
W2 (drainage from amine drain)	Amines (expressed as total nitrogen)	Event specific, prior to draining effluent from the amine drain to the M4 holding tank prior to release at W2	BS EN 20236 or BS EN ISO 11905-1 or BS ISO 29441 or as otherwise agreed in writing with the Environment Agency.	Concentration of amines (expressed as total nitrogen) must be 'zero' (below detection limits of the monitoring standard).
Note 1: Note 1 to LCP BAT conclusion #2: in the case of CHP units, if for technical reasons the performance test cannot be carried out with the unit operated at full load for the heat supply, the test can be supplemented or substituted by a calculation using full load parameters. Note 2: Instantaneous and annual average carbon capture efficiency to be monitored. Annual average carbon capture efficiency to be averaged over one year of operations (from 1st of January) during normal operation. Excluding periods of OTNOC. OTNOC includes venting of CO_2 during periods of time when the CO_2 transport and storage system is not available due to causes external to the operations of the installation; and periods of start-up and shut-down.				

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 or monitoring point/reference**	**Reporting period**	**Period begins**
Emissions to air Parameters as required by condition 3.5.1.	A1, A2, A3, A4, A5, A6, A7	Every 3 months for continuous monitoring and monthly monitoring	1 January, 1 April, 1 July, 1 October
		Every 6 months for monthly and bi-annual monitoring	1 January, 1 July
		Every year where there is an annual average	1 January
Emissions to Water Parameters as required by condition 3.5.1	W1/M1, W1/M2, W1/M3	Every 3 months	1 January, 1 April, 1 July, 1 October
DCC blow-down • number of events • duration of events	W2 Note 1	Annually	1 January
Drainage from amine drum to the M4 holding tank prior to release at W2 • number of events • amines (expressed as total nitrogen)	W2	Annually	1 January
CO_2 venting • number of events • duration of events • root cause analysis for each event and preventative / frequency reduction measures • total mass of CO_2 emissions (tonnes / event)	Venting from carbon capture plant at emission point A8.	Annually	1 January
Note 1: DCC blow-down water may be diverted to the M4 holding pond and discharged through W2, in accordance with table S3.2 of this permit.			

Table S4.2 Resource Efficiency Metrics	
Parameter	**Units**
Electricity Exported	GWhr
Heat Exported	GWhr
Mechanical Power Provided	GWhr
Fossil Fuel Energy Consumption	GWhr
Non-Fossil Fuel Energy Consumption	GWhr
Annual Operating Hours	hr
Water Abstracted from Fresh Water Source	m^3
Water Abstracted from Borehole Source	m^3
Water Abstracted from Estuarine Water Source	m^3
Water Abstracted from Sea Water Source	m^3
Water Abstracted from Mains Water Source	m^3
Gross Total Water Used	m^3
Net Water Used	m^3
Hazardous Waste Transferred for Disposal at another installation	t
Hazardous Waste Transferred for Recovery at another installation	t
Non-Hazardous Waste Transferred for Disposal at another installation	t
Non-Hazardous Waste Transferred for Recovery at another installation	t
Waste recovered to Quality Protocol Specification and transferred off-site	t
Waste transferred directly off-site for use under an exemption / position statement	t
Efficiency of CO_2 capture (PCC plants 1 and 2) during normal operation	%
Efficiency of CO_2 capture (PCC plants 1 and 2) during start-up and shut-down	%
Total (thermal and electrical) energy use per tonne of CO_2 captured (PCC plants 1 and 2)	Thermal energy: kWth/Tonne CO_2 captured Electrical energy: kWe/Tonne CO_2 captured
Amine solvent usage	tonnes
Total CO_2 captured	tonnes
Total CO_2 vented to atmosphere	tonnes
Water consumption per unit CO_2 captured each year	m^3/t
Periods where PCC plant 1 and PCC plant 2 are not available	No of occasions and cumulative hours for current calendar year for each PCC plant

Table S4.3 Large Combustion Plant Performance parameters for reporting to DEFRA		
Parameter	**Frequency of assessment**	**Units**
Thermal Input Capacity for each LCP	Annually	MW
Annual Fuel Usage for each LCP	Annually	TJ
Total Emissions to Air of NOx for each LCP	Annually	tonnes
Total Emissions to Air of SO_2 for each LCP	Annually	tonnes
Total Emissions to Air of Dust for each LCP	Annually	tonnes
Operating Hours for each LCP	Annually	hour

Table S4.4 Reporting forms		
Media/ parameter	**Reporting format**	**Agency recipient**
Air & Energy	Form IED AR1 – SO_2, NO_x and dust mass emission and energy. Form as agreed in writing by the Environment Agency.	National and Area Office
LCP	Form IED HR1 – operating hours. Form as agreed in writing by the Environment Agency.	National and Area Office
Air	Form IED CON 1 – continuous monitoring. Form as agreed in writing by the Environment Agency.	Area Office
Air	Form IED CON 2 – continuous monitoring. Form as agreed in writing by the Environment Agency	Area Office
CEMs	Form IED CEM – invalidation Log. Form as agreed in writing by the Environment Agency.	Area Office
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency. Form as agreed in writing by the Environment Agency.	Area Office
Resource Efficiency	Form REM1 – resource efficiency annual report Form as agreed in writing by the Environment Agency.	National and Area Office
Water	Form water 1 or other form as agreed in writing by the Environment Agency	Area Office
Point source emissions to air	Emissions to Air Reporting Form, Version 1, 08/03/2021, or other form as agreed in writing by the Environment Agency,	Area office
PCC plants process monitoring (including CO_2 venting) requirements as required by table S3.4 of this permit	Form Process 1 (PCC plants) – process monitoring or other form as agreed in writing by the Environment Agency	Area Office

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	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit 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 breach of permit conditions not related to limits	
To be notified within 24 hours of detection	
Condition breached	
Date, time and duration of breach	
Details of the permit breach i.e. what happened including impacts observed.	
Measures taken, or intended to be taken, to restore permit compliance.	

(d) 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 facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 – Interpretation

“accident” means an accident that may result in pollution.

“application” 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.

“average over the sampling period” means the average value of three consecutive measurements of at least 30 minutes each or as agreed in writing with the Environment Agency.

“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.

“Black Start” means the procedure to recover from a total or partial shutdown of the UK Transmission System which has caused an extensive loss of supplies. This entails isolated power stations being started individually and gradually being reconnected to other power stations and substations in order to form an interconnected system again.

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

“CAS number” means the unique and unambiguous identifier for a specific substance

“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.

“commissioning” means the process of inspecting, preparing, testing and verifying that any new equipment and systems which are part of, or associated with, any activities referenced in schedule 1, table S1.1 of this permit, can be operated within the intended design envelope.

“daily average” means the average over a period of 24 hours of validated hourly averages obtained by continuous measurements.

“disposal” means any of the operations provided for in Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

“DLN” means dry, low NO_x burners.

“dynamic emission limit value” (DELV) means an emission limit that varies in accordance with Article 40 of the Industrial Emissions Directive.

“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 limit.

“emissions to land” includes emissions to groundwater.

“Energy efficiency” means the annual net plant energy efficiency, the value for which is calculated from the operational data collected over the year.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations SI 2016 No.1154 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“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, as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016.

“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.

“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.

“MFF Protocol” means IED Chapter III Protocol for Multi-fuel Firing Refinery Combustion Plants granted a Permit prior to 7 January 2013, version 5.

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

“ncv” means net calorific value.

“Net electrical efficiency” means the ratio between the net electrical output (electricity produced minus the imported energy) and the fuel/feedstock energy input (as the fuel/feedstock lower heating value) at the combustion unit boundary over a given period of time.

“Net total fuel utilisation” means the ratio between the net produced energy minus the imported electrical and/or thermal energy and the fuel energy input at the combustion unit boundary over a given period of time.

“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.

“SI” means site inspector.

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

“year” means calendar year ending 31 December.

“yearly average” means the average over a period of one year of validated hourly averages obtained by continuous measurements.

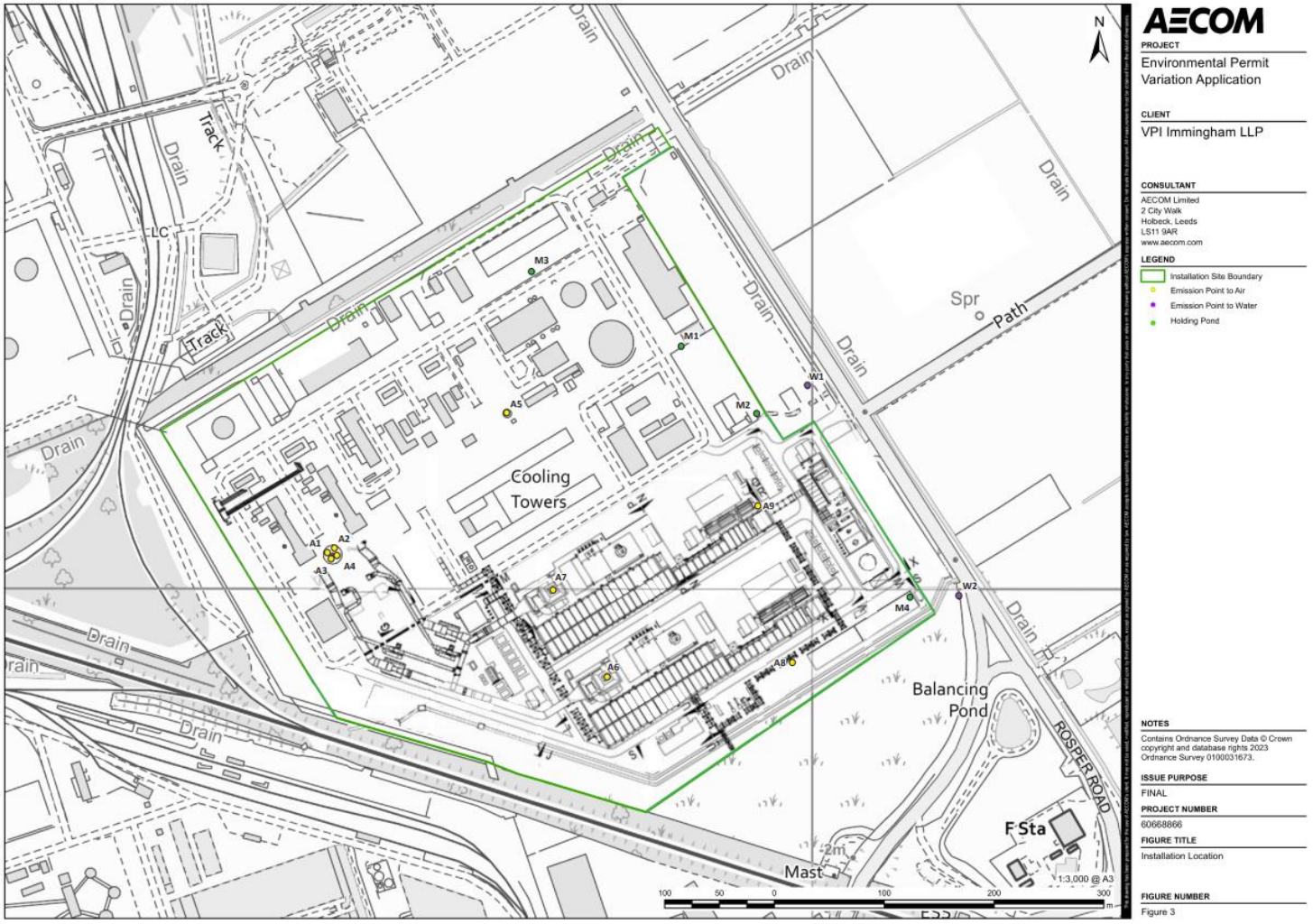
Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

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

- in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or
- in relation to emissions from gas turbine or compression ignition engine combustion processes, 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 emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content; and/or
- in relation to emissions from the PCC plants, the concentration in dry air at a temperature of 273K, at a pressure of 101.3kPA and with an oxygen content of 15% dry.

Schedule 7 – Site plan



AECOM

PROJECT
Environmental Permit Variation Application

CLIENT
VPI Immingham LLP

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LEGEND
Installation Site Boundary
Emission Point to Air
Emission Point to Water
Holding Pond

NOTES
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ISSUE PURPOSE
FINAL

PROJECT NUMBER
60668866

FIGURE TITLE
Installation Location

FIGURE NUMBER
Figure 3

END OF PERMIT