Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Hydrocarbon Resources Limited

Barrow Gas Terminals – North, South & Rivers
Rampside Road
Barrow in Furness
LA13 0QU

Variation application number

EPR/BX1675IT/V005

Permit number

EPR/BX1675IT

Barrow Gas Terminals – North, South & Rivers
Permit number EPR/BX1675IT

Introductory note

This introductory note does not form a part of the notice.

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

Schedule 1 of the notice specifies that all the conditions of the permit have been varied and schedule 2 comprises a consolidated permit which reflects the variations being made and contains all conditions relevant to this permit.

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

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

As well as implementing Chapter III of IED, the consolidated variation notice takes into account and brings together in a single document all previous variations that relate to the original permit issued. It also modernises all conditions to reflect the conditions contained in our current generic permit template.

The Operator has chosen to operate the LCPs under the Limited Lifetime Derogation (LCP 177) compliance route and the ELV (LCP 178 and LCP 179) compliance route. This is a change from the previous operating regime which was ELV compliance only.

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

- LCP 196 is changed to LCP 177 (emission point A18 (NMT FGC)-vents via a waste heat recovery unit to its own dedicated windshield-stack height 17m. There is also a bypass stack.);
- LCP 197 is changed to LCP178 (emission point A28 (LP SMOC)-vents via its own dedicated windshield-stack height 20m); and
- LCP 198 is changed to LCP179 (emission point A29 (HP SMOC)-vents via its own dedicated windshield-stack height 20m).

The net thermal input of the LCP(s) is as follows: LCP 177 – one 78MWth Gas Turbine, LCP 178- one 76MWth Gas Turbine and LCP 179- one 76MWth Gas Turbine. All units are natural gas-fired gas turbines for mechanical drive

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

The Barrow Gas Terminals receive gas and condensate from the Rivers, North and South Morecambe Bay Gas Fields. The Terminals process the gas prior to distribution to the National Transmission System. The Barrow Gas Terminals operate 24 hours a day, 365 days a year.

The South Morecambe Terminal imports gas from the South Morecambe Bay Gas Field and has been in operation since 1985. The gas is compressed by the offshore production platform and then passed to the South Morecambe Terminal via a sealine. The first stage of processing gas on site is the removal of condensate, methanol and water in the slug catcher. Further condensate, methanol and water is removed in the Dew Point Control Trains by cooling the gas. A side stream of the gas is then passed through a tower packed with a catalyst to remove any excess hydrogen sulphide. As gas production from the South Morecambe Bay Gas Field is declining, low pressure and high pressure compressors are used to boost the export pressure of the gas. Finally, the gas is filtered before being metered and passed into the National Transmission System.

The condensate that is collected from the process is stabilised on site by removing the light hydrocarbons and sulphur compounds. The condensate is then stored on site prior to being exported by pipeline to the Condensate Storage Facility at Barrow docks.

The North Morecambe Terminal imports gas from the separate North Morecambe, Millom and Dalton Gas Fields. It will also receive gas, methanol, and condensate from the Rivers Terminal.

At the North Terminal gas is processed by first removing the condensate, methanol, water and corrosion inhibitor in the slug catcher. After compressing the gas, the carbon dioxide within the gas is removed by being absorbed in a solution of activated diethanolamine. The gas then flows to the Dew Point Control plant where any remaining liquid hydrocarbons and water are removed. A side stream of the gas flows to the Nitrogen Removal Plant where the gas is cooled to very low temperatures and the more volatile nitrogen is removed to ensure that the sales specification is achieved. Finally, the gas is filtered before the gas is metered and passed into the National Transmission System.

The condensate that is collected from the process is stripped of any remaining light hydrocarbons. It is then passed to the condensate storage facility on site before finally being exported to the condensate storage facility at Barrow docks.

The methanol and corrosion inhibitor from the sealine collected in the slug catcher is filtered to remove solids and then flashed to atmospheric pressure to remove any hydrocarbon gases. The methanol is recovered by distillation.

The Rivers Terminal receives gas from the sour gas fields. The gas produced from these fields differs from the gas produced from the other Morecambe Bay Gas Fields in that it contains a significant amount of hydrogen sulphide and mercaptan containing gas. At the Rivers Terminal, condensate, methanol and water is removed from the gas in the slug catcher. The gas is compressed and the hydrogen sulphide and mercaptan are removed in a solvent washing process before the gas is passed to North Terminal for further processing as described above. In the Acid Plant the hydrogen sulphide and mercaptan containing gas is burnt to produce sulphur dioxide gas. This is converted into liquid sulphuric acid which is exported from the terminal by road tanker.

The main emissions to air from the installation are the combustion products of the natural gas, namely nitrogen oxides, carbon monoxide, carbon dioxide, sulphur dioxide and any remaining unburnt hydrocarbons. There are also fugitive releases of volatile organic compounds and HCFCs. The emissions should not compromise any air quality objectives where members of the public are regularly present and are likely to be exposed over the averaging period of the objective.

Effluent from the Terminals is discharged to Barrow waste water treatment works.

Clean and uncontaminated surface water from the site is discharged to Roosecote Sands.

Hydrocarbon Resources Limited employs an integrated management system certified to ISO 14001. The management system combines both safety and environmental management techniques and is a documented system that is independently audited.

The site is also regulated under the Control of Major Accidents and Hazards Regulations. A Safety Report has been prepared and a Major Accident Prevention Policy has been implemented on site.

As the site is adjacent to the Morecambe Bay RAMSAR, SAC, SPA and SSSIs and is 3.7 km from Duddon Estuary SAC and RAMSAR, SAC, SPA and SSSIs. An appropriate assessment of the impact of the emissions from the site has been made under the Habitats Regulations.

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 BL6128 received (under PPC 2000)	11/08/03	
Request for further information from Hydrocarbon Resources Ltd	20/11/03	Received 15/12/03
Permit BL6128 determined	18/12/03	
Application BX1675IT received (under PPC 2000)	Duly made 18/08/06	
Further information received from Hydrocarbon Resources Ltd	11/06/07	
Permit BX1675IT determined	26/06/07	
Consolidation information received for variation BX1675IT/V002 (under EPR 2007)	28/07/08	
Permit BL6128 superceded	05/06/09	
Permit BX1675IT variation issued	05/06/09	
Application EPR/BX1675IT/V003 (variation and consolidation) (under EPR 2010)	Duly made 09/09/11	Application to vary and update the permit to modern conditions.
Additional information	07/10/11	Clarification on: BAT for the replacement acid plant; type of catalyst used; other aspects of the application
	07/10/11	Clarification regarding CEMS
	18/10/11	Clarification of environmental impact
Variation determined EPR/BX1675IT/V003	08/12/11	Varied and consolidated permit issued in modern condition format.
Variation determined EPR/BX1675IT/V004	28/05/13	Agency variation to implement the changes introduced by IED.
Regulation 60 Notice sent to the Operator	31/10/14	Issue of a Notice under Regulation 60(1) of the EPR. Environment Agency Initiated review and variation to vary the permit under IED to implement the special provisions for LCP under Chapter III, introducing new Emission Limit Values (ELVs) applicable to LCP, referred to in Article 30(2) and set out in Annex V. The permit is also updated to modern conditions.
Regulation 60 Notice response	31/03/15	Response received from the Operator.
Additional information received	23/09/15, 06/10/15 and 26/11/15	Response to request for further information (RFI) dated 05/08/15.
Variation determined EPR/BX1675IT/V005 (PAS Billing ref: XP3934AT)	22/12/15	Varied and consolidated permit issued. Variation effective from 01/01/2016.

End of introductory note

Notice of variation and consolidation

The Environmental Permitting (England and Wales) Regulations 2010

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

Permit number

EPR/BX1675IT

Issued to

Hydrocarbon Resources Limited ("the operator")

whose registered office is

Millstream
Maidenhead Road
Windsor
Berkshire
SL4 5GD

company registration number 03115179

to operate a regulated facility at

Barrow Gas Terminals – North, South & Rivers
Rampside Road
Barrow in Furness
Cumbria
LA13 0QU

to the extent set out in the schedules.

The notice shall take effect from 01/01/2016

Name	Date
J Linton	**22/12/2015**

Authorised on behalf of the Environment Agency

Schedule 1

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

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number

EPR/BX1675IT

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/BX1675IT/V005 authorising,

Hydrocarbon Resources Limited ("the operator"),

whose registered office is

Millstream
Maidenhead Road
Windsor
Berkshire
SL4 5GD

company registration number 03115179

to operate an installation at

Barrow Gas Terminals – North, South & Rivers
Rampside Road
Barrow in Furness
Cumbria
LA13 0QU

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

Name	Date
J Linton	**22/12/2015**

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

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

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

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

1.2 Energy efficiency

1.2.1 The operator shall:

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

(b) 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: LCP 177, LCP 178 and LCP 179. Without prejudice to condition 2.3.1, the activities shall be operated in accordance with the "Electricity Supply Industry IED Compliance Protocol for Utility Boilers and Gas Turbines" revision 1 dated February 2015 or any later version unless otherwise agreed in writing by the Environment Agency.

2.3.3 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: LCP 177, LCP 178 and LCP179. The end of the start up period and the start of the shutdown period shall conform to the specifications set out in Schedule 1, tables S1.2 and S1.4.

2.3.6 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.

2.3.7 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.

2.3.8 For the following activities referenced in schedule 1, S1.1: LCP177. The activities shall not be operated for more than 17,500 operating hours starting from 1 January 2016 and ending no later than 31 December 2023.

2.4 Improvement programme

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

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

3 Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, S3.2, S3.3 and S3.4.

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.

3.2 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.

3.4.2 The operator shall:

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

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

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,S3.2 and S3.3;

(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, S3.2, S3.3 and S3.4 unless otherwise agreed in writing by the Environment Agency.

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

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.

3.6.2 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.

3.6.3 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.

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 2.3.8 applies the hours of operation since 01/01/2016 for LCP 177

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.

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

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

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

Where the operator is a registered company:

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

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

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

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

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

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

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

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

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

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

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

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

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

4.3.8 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**
A1	Section 1.2 A(1) (a) Refining gas where this is likely to involve the use of 1000 tonnes or more of in any period of 12 months	The refining of natural gas at the Barrow Gas Terminals - North, South and Rivers including the process to remove the methanol, water, condensate, carbon dioxide, hydrogen sulphide and nitrogen.	From the first isolation valve on the gas receipt pipelines to the point where the gas is passed into the National Transmission System.
A3	Section 1.1 A(1) (a) Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more	LCP177:70MWth GT for mechanical drive. LCP178:76MWth GT for mechanical drive. LCP179:76MWth GT for mechanical drive. Burning of gas fuel in a 6.9MW boiler There are additional combustion processes which give an aggregated thermal input of 270 MW for the whole site.	From receipt of natural gas through to discharge of combustion gases from the stack and export of mechanical energy. The operation of the package boiler on Rivers Terminal
	Directly Associated Activity		
A2	Converting a product of refining natural gas into another product	The receipt of hydrogen sulphide gas stream and conversion to sulphuric acid.	From the incoming gas stream to the transfer of sulphuric acid to storage.
A4	Condensate processing, handling and storage	Condensate processing, handling and storage	The processing, handling and storage of condensate on site until exported to the Condensate Storage Facility.
A5	Waste storage and handling	Waste storage and handling	From the generation of waste on site to the removal of wastes from site.
A6	Generation of nitrogen	The generation of nitrogen gas on site.	The generation of nitrogen on site to the use on site.
A7	Methanol distillation, processing, handling and storage	Methanol distillation, processing, handling and storage	The processing, handling , distillation and storage of methanol on site.
A8	Surface water collection and oil separation	Surface water collection, oil separation and discharge to Roosecote Sands	From the collection of surface water on site to the discharge to Roosecote Sands.

Table S1.1 activities			
Activity reference	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
A9	Gas flaring	Flaring and venting of gas from the terminals during shutdowns and emergency situations	The flaring and venting of natural gas from the specified emission points
A10	Raw material storage and handling	Raw material storage and handling	From receipt of raw materials to the use on site.
A11	Process effluent collections systems and discharge to sewer	Process effluent collections systems and discharge to sewer	The discharge of process effluents and surface water on site to sewer.
A12	Process effluent collections systems and discharge to sewer	Operation of water treatment plant and cooling towers	From the supply of water to discharge to the site effluent sewers
A13	Storage of sulphuric acid	Storage of sulphuric acid	The storage of sulphuric acid and road tanker loading facility
A14	The refrigerant system for the South Morecambe Terminal dew point control process	The refrigerant system for the South Morecambe Terminal dew point control process	The operation of the refrigerant system.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	The response to section B2.1 to B2.12 in the application for permit BX1675IT for North and South Morecambe Gas Terminals	18/08/06
Letter	Letter from applicant dated 11th June 2007 in relation to the application for permit BX1675IT for North and South Morecambe Gas Terminals	11/06/07
Application	The response to section B2.1 to B2.12 in the application for permit BL6128 for the Rivers Gas Terminals	11/08/03
Response to Schedule 4 Part 1 Notice	Response to questions 1 to 16 in relation to the application for permit BL6128 for the Rivers Gas Terminals	15/12/03
Consolidation document	The PPC Consolidation document dated 28th July 2008	28/07/08
Application for variation EPR/BX1675IT/V003	The operating techniques described in the application for the variation.	09/09/11
Response to regulation 60(1) Notice – request for information dated 31/10/14	Compliance route(s) and operating techniques identified in response to questions 1 (details of LCP's), 2 (compliance routes), 3 ((notification of LLD), 4 (configuration of LCP's), 5 (net rated thermal input) and 6 (start up).	31/03/15
Receipt of additional information to the regulation 60(1) Notice. requested by letter dated 05/08/15	Compliance route(s) and operating techniques identified in response to questions 5 (net rated thermal input), 6 (start up) and 11 (monitoring).	26/11/15

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Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IP9	The operator shall assess options available for minimising water use, energy use and raw material use / waste minimisation. The assessment shall have regard to the techniques in Agency Guidance Note IPPC S1.02 and IPPC H3 Energy Efficiency. A written report summarising the assessment shall be submitted to the Agency. Where the assessment identifies an option that is BAT then the operator shall propose a timescale for its implementation. Following submission of the report, the operator shall implement the option approved in writing by the Agency to the timescale indicated in the approval.	complete
IP10	The operator shall develop a written Site Closure Plan, having regard to Section 2.11 of the Agency Sector Guidance Note IPPC S1.02. Upon completion of the plan the document shall be submitted to the Agency.	complete
IP11	A written procedure shall be submitted to the agency detailing the measures to be used so that monitoring equipment, personnel and organisations employed for the emissions monitoring programme shall have either MCERTS certification or accreditation in accordance with condition 3.6.3. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the procedure. The procedure shall be implemented by the operator from the date of approval in writing by the Agency	complete

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IP12	The operator shall monitor the emissions of Hydrogen sulphide from point A11 on North Morecambe Terminal during the commissioning of the Rivers Terminal. The duration and frequency of the monitoring shall be agreed with the Agency. Following the completions of the monitoring programme, a written report summarising the monitoring results and including proposals for future monitoring frequencies, methods and emission limit values for the emissions from point A11 on North Morecambe Terminal shall be submitted to the Agency.	complete
IP13	The Operator shall review the options available for the reduction of emissions of methane from the Nitrogen Removal Units 1 and 2. A written report summarising the review shall be submitted to the Agency. Where the review identifies an option that is BAT then the operator shall propose a timescale for its implementation. Following submission of the report, the operator shall implement the option approved in writing by the Agency to the timescale indicated in the approval.	complete
IP14	The Operator shall advise the Agency in writing when the commissioning of Rivers Terminal has been completed. Until the commissioning of Rivers Terminal has been completed the Operator shall provide the Agency with a monthly report detailing the reasons why commissioning has not been completed. Within 28 days of notifying the Agency that commissioning of Rivers Terminal has been completed the Operator such submit a report to the Agency on the testing and monitoring programme carried out as part of the commissioning, demonstrating that the Operator can comply with all the emission limits in the permit during the normal operations of the Rivers Terminal.	complete
IP15	The operator shall submit a written sulphuric acid replacement plant post-commissioning report to the Environment Agency which shall include: o a review of performance of the plant against the conditions of this permit. o details of optimisation of the NOx emission abatement system; how the Selective Catalytic Reduction (SCR) system and combustion settings are controlled to optimise NOx emissions. o details of optimisation of sulphur dioxide conversion to sulphur trioxide. o details of procedures developed during commissioning for achieving and demonstrating satisfactory process control and covering the range of designed operating rates.	complete
IP16	'For LCPD LCP 196, 197 and 198 (now LCP 177, 178 and 179 under IED). Annual emissions of dust, sulphur dioxide and oxides of nitrogen including energy usage for the year 01/01/2015 to 31/12/2015 shall be submitted to the Environment Agency using form AAE1 via the NERP Registry. If the LPCD LCP was a NERP plant the final quarter submissions shall be provided on the RTA 1 form to the NERP Registry.'	28/01/16
IP17	The operator shall provide a report in writing to the Environment Agency. The report shall contain a proposed emission limit which applies when the load varies between MSUL/MSDL and base load during the daily reference period, for emission point LCP177 for oxides of nitrogen. The report shall also provide justification for this limit, and an assessment of the impacts of emissions at this limit using our H1 guidance or equivalent methodology.	31/12/16

Table S1.4 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 (%)	"Minimum Shut-Down Load" Load in MW and as percent of rated power output (%)
A18: LCP177	12MW; 42%	12MW; 42%
A28: LCP178	12MW; 40%	12MW; 40%
A29: LCP179	12MW; 40%	12MW; 40%

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Fuel gas used in the High Pressure (HP) combustion processes on site.	Sulphur content of HP fuel gas shall not exceed the NTS gas specification level.
Fuel gas used in the Low Pressure (LP) combustion processes on site.	Sulphur content of LP fuel gas shall not exceed 150 ppm (215 mg/m^3) total sulphur

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
South Morecambe Terminal						
A1	Dew Point Control Refrigeration Unit	Hydrochloro-fluorocarbon	No limit set	--	--	Permanent sampling access not required
A2	Hot Oil Heater A	Oxides of nitrogen (as NO_2)	250 mg/m^3	Hourly average	Annually	BS EN 14792
A2	Hot Oil Heater A	Carbon monoxide	100 mg/m^3	Hourly average	Annually	BS EN 15058
A3	Hot Oil Heater B	Oxides of nitrogen (as NO_2)	250 mg/m^3	Hourly average	Annually	BS EN 14792
A3	Hot Oil Heater B	Carbon monoxide	100 mg/m^3	Hourly average	Annually	BS EN 15058
A20 A21 A22 A26	Vent Stacks, Pipe Flare, Linear Relief Gas Oxides, Assorted Vents	No parameters set	No limit set	--	--	Permanent sampling access not required
A28 and A29	LCP 178 and 179-gas turbines fired on natural gas	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	75 mg/m^3 70% to base load (Note 5a) 100 mg/m^3 MSUL/MSDL to base load (Note 5b)	-	At least every 6 months	BS EN 14792
A28 and A29	LCP 178 and 179-gas turbines fired on natural gas	Carbon Monoxide	100 mg/m^3 70% to base load (Note 5a) 100 mg/m^3 MSUL/MSDL to base load (Note 5b)	-	At least every 6 months	BS EN 15058
A28 and A29	LCP 178 and 179-gas turbines fired on natural gas	Sulphur dioxide	-	-	At least every 6 months	Concentration by calculation, as agreed in writing with the Environment Agency

Table S3.1 Point source emissions to air						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A28 and A29	LCP 178 and 179-gas turbines fired on natural gas	Oxygen	-	-	At least every 6 months	BS EN 14789
A28 and A29	LCP 178 and 179-gas turbines fired on natural gas	Water Vapour	-	-	At least every 6 months	BS EN 14790
A28 and A29	LCP 178 and 179-gas turbines fired on natural gas	Stack gas temperature	-	-	At least every 6 months	Traceable to national standards
A28 and A29	LCP 178 and 179-gas turbines fired on natural gas	Stack gas pressure	-	-	At least every 6 months	Traceable to national standards
A28 and A29	LCP 178 and 179-gas turbines fired on natural gas	As required by the Method Implementation Document for BS EN 15259	-	-	Pre-operation and when there is a significant operational change	BS EN 15259
North Morecambe Terminal						
A6	Hot Oil Heater A	Oxides of nitrogen (as NO_2)	200 mg/m^3	Hourly average	Annually	BS EN 14792
A6	Hot Oil Heater A	Carbon monoxide	250 mg/m^3	Hourly average	Annually	BS EN 15058
A7	Hot Oil Heater B	Oxides of nitrogen (as NO_2)	200 mg/m^3	Hourly average	Annually	BS EN 14792
A7	Hot Oil Heater B	Carbon monoxide	250 mg/m^3	Hourly average	Annually	BS EN 15058
A9	Dew Point Control Regeneration Heater	Oxides of nitrogen (as NO_2)	200 mg/m^3	15 minute average	Annually	BS EN 14792
A9	Dew Point Control Regeneration Heater	Carbon monoxide	100 mg/m^3	15 minute average	Annually	BS EN 15058
A10	Carbon Dioxide Removal Plant Vent Gas Incinerator	Oxides of nitrogen (as NO_2)	165 mg/m^3	Hourly average	Annually	BS EN 14792

Table S3.1 Point source emissions to air						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A10	Carbon Dioxide Removal Plant Vent Gas Incinerator	Sulphur dioxide	230 mg/m^3	Hourly average	Annually	BS EN 14791
A12	Nitrogen Removal Unit 1	Total organic carbon (as methane)	15,000 mg/m^3	Hourly average	Annually	BS EN 13526 or BS EN 12619
A13	Nitrogen Removal Unit 2	Total organic carbon (as methane)	15,000 mg/m^3	Hourly average	Annually	BS EN 13526 or BS EN 12619
A14	Engine for Product Gas Compressor A	Oxides of nitrogen (as NO_2)	500 mg/m^3	Hourly average	Annually	BS EN 14792
A14	Engine for Product Gas Compressor A	Carbon monoxide	600 mg/m^3	Hourly average	Annually	BS EN 15058
A14	Engine for Product Gas Compressor A	Total organic carbon (as methane)	1000 mg/m^3	Hourly average	Annually	BS EN 13526 or BS EN 12619
A15	Engine for Product Gas Compressor B	Oxides of nitrogen (as NO_2)	500 mg/m^3	Hourly average	Annually	BS EN 14792
A15	Engine for Product Gas Compressor B	Carbon monoxide	600 mg/m^3	Hourly average	Annually	BS EN 15058
A15	Engine for Product Gas Compressor B	Total organic carbon (as methane)	1000 mg/m^3	Hourly average	Annually	BS EN 13526 or BS EN 12619
A16	Engine for Product Gas Compressor C	Oxides of nitrogen (as NO_2)	500 mg/m^3	Hourly average	Annually	BS EN 14792
A16	Engine for Product Gas Compressor C	Carbon monoxide	600 mg/m^3	Hourly average	Annually	BS EN 15058
A16	Engine for Product Gas Compressor C	Total organic carbon (as methane)	1000 mg/m^3	Hourly average	Annually	BS EN 13526 or BS EN 12619
A17	Engine for Product Gas Compressor D	Oxides of nitrogen (as NO_2)	500 mg/m^3	Hourly average	Annually	BS EN 14792
A17	Engine for Product Gas Compressor D	Carbon monoxide	600 mg/m^3	Hourly average	Annually	BS EN 15058
A17	Engine for Product Gas Compressor D	Total organic carbon (as methane)	1000 mg/m^3	Hourly average	Annually	BS EN 13526 or BS EN 12619

Table S3.1 Point source emissions to air						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A18	LCP 177-gas turbine fired on natural gas	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	125 mg/m^3 70% to base load (Note 5a) 200 mg/m^3 MSUL/MSDL to base load (Note 5b)	-	At least every 6 months	BS EN 14792
A18	LCP 177-gas turbines fired on natural gas	Carbon Monoxide	200 mg/m^3 70% to base load (Note 5a) 300 mg/m^3 MSUL/MSDL to base load (Note 5b)	-	At least every 6 months	BS EN 15058
A18	LCP 177-gas turbine fired on natural gas	Sulphur dioxide	-	-	At least every 6 months	Concentration by calculation, as agreed in writing with the Environment Agency
A18	LCP 177-gas turbine fired on natural gas	Oxygen	-	-	At least every 6 months	BS EN 14789
A18	LCP 177-gas turbine fired on natural gas	Water Vapour	-	-	At least every 6 months	BS EN 14790
A18	LCP 177-gas turbine fired on natural gas	Stack gas temperature	-	-	At least every 6 months	Traceable to national standards
A18	LCP 177-gas turbine fired on natural gas	Stack gas pressure	-	-	At least every 6 months	Traceable to national standards
A18	LCP 177-gas turbine fired on natural gas	As required by the Method Implementation Statement for BS EN 15259	-	-	Pre-operation and when there is a significant operational change	BS EN 15259
A11, A24, A25, A27	Pre Purification Unit, Ground Flare, Vent stack, Assorted Vents	No parameters set	No limit set	--	--	Permanent sampling access not required
Rivers Terminal						

Table S3.1 Point source emissions to air						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
AR1 AR2 AR5 AR7	HP Flare, LP Flare, Package boiler, Methanol tank	No parameters set	No limit set	--	--	Permanent sampling access not required
AR3 (A & B)	Gas Turbine 1 A - Main stack B - Divert stack	Oxides of nitrogen (as NO_2)	125 mg/m^3 [Note 7]	Hourly average	Annually	BS EN 14792
AR3 (A & B)	Gas Turbine 1 A - Main stack B - Divert stack	Carbon monoxide	100 mg/m^3 [Note 7]	Hourly average	Annually	BS EN 15058
AR4 (A & B)	Gas Turbine 2 A - Main stack B - Divert stack	Oxides of nitrogen (as NO_2)	125 mg/m^3 [Note 7]	Hourly average	Annually	BS EN 14792
AR4 (A & B)	Gas Turbine 2 A - Main stack B - Divert stack	Carbon monoxide	100 mg/m^3 [Note 7]	Hourly average	Annually	BS EN 15058
AR6	Sulphuric Acid Plant (Old)	Oxides of nitrogen (as NO_2)	300 mg/m^3 [Note 3, 4]	Hourly average	Continuous with annual verification [Note 6]	In-house methods agreed with the Agency
AR6	Sulphuric Acid Plant (Old)	Carbon monoxide	125 mg/m^3 [Note 3, 4]	Hourly average	Continuous with annual verification [Note 6]	In-house methods agreed with the Agency
AR6	Sulphuric Acid Plant (Old)	Sulphur dioxide	[Note 3, 4]	Hourly average	Continuous with annual verification [Note 6]	In-house methods agreed with the Agency
AR6	Sulphuric Acid Plant (Old)	Hydrogen sulphide	[Note 3, 4]	Hourly average	Continuous with annual verification [Note 6]	In-house methods agreed with the Agency

Table S3.1 Point source emissions to air						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)-these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
AR8	Sulphuric Acid Plant (New)	Oxides of nitrogen (as NO_2)	50 mg/m^3 [Note 4]	Hourly average	Continuous with annual verification [Note 6]	BS EN 15267-3 [Note 8]
AR8	Sulphuric Acid Plant (New)	Carbon monoxide	100 mg/m^3 [Note 4]	Hourly average	Continuous with annual verification [Note 6]	BS EN 15267-3 [Note 8]
AR8	Sulphuric Acid Plant (New)	Sulphur dioxide	400 mg/m^3 [Note 4]	Hourly average	Continuous with annual verification [Note 6]	BS EN 15267-3 [Note 8]
AR8	Sulphuric Acid Plant (New)	Hydrogen sulphide	5 mg/m^3 [Note 4]	Hourly average	Continuous with annual verification [Note 6]	In-house methods agreed with the Agency
AR8	Sulphuric Acid Plant (New)	Conversion based on mass of sulphur dioxide feed to converter	Minimum 99.5% [Note 9] or 99.0% [Note 10]	12-month rolling average	To be agreed with the Agency	In-house methods agreed with the Agency
AR8	Sulphuric Acid Plant (New)	Sulphuric acid mist	35 mg/m^3	Annual	Annually	In-house methods agreed with the Agency
AR9, AR10, AR11	Hot air vent, Mist control unit vents	No parameters set	No limit set	--	--	Permanent sampling access not required

Notes applicable to table S3.1

Note 1 Monitoring will not be required from any emission point where the process giving rising emissions has been operated for less than 500 hours in the previous calendar year. This condition does not apply to emission points A18, A28 and A29.

Note 2 The emission limits specified on table S3.1 shall not apply to the first hour after start up, the hour prior to shut down, during the commissioning of plant or periods agreed with Agency such as plant trips. This condition does not apply to emission points A18, A28 and A29.

Note 3 95% of the hourly average readings in any rolling 24 hour period shall not exceed the value in table S3.1 with no hourly average shall exceeding 150% of the value in table S3.1.

Note 4 The Acid Plant may not operate for longer than 14 days in any year without continuous monitoring of the emissions except with the agreement of the Environment Agency. A record of any times that continuous monitoring is not available shall be kept by the operator.

Note 5a: This ELV applies where the load is >70% for the duration of the sampling period.

Note 5b: This ELV applies where the load varies between MSUL/MSDL and base load during the sampling period. MSUL and MSDL are defined in Table S1.4.

Note 6 The continuous monitoring data from AR6 and AR8 shall be verified by an annual extractive monitoring exercise consisting of 3 x 1 hour average samples analysed for Oxides of Nitrogen, Carbon Monoxide, Sulphur Dioxide, Hydrogen Sulphide and conversion. The monitoring shall be carried out to MCERTS standards.

Note 7 Limits shall only apply at GT load conditions greater than 50%.

Note 8 Certification to the MCERTS performance standards indicates compliance with BS EN 15267-3.

Note 9 Steady State operation; limit based on 52-week rolling average, excluding warm-up periods.

Note 10 Average conversion rate during cold or warm start up conditions, not exceeding 5 hours per occasion.

Table S3.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Limit (incl. unit)	Reference period	Monitoring frequency	Monitoring standard or method
W1 as shown on figure 1B South Morecambe Terminal in volume 1 of the application [Note 1]	Tilted Plate Separator	pH	No set limit	Continuous	Continuous	In-house methods agreed with the Agency
		pH	No set limit	Spot sample	Monthly	In-house methods agreed with the Agency
		Conductivity	No set limit			
		Suspended Solids	No set limit			
		COD	No set limit			
		Oil and grease	None visible			
		Methanol	None detectable			
W2 as shown on figure 1C North Morecambe Terminal in volume 1 of the application [Note 1]	Outfall Holding Basins A & B	COD	No set limit	Spot sample	Monthly	In-house methods agreed with the Agency
		pH	No set limit	Spot sample	Per batch discharge	
		Conductivity	No set limit			
		Suspended Solids	No set limit			
		Oil and grease	None visible			
		Methanol	None detectable			
		Amines	None detectable			
W3 Discharge to Happy Valley as identified in the response to IP 6	Surface water from around the firewater pond	No parameter set	Clean and uncontaminated surface water	--	--	Permanent sampling access not required

Table S3.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Emission point ref. & location	**Source**	**Parameter**	**Limit (incl. unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
W4 Discharge to Roosecote Sands as identified in the response to IP6	Surface water from the SMT flare area	No parameter set	Clean and uncontaminated surface water	--	--	Permanent sampling access not required

Notes applicable to table S3.2

Note 1 The sample point for W1 is the Tilted plate separator outlet and the sample point for W2 is the Outfall holding basin being discharged, either A or B.

Table S3.3 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (incl. Unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
S1	Combined discharge from Rivers, North and South Morecambe Terminals	None specified	No set limit	--	--	--

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**
South Morecambe Terminal A2, A3, A6, A7- Hot Oil Heaters	Oxides of nitrogen (as NO_2), Carbon monoxide	Quarterly	Portable stack gas analyser	--
North Morecambe Terminal A9- Dew Point Control Regeneration Heate	Oxides of nitrogen (as NO_2), Carbon monoxide	Quarterly	Portable stack gas analyser	--
North Morecambe Terminal A10- Carbon Dioxide Removal Plant Vent Gas Incinerator	Oxides of nitrogen (as NO_2), Sulphur dioxide, Carbon dioxide	Quarterly	Portable stack gas analyser	--
North Morecambe Terminal A12, A13- Nitrogen Removal Units	Total organic carbon (as methane)	Quarterly	In-house methods agreed with the Agency	--
North Morecambe Terminal A14, A15, A16, A17- Engines for Product Gas Compressors	Oxides of nitrogen (as NO_2), Carbon monoxide	Six monthly	Portable stack gas analyser	If operating at the time of process monitoring
	Total organic carbon (as methane)	Six monthly	In-house methods agreed with the Agency	

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**
Rivers Terminal Common Impounding Basin- Rivers Terminal Drainage System	pH, Methanol, Visible oil & grease	Prior to every discharge	In-house methods agreed with the Agency	--
Rivers Terminal Open Drains Pit- Rivers Terminal Drainage System	pH, Methanol, Visible oil & grease	Prior to every discharge	In-house methods agreed with the Agency	–
North Morecambe Terminal Methanol Stills Bottom Sump	pH, Visible oil & grease	Prior to every discharge	In-house methods agreed with the Agency	–
North Morecambe Terminal Methanol Stills Bottom Sump	Methanol	Prior to every discharge	In-house methods agreed with the Agency	2,000 mg/l [Note 1]
North Morecambe Terminal Methanol Stills Bottom Sump	Toluene, Ethylbenzene, Benzene, m&p-Xylene, o-Xylene	Annually	In-house methods agreed with the Agency	–
South Morecambe Terminal Cooling Tower Sump-process effluents	pH, Conductivity, COD, Zinc, Suspended solids	Monthly	In-house methods agreed with the Agency	--

Notes applicable to table S3.4

Note 1 This limit can be extended to 10,000 mg/l in agreement with United Utilities on a maximum of 10 occasions in any 12 month period. On each of these occasions the Agency shall be informed of the reasons for the high levels.

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.	A2, A3, A6, A7, A9, A10, A12, A13, AR6 and AR8	Every 3 months	1 January, 1 April 1 July, 1 October
Emissions to air Parameters as required by condition 3.5.1.	A14, A15, A16 and AR17.	Every 6 months	1 January, 1 July
Emissions to air Parameters as required by condition 3.5.1.	A2, A3, A6, A7, A9, A10, A12, A13, A14, A15, A16, A17, AR3, AR4, AR6 and AR8.	Every 12 months	1 January
Oxides of nitrogen	A18, A28 and A29	Every 6 months	1 January, 1 July,
Carbon Monoxide	A18, A28 and A29	Every 6 months	1 January, 1 July
Sulphur dioxide	A18, A28 and A29	Every 6 months	1 January, 1 July
Emissions to surface water Parameters as required by condition 3.5.1	W1 and W2	Every 3 months	1 January, 1 April 1 July, 1 October
Emissions to sewer Parameters as required by condition 3.5.1	S1	No routine reporting required	--

Table S4.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Emissions to internal drainage systems feeding S1 Parameters as required by condition 3.5.1	Rivers Terminal: Common Impounding Basin, Rivers Terminal: Open Drains Pit, North Morecambe Terminal: Methanol Stills Bottom Sump, South Morecambe Terminal: Cooling Tower Sump.	Every 6 months	1 January, 1 July

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

Table S4.3 Chapter III Performance parameters for reporting to DEFRA and other Performance parameters		
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 NO_x for each LCP	Annually	t
Total Emissions to Air of SO_2 for each LCP	Annually	t

Table S4.3 Chapter III Performance parameters for reporting to DEFRA and other Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Total Emissions to Air of Dust for each LCP	Annually	t
Operating Hours for each LCP (Load Factor)	Annually	hr
Natural gas produced	Annually	Million standard cubic metres
Sulphuric acid produced	Annually	Tonnes (as 96 wt%)
Sulphur dioxide conversion efficiency	Annually	%

Table S4.4 Reporting forms				
Media/ parameter	**Reporting format**	**Starting Point**	**Agency recipient**	**Date of form**
Air	Forms **Air 1**, **Air 2** and **Air 3** or other forms as agreed in writing by the Agency	01/01/09	Area Office	01/12/11
Air & Energy	Form IED AR1 – SO_2, NO_x and dust mass emission and energy	01/01/16	National & Area Offices	31/12/15
LCP	Form IED HR1 – operating hours	01/01/16	National & Area Offices	31/12/15
Air	Form IED PM1 – discontinuous monitoring and load	01/01/16	Area Office	31/12/15
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	01/01/16	Area Office	31/12/15
Resource Efficiency	Form REM1 – resource efficiency annual report	01/01/16	National & Area Office	31/12/15
Water	Form Surface Water or other form as agreed in writing by the Agency	01/01/09	Area Office	04/06/09
Internal water drainage systems	Form Internal Drainage or other form as agreed in writing by the Agency	01/01/11	Area Office	01/12/11

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	**BX1675IT**
Name of operator	**Hydrocarbon Resources Limited**
Location of Facility	**Barrow in Furness**
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 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.

"Air Quality Risk Assessment" has the meaning given in Annex D of IED Compliance Protocol for Utility Boilers and Gas Turbines.

"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.

"background concentration" means such concentration of that substance as is present in:

for emissions to surface water, the surface water quality up-gradient of the site; or

for emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge.

"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.

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

"CEN" means Commité Européen de Normalisation.

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

"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 to land" includes emissions to groundwater.

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

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

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

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

"HP SMOC" means High Pressure South Morecambe Onshore Compressor – LCP unit

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

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

“low polluting fuels” means biomass or coal with an average as-received sulphur content of less than 0.4% by mass as described in the ESI IED Compliance Protocol for Utility Boilers and Gas Turbines.

“LP SMOC” means Low Pressure South Morecambe Onshore Compression- LCP unit

“Mid-merit” means combustion plant operating between 1,500 and 4,000 hrs/yr.

“MCERTS” means the Environment Agency’s Monitoring Certification Scheme.

“MCR” means maximum continuous rating.

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

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

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

“ncv” means net calorific value.

“NMT FGC” means North Morecambe Terminal Field Gas Compressor-LCP unit.

“NTS” means National Transmission System.

“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.

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

“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.

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.

“year” means calendar year ending 31 December.

Schedule 7 – Site plan

Site plan subject to National Security

END OF PERMIT