



ENVIRONMENT  
AGENCY

## Permit with introductory note

Pollution Prevention and Control (England & Wales) Regulations 2000

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ConocoPhillips Ltd

Humber Refinery  
Eastfield Road  
South Killingholme  
North Lincolnshire  
DN40 3DW

Permit number

UP3230LR

# ConocoPhillips Ltd Permit Number UP3230LR

## Introductory note

### ***This introductory note does not form a part of the permit***

The main features of the installation are as follows.

The Humber Refinery is located at South Killingholme in North Lincolnshire and is operated by ConocoPhillips Ltd. The refinery primarily processes sweet crudes for the production of fuels and petroleum coke.

The main environmental releases from the site to air are Sulphur Dioxide, Oxides of Nitrogen, Particulate Matter and Volatile Organic Compounds. Conditions within the permit have been set to ensure the permitted operation can comply with environmental standards relating to local receptors.

Releases to water are minimised by the use of a three stage effluent treatment plant, and by recycling this effluent as a raw water feed to an adjacent combined heat and power station.

<b>Status Log of the permit</b>		
<b>Detail</b>	<b>Date</b>	<b>Response Date</b>
Application UP3230LR	Duly made 24/08/06	
Additional Information requested	08/12/06	
Extension to submission date received	05/01/07	
Extension agreed	10/01/07	
Additional Information received		08/02/07
Additional Information requested	03/04/07	
Additional Information received		14/05/07
Additional Information received	24/8/07	
Extension to determination date requested	25/10/07 and 09/11/07	
Extension agreed		30/10/07 and 12/11/07
Permit determined	14/12/07	

<b>Superseded or Partially Superseded Licences/Authorisations/Consents relating to this installation</b>			
<b>Holder</b>	<b>Reference Number</b>	<b>Date of Issue</b>	<b>Fully or Partially Superseded</b>
ConocoPhillips Ltd	AY3385 (and variation BD9114)	01/05/97	Fully superseded
	AA3336 (and variations AK2785, AU2816)	30/11/92	Fully superseded
	AF8173 (and variations AL5046, AP7628, AU5050, AW7789)	25/10/93	Fully superseded
	BB6904, BE5637, BE8725		
	BG8572, BJ8642, BQ4491		
	BU5348, BY0216)	last variation issued 27/11/04	

**Other existing Licences/Authorisations/Registrations relating to this site**

<b>Holder</b>	<b>Reference Number</b>	<b>Date of issue</b>
ConocoPhillips Ltd	WML 55/19/148B EA Ref 70818	18/12/87

End of Introductory Note

## Permit

Pollution Prevention and Control  
(England and Wales) Regulations 2000

# Permit

Permit number

**UP3230LR**

The Environment Agency (the Agency) in exercise of its powers under Regulation 10 of the Pollution Prevention and Control (England and Wales) Regulations 2000 (SI 2000 No 1973) hereby authorises **ConocoPhillips Ltd** ("the operator"),

whose registered office is

**Portman House**

**2 Portman Street**

**London**

**W1H 6DU**

company registration number 00529086

to operate an installation at

**Humber Oil Refinery**

**Eastfield Road**

**South Killingholme**

**North Lincolnshire**

**DN40 3DW**

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

Signed	Date
	14/12/2007

**T Ruffell**

Authorised to sign on behalf of the Agency

# Conditions

## 1 Management

### 1.1 General management

1.1.1 The activities shall be managed and operated:

- (a) in accordance with a management system, which identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents and non-conformances and those drawn to the attention of the operator as a result of complaints; and
- (b) by sufficient persons who are competent in respect of the responsibilities to be undertaken by them in connection with the operation of the activities.

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 Accident management plan

1.2.1 The operator shall:

- (a) maintain and implement an accident management plan;
- (b) review and record at least every 4 years or as soon as practicable after an accident, (whichever is the earlier) whether changes to the plan should be made;
- (c) make any appropriate changes to the plan identified by a review.

### 1.3 Energy efficiency

1.3.1 The operator shall:

- (a) take appropriate measures to ensure that energy is used efficiently in the activities;
- (b) review and record at least every 4 years whether there are suitable opportunities to improve the energy efficiency of the activities; and
- (c) take any further appropriate measures identified by a review.

### 1.4 Efficient use of raw materials

1.4.1 The operator shall:

- (a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;
- (b) maintain records of raw materials and water used in the activities;
- (c) review and record at least every 4 years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and
- (d) take any appropriate further measures identified by a review.

## **1.5 Avoidance, recovery and disposal of wastes produced by the activities**

1.5.1. The operator shall:

- (a) take appropriate measures to ensure that waste produced by the activities is avoided or reduced, or where waste is produced it is recovered wherever practicable or otherwise disposed of in a manner which minimises its impact on the environment;
- (b) review and record at least every 4 years whether changes to those measures should be made; and
- (c) take any further appropriate measures identified by a review.

## **1.6 Site security**

1.6.1. Site security measures shall prevent unauthorised access to the site, as far as practicable.

# **2. Operations**

## **2.1 Permitted activities**

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

## **2.2 The site**

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 2 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 Agency.

2.3.2 No raw materials or fuels listed in schedule 3 table S3.1 shall be used unless they comply with the specifications set out in that table.

2.3.3 Waste shall only be accepted if:

- (a) it is of a type and quantity listed in schedule 3 table S3.2, and
- (b) it conforms to the description in the documentation supplied by the producer and holder.

2.3.4 Records shall be kept of all waste accepted onto the site.

## **2.4 Off-site conditions**

2.4.1 There are no off-site conditions under this section.

## **2.5 Improvement programme**

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

## **2.6 Pre-operational conditions**

- 2.6.1 There are no pre-operational conditions in this permit.

## **2.7 Closure and decommissioning**

- 2.7.1 The operator shall maintain and operate the activities so as to prevent or where that is not practicable, to minimise, any pollution risk on closure and decommissioning.
- 2.7.2 The operator shall maintain a site closure plan which demonstrates how the activities can be decommissioned to avoid any pollution risk and return the site to a satisfactory state.
- 2.7.3 The operator shall carry out and record a review of the site closure plan at least every 4 years.
- 2.7.4 The site closure plan (or relevant part thereof) shall be implemented on final cessation or decommissioning of the activities or part thereof.

## **2.8 Site protection and monitoring programme**

- 2.8.1 The operator shall, within 2 months of the issue of this permit, submit a site protection and monitoring programme.
- 2.8.2 The operator shall implement and maintain the site protection and monitoring programme and shall carry out and record a review of it at least every 4 years.

# **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 4 tables S4.1 and S4.2.
- 3.1.2 The limits given in schedule 4 shall not be exceeded.
- 3.1.3 Total annual emissions from the emission point(s) set out in tables schedule 4 S4.1 and S4.2 of a substance listed in schedule 4 tables S4.4a and S4.4b shall not exceed the relevant limit in tables S4.4a and S4.4b.

## **3.2 Transfers off-site**

- 3.2.1 Records of all the wastes sent off site from the activities, for either disposal or recovery, shall be maintained.

### **3.3 Fugitive emissions of substances**

- 3.3.1 Fugitive emissions of substances (excluding odour, noise and vibration) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including those specified in schedule 1 table S1.4, have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.3.2 All liquids, 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.

### **3.4 Odour**

- 3.4.1 Emissions from the activities shall be free from odour at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, including those specified in schedule 1 table S1.5, to prevent or where that is not practicable to minimise the odour.

### **3.5 Noise and vibration**

- 3.5.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, including those specified in schedule 1 table S1.6, to prevent or where that is not practicable to minimise the noise and vibration.

### **3.6 Monitoring**

- 3.6.1 The operator shall, unless otherwise agreed in writing by the Agency, undertake the monitoring specified in the following tables in schedule 4 to this permit:
- (a) point source emissions specified in tables S4.1 and S4.2;
  - (b) process monitoring specified in table S4.8
- 3.6.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.6.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme specified in condition 3.6.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by the Agency.
- 3.6.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 4 tables S4.1 and S4.2 unless otherwise specified in that schedule.
- 3.6.5 Within 6 months of the issue of this permit (unless otherwise agreed in writing by the Agency) the site reference data identified in the site protection and monitoring programme shall be collected and submitted to the Agency.



## **3.7 Monitoring for the purposes of the Large Combustion Plant Directive**

- 3.7.1 All LCP monitoring required by this permit shall be carried out in accordance with the provisions of Annex VIII of the Large Combustion Plant Directive.
- 3.7.2 If the monitoring results for more than 10 days a year are invalidated within the meaning set out in Schedule 7, the Operator shall:
- (a) within 28 days of becoming aware of this fact, review the causes of the invalidations and submit to the Agency for approval, proposals for measures to improve the reliability of the continuous measurement systems, including a timetable for the implementation of those measures; and
  - (b) implement the approved measures.
- 3.7.3 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.
- 3.7.4 Unless otherwise agreed in writing by the Agency in accordance with condition 3.7.5 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.
- 3.7.5 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 Agency.
- 3.7.6 Where required by a condition of this permit to check the measurement equipment the operator shall submit a report to the 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;
  - (d) be retained, unless otherwise agreed in writing by the 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) the site protection and monitoring programme.
- 4.1.2 Any records required to be made by this permit shall be supplied to the Agency within 14 days where the records have been requested in writing by the Agency.
- 4.1.3 All records required to be held by this permit shall be held on the site and shall be available for inspection by the Agency at any reasonable time.

## 4.2 Reporting

4.2.1 A report or reports on the performance of the activities over the previous year shall be submitted to the Agency by 31 January (or other date agreed in writing by the 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 this permit against the relevant assumptions, parameters and results in the assessment of the impact of the emissions submitted with the application;
- (b) where the operator's management system encompasses annual improvement targets, a summary report of the previous year's progress against such targets;
- (c) the annual production /treatment data set out in schedule 5 table S5.2;
- (d) the performance parameters set out in schedule 5 table S5.3 using the forms specified in table S5.4 of that schedule;
- (e) details of any contamination or decontamination of the site which has occurred.

4.2.2 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the 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 5 table S5.1;
- (b) for the reporting periods specified in schedule 5 table S5.1 and using the forms specified in schedule 5 table S5.4 ; and
- (c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.3 The operator shall, unless notice under this condition has been served within the preceding 4 years, submit to the Agency, within 6 months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.2.4 All reports and notifications required by the permit shall be sent to the Agency using the contact details supplied in writing by the Agency

4.2.5 A summary report of the waste types and quantities accepted onto the site shall be made for each quarter during which the total amount accepted exceeds 100 tonnes of non-hazardous waste or 10 tonnes of hazardous waste. It shall be submitted to the Agency within one month of the end of the quarter and shall be in the format required by the Agency.

4.2.6 The results of reviews and any changes made to the site protection and monitoring programme shall be reported to the Agency, within 1 month of the review or change.

## 4.3 Notifications

4.3.1 The Agency shall be notified without delay following the detection of:

- (a) any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission which has caused, is causing or may cause significant pollution;
- (b) the breach of a limit specified in the permit;
- (c) any significant adverse environmental effects

- 4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 6 to this permit within the time period specified in that schedule.
- 4.3.3 Prior written notification shall be given to the Agency of the following events and in the specified timescales:
- (a) as soon as practicable prior to the permanent cessation of any of the activities;
  - (b) cessation of operation of part or all of the activities for a period likely to exceed 1 year; and
  - (c) resumption of the operation of part or all of the activities after a cessation notified under (b) above.
- 4.3.4 The Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.
- 4.3.5 Where the 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 Agency when the relevant monitoring is to take place. The operator shall provide this information to the Agency at least 14 days before the date the monitoring is to be undertaken.
- 4.3.6 The Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:
- (a) any change in the operator's trading name, registered name or registered office address;
  - (b) any change to particulars of the operator's ultimate holding company (including details of an ultimate holding company where an operator has become a subsidiary); and
  - (c) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.
- 4.3.7 Where the operator has entered into a direct participant agreement in the emissions trading scheme which covers emissions relating to the energy consumption of the activities, the operator shall notify the Agency within one month of:
- (a) a decision by the operator to withdraw from or the Secretary of State to terminate that agreement.
  - (b) a failure to comply with an annual target under that agreement at the end of the trading compliance period.

## **Notification of closure of Large Combustion Plant**

- 4.3.8 From 1 January 2008 the operator shall inform the Agency in writing of the intended closure of any LCP, giving as much notice as possible before closure.

## **4.4 Interpretation**

- 4.4.1 In this permit the expressions listed in schedule 7 shall have the meaning given in that schedule.

# Schedule 1 - Operations

Table S1.1 activities		
Activity listed in Schedule 1 of the PPC Regulations	Description of specified activity	Limits of specified activity
S1.1 A(1) (a)	Burning any fuel in an appliance with a rated thermal input of 50MW or more	Refinery fuel gas (including the cryogenic unit) and natural gas supply systems to combustion units and any associated activities necessary to maintain the operation of the plant and fuel supplies through to the discharge of exhaust gases from the stacks, abatement plant and the export of steam to the steam systems, including: <ul style="list-style-type: none"> <li>(i) Onsite 24MWe CHP unit (GTA 711, GTA 712, GTA 713 and GTA 714)</li> </ul>
S1.2 A(1) (g)	Refining mineral oil (Primary operations)	From feed to oil refining unit to use, including each of the following units: <ul style="list-style-type: none"> <li>(i) #1 vacuum distillation unit (#1 VDU), including process heater</li> <li>(ii) #2 vacuum distillation unit (#2 VDU), including process heater</li> <li>(iii) #3 vacuum distillation unit (#3 VDU), including process heater</li> <li>(iv) Gas oil hydrodesulphurisation unit (GOHDS), including process heater</li> <li>(v) Heavy oil filtration unit</li> <li>(vi) #1 Calciner including coke handling, storage and rail/road loading, and petroleum coke unloading, handling, storage and loading area (including flare pad)</li> <li>(vii) #2 Calciner including coke handling, storage and rail/road loading, and petroleum coke unloading, handling, storage and loading area (including flare pad)</li> <li>(viii) #3 Calciner including coke handling, storage and rail/road loading, and petroleum coke unloading, handling, storage and loading area (including flare pad)</li> <li>(ix) Virgin hydrodesulphurisation unit (VHDS), including process heaters</li> <li>(x) Cracked hydrodesulphurisation unit (CHDS), including process heaters</li> <li>(xi) Diesel hydrodesulphurisation unit (DHDS), including process heaters</li> <li>(xii) Gasoline hydrodesulphurisation unit (GHDS), including process heater</li> <li>(xiii) Penex unit, including process heater</li> <li>(xiv) Saturated gas plant (SGP)</li> <li>(xv) Cracked gas plant (CGP) including CPU Merox , Selective Hydrogenation Process (SHP-2), and flare gas recovery compressors</li> <li>(xvi) Catalytic reforming unit #2 (CRU-2), including process heaters and hydrogen system</li> <li>(xvii) Catalytic reforming unit #3 (CRU-3), including process heaters and hydrogen system</li> <li>(xviii) Pressure swing adsorber (PSA)</li> <li>(xix) Aromatics extraction unit (AEU)</li> <li>(xx) Fluid catalytic cracking unit (FCCU), process heaters, FCCU gasoline heart-cut treatment (Minalk</li> </ul>

		<p>system) and selective hydrogenation unit</p> <p>(xxi) Propylene recovery unit (PRU) including PRU Merox and selective hydrogenation process (SHP-1)</p> <p>(xxii) Vapour recovery unit (VRU) including VRU Merox (Minalk)</p> <p>(xxiii) Alkylation Unit including process heater and Butamer unit</p> <p>(xxiv) Thermal cracking unit (TCU) including process heater</p> <p>(xxv) GTA 706</p>
	Refining mineral oil (Secondary operations – oil movements and blending)	From receipt of feed, through blending (where necessary) to feed, intermediate and product storages and export including: liquified petroleum gases, white oils (including rail loading of petrol/diesel and petrol vapour recovery unit), heavy gas oils and other black oils, slops, etc. in support of the above primary operations.
S1.2 A(1) (h) (i)	The handling, storage and physical/ thermal treatment of crude oil	<p>From receipt and storage of crude (including unloading from road tankers and blending of slops) to operation of crude distillation units, including:</p> <p>(i) #1 Crude topping unit (#1 CTU), process heater and associated feed and product system for this activity</p> <p>(ii) #2 Crude topping unit (#2 CTU), process heater, kerosene treatment and associated feed and product system for this activity</p>
S1.2 A(1) (j)	Carbonisation activities applied to oils or other carbonaceous materials.	<p>From feed to unit to discharge to further processing including:</p> <p>(i) #1 Coker, process heaters and green coke storage pit</p> <p>(ii) #2 Coker, process heaters and green coke storage pit</p>
S4.1 A(1)(a) (i)	Producing organic chemicals, such as aromatic hydrocarbons	Hydro de-alkylation unit (HDA), for the manufacture of benzene, process heaters and associated feed and product storage/export system for this activity
S4.1 A(1) (a) (ii)	Producing organic compounds containing oxygen, such as ethers.	<p>From receipt of raw materials to the manufacture, storage and despatch of finished product. (including the cleaning of the process plant, operation of abatement systems and the storage and handling of waste arising from the process). Production plants covered include:</p> <p>(a) Dimethylether unit (DME), unloading and storage of methanol feed and storage and loading of product.</p>
S4.2 A(1) (a) (v)	Producing inorganic chemicals such as non-metals (e.g. sulphur)	<p>Sulphur recovery unit plant (with associated amine systems, amine recovery unit, sour water stripper units), including:</p> <p>(i) #1 Sulphur recovery unit (#1 SRU) with tail-gas incineration and storage/loading of products</p> <p>(ii) #2 Sulphur recovery unit (#2 SRU) with SuperClaus unit, tail gas incineration and storage/loading of products</p>
S5.3 A(1) (a)	Disposal of hazardous waste in a facility with a capacity of more than 10 tonnes per day (by biological treatment)	Treatment in the main biological effluent treatment plant (ETP), including oil water separators, IAF units, activated sludge unit, #1, #2, #3 and Alkylation holding ponds, storage of sludge and waste receipt detailed in table 3.2.
S5.3 A(1) (c) (ii)	Disposal of non-hazardous waste in a facility with a capacity of more than 50 tonnes per day by physico-chemical treatment.	Physical treatment of South tank farm (STF) surface waters in oil-water separator, including bund/surface water collection systems and holding pond

<b>Directly Associated Activity</b>		
Flaring of gases	Burning of sour and sweet gases at flares.	Flare headers, knock-out pots and flare stacks and any ancillary equipment. Includes closed Blowdown system.
Cooling water systems	Systems used for cooling.	All cooling water systems including storage, pipelines and equipment, to discharge to ETP.
Lagoons	The holding or temporary storage of water, effluents or oil-based liquids for settling (sedimentation) or other purposes	The feed point to the lagoon(s), the lagoon(s) and its drainage point.
Surface water drainage	Collection and handling of surface waters within installation	Handling and storage of site drainage until discharge to the site waste water treatment system or to discharge off-site.
Water treatment	All water treatment activities	From receipt of raw materials to dispatch to effluents to sewer or site waste water treatment system.

**Table S1.2 Operating techniques**

<b>Description</b>	<b>Parts</b>	<b>Date Received</b>
Application	The response to section 2.1 to 2.2.	24/08/06
Response to Schedule 4 Notice dated 08/12/06	Response to Q1 – 2 subject to the limits set in Schedule 4.1 Response to Q3 – 5 subject to the conditions in schedule 1.3	09/02/07 09/02/07
Response to Schedule 4 Notice dated 03/04/07	Response to FCCU Regenerative Scrubbing BAT review.	15/05/07
Additional information	Application Resubmission – The revised response to sections 2.1 to 2.2, and consolidation of the Schedule 4 responses.	24/08/07

**Table S1.3 Improvement programme requirements**

Reference	Requirement	Date
IC1	<p>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 to air 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.</p> <p>The procedure shall be implemented by the operator from the date of approval by the Agency</p>	01/04/08
IC2	<p>A written plan shall be submitted to the Agency for approval detailing the results of a survey of hard-standing, kerbing and secondary containment for raw material, intermediate, product and waste storage areas and the measures to comply with the requirements of section 2.2.5 of TGN S 1.02. Where appropriate the plan shall contain dates for the implementation of individual measures. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan.</p> <p>The plan shall be implemented by the operator from the date of approval by the Agency.</p>	01/04/09
IC3	<p>A written plan shall be submitted to the Agency for approval detailing the results of a survey of bunding and other secondary containment measures for raw materials, intermediates, products and waste storage areas and the measures to meet the requirements of section 2.2.2 and 2.2.3 of Sector Guidance Note S 1.02. Where appropriate the plan shall contain dates for the implementation of individual measures. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan.</p> <p>The plan shall be implemented by the operator from the date of approval by the Agency.</p>	01/07/10
IC4	<p>A written plan shall be submitted to the Agency for approval detailing the measures to be taken to achieve a sulphur recovery efficiency of 99.5% in accordance with the Sector Guidance Note S 1.02. The plan shall contain dates for the implementation of individual measures. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan.</p> <p>The plan shall be implemented by the operator from the date of approval by the Agency.</p>	01/10/08
IC5	<p>A written plan shall be submitted to the Agency for approval detailing the measures to be taken to achieve a reduction in the sulphur dioxide emission concentration from the FCCU regenerator. Where appropriate the plan shall contain dates for the implementation of individual measures. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan.</p> <p>The plan shall be implemented by the operator from the date of approval by the Agency.</p>	01/03/08
IC6	<p>A written plan shall be submitted to the Agency for approval detailing the work to be undertaken to carry out Leak Detection and Repair across all plant and pipework at the refinery installation. The plan shall include work necessary to bring the LDAR monitoring status at the installation to Tier 1, Tier 2 and Tier 3 versus the USEPA Method 21, all within 4 years.</p> <p>Where appropriate the plan shall contain dates for the implementation of individual measures. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan.</p> <p>The plan shall be implemented by the operator from the date of approval by the Agency.</p>	01/07/09
IC7	<p>A written procedure shall be submitted to the Agency detailing the measures to be used so that monitoring equipment and sampling for the emissions to water 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.</p> <p>The procedure shall be implemented by the operator from the date of approval by the Agency</p>	01/04/09
IC8	<p>A written plan shall be submitted to the Agency for approval detailing the measures to be taken to reduce oxides of nitrogen (NOx) emissions from the refinery installation. Where appropriate the plan shall contain dates for the implementation of individual measures. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan.</p>	01/03/09

	The plan shall be implemented by the operator from the date of approval by the Agency.	
IC9	A written plan shall be submitted to the Agency for approval detailing the implementation programme for continuous monitoring of SO <sub>2</sub> and NO <sub>x</sub> for release points A9 and A11. The notification requirements of 2.5.2 shall be deemed to have been complied with on submission of the plan.	01/04/08
	The plan shall be implemented by the operator from the date of approval by the Agency.	
IC10	A written evaluation shall be submitted to the Agency for approval detailing the technical and economic feasibility of installing liquid ring pumps on VDU1 and VDU2. Where appropriate the plan shall contain dates for the implementation of various measures. The notification requirements of 2.5.2 shall be deemed to have been complied with on submission of the plan.	01/04/11
	The plan shall be implemented by the operator from the date of approval by the Agency.	
IC11	A written report shall be submitted to the Agency for approval detailing the findings of a water use audit. Where appropriate the report shall contain dates for the implementation of individual measures. The notification requirements of 2.5.2 shall be deemed to have been complied with on submission of the plan.	01/04/09
	The plan shall be implemented by the operator from the date of approval by the Agency.	
IC12	A written report shall be submitted to the Agency giving details of any hydrocarbon-containing wastes that are currently disposed of. The report shall include a proposed plan and programme, for approval by the Agency, for the introduction of any techniques necessary to ensure the following in relation to the above wastes: (a) prevention or reduction of waste arisings, (b) recovery and/or recycling of any wastes that do arise, and (c) disposal of any wastes for which recovery is technically and economically possible is carried out in a way that avoids or reduces any impact on the environment.  Where appropriate the plan shall contain dates for the implementation of individual measures. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan.	01/06/08
	The plan shall be implemented by the operator from the date of approval by the Agency.	
IC13	A written evaluation shall be submitted to the Agency for approval detailing the potential for reuse or recovery for the following waste streams  (a) Sodium hydroxide containing sodium naphthenate (b) Potassium hydroxide containing fluoride  Where appropriate the plan shall contain dates for the implementation of individual measures. The notification requirements of 2.5.2 shall be deemed to have been complied with on submission of the plan.	01/04/12
	The plan shall be implemented by the operator from the date of approval by the Agency	
IC14	A written report shall be submitted to the Agency for approval detailing the ambient benzene levels around the installation, and an evaluation made of the the technical and economic feasibility of options to reduce emissions.  Where appropriate the report shall contain dates for the implementation of individual measures. The notification requirements of 2.5.2 shall be deemed to have been complied with on submission of an implementation plan.	Interim response 01/02/09  Final response 01/10/09
	The plan shall be implemented by the operator from the date of approval by the Agency	
IC15	A written report shall be submitted to the Agency for approval detailing the ambient VOC levels other than benzene around the installation for VOCs considered significant in the application H1 assessment, and an evaluation made of the the technical and economic feasibility of options to reduce emissions.  Where appropriate the report shall contain dates for the implementation of individual measures The notification requirements of 2.5.2 shall be deemed to have been complied with on submission of an implementation plan	Interim response 01/02/09  Final response 01/10/11
	The plan shall be implemented by the operator from the date of approval by the Agency	
IC16	A written evaluation shall be submitted to the Agency for approval detailing the technical and economic feasibility of improving the dispersion of releases to air from release point A11.	01/04/08



Where appropriate the plan shall contain dates for the implementation of individual measures. The notification requirements of 2.5.2 shall be deemed to have been complied with on submission of the plan.

	The plan shall be implemented by the operator from the date of approval by the Agency	
IC17	A written plan shall be submitted to the Agency for approval detailing the installation of continuous SO <sub>2</sub> and NO <sub>x</sub> monitors for release points A1, A3 and A5 at the refinery installation.	01/02/08
	The plan shall contain dates for the implementation of individual measures. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan.	
	The plan shall be implemented by the operator from the date of approval by the Agency	
IC18	A written plan shall be submitted to the Agency for approval detailing the technical and economic feasibility of returning a FCCU expander back into service.. Where appropriate the plan shall contain dates for the implementation of individual measures. The notification requirements of 2.5.2 shall be deemed to have been complied with on submission of the plan.	01/03/08
	The plan shall be implemented by the operator from the date of approval by the Agency	
IC 19	A written report shall be submitted to the Agency for approval detailing the measures proposed to improve the hourly estimation of normalised flue gas volumes from release points A6, A8, A9 and A11.	01/07/08
	Where appropriate the report shall contain dates for the implementation of individual measures. The notification requirements of 2.5.2 shall be deemed to have been complied with on submission of an implementation plan.	
	The plan shall be implemented by the operator from the date of approval by the Agency	

**Table S1.4 Appropriate measures for fugitive emissions**

Measure	Dates
The operator shall maintain a managed LDAR programme for testing potential sources of fugitive emissions of VOCs from operational plant at the installation, as described in Section 2.2.4 of the application. The operator shall complete repairs and/or carry out other actions to prevent, or where that is not possible, minimise continued emissions from those sources.	From date of permit issue

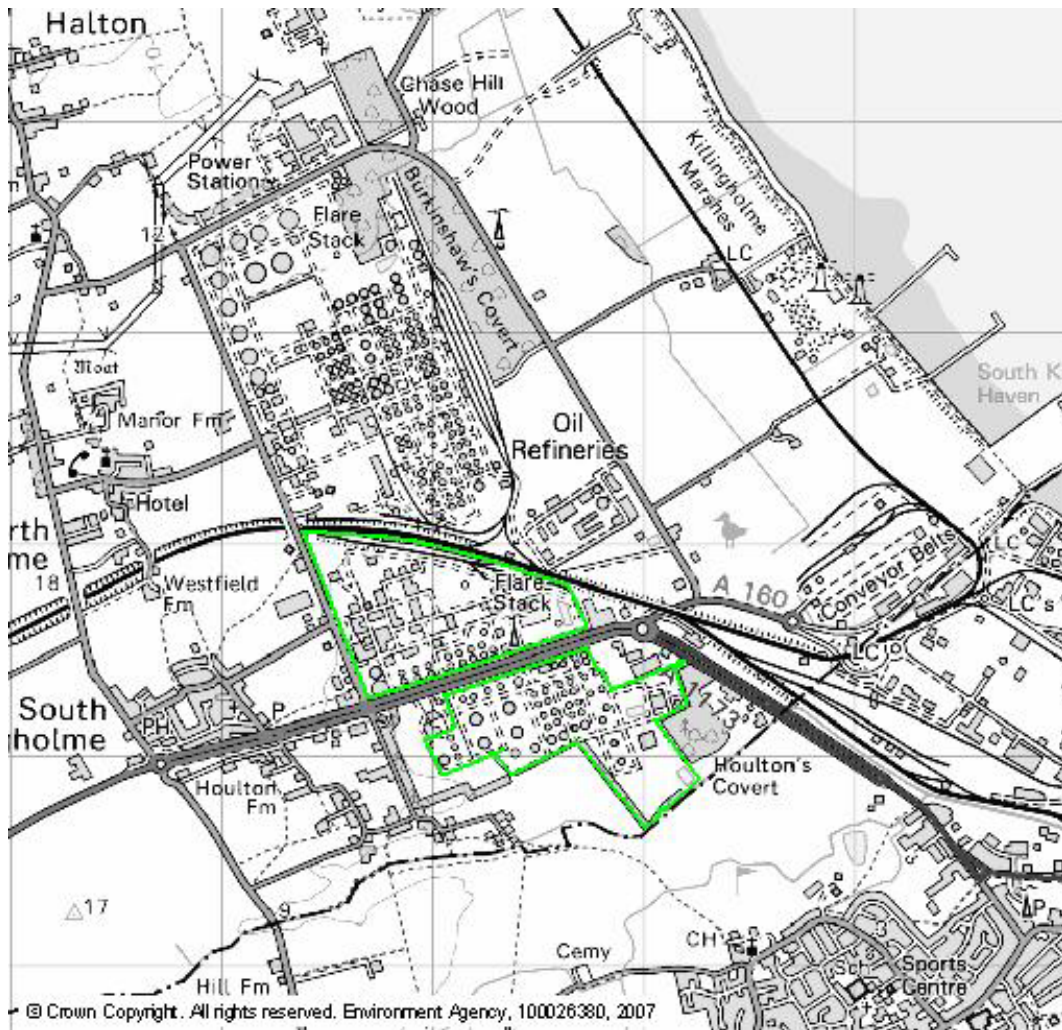
**Table S1.5 Appropriate measures for odour**

Measure	Dates
The operator shall maintain the odour management plan as described in section 2.2.6 of the application.	From date of permit issue.
The operator shall review the plan annually and record at least once a year or as soon as practicable after a complaint (whichever is the earlier), whether changes to the plan should be made and make any appropriate changes to the plan identified by a review.	

**Table S1.6 Appropriate measures for noise**

Measure	Dates
The operator shall maintain the noise management plan as described in section 2.9 of the application.	From date of permit issue.
The operator shall review the plan annually and record at least once a year or as soon as practicable after a complaint (whichever is the earlier), whether changes to the plan should be made and make any appropriate changes to the plan identified by a review.	

## Schedule 2 - Site plan



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## Schedule 3 - Waste types, raw materials and fuel

**Table S3.1 Raw materials and fuels**

Raw materials and fuel description	Specification
Refinery fuel gas (RFG)	Less than 200 ppmv sulphur as H <sub>2</sub> S (daily avg)

**Table S3.2 Permitted waste types and quantities for Effluent Treatment Plant**

Maximum quantity	Rate to be controlled to comply with the limits in Table S4.2
Waste code	Description
05 01 09*	Oily Water Separator Sludge (Tetney and Ocean Terminal)
16 07 08*	Tetney Roof Seal decontamination effluent
16 10 02	Humber LPG Caverns pigging water/Ocean Terminal Tank Water Bottoms
10 01 19	ICHP fuel gas knockout pot condensate
16 10 01*	Ocean Terminal Gasoline tank, water bottoms

## Schedule 4 – Emissions and monitoring

**Table S4.1 Point source emissions to air – emission limits and monitoring requirements**

Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference Period	Monitoring frequency	Monitoring standard or method	
A1	ST 101	Sulphur dioxide	No limit set <small>Note 2, 7</small>	Hourly	Continuous Note 1	BS EN14181	
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set <small>Note 2</small>	Annually	Continuous Note3	BS EN14181	
		Particulate	No limit set <small>Note 2</small>	Annually	-	Agreed Factor	
A2	ST 102	Sulphur dioxide	No limit set <small>Note 7</small>	Hourly	Continuous	Note 1	
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set <small>Note 2</small>	Average over sampling period	Annually Note 9	ISO 10849	
		Particulate	No limit set	-	-	-	
A3	ST 201	Sulphur dioxide	No limit set <small>Note 2, 7</small>	Hourly	Continuous Note 1	BS EN14181	
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set <small>Note 2</small>	Annually	Continuous Note3	BS EN14181	
		Particulate	No limit set <small>Note 2</small>	Annually	-	Agreed Factor	
A4	ST 202	Sulphur dioxide	No limit set <small>Note 7</small>	Hourly	Continuous	Note 1	
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set	Hourly	Continuous Note 9	BS EN14181	
		Particulate	No limit set	-	-	-	
A5	ST 301	Sulphur dioxide	No limit set <small>Note 2, 7</small>	Hourly	Continuous Note 1	BS EN14181	
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set <small>Note 2</small>	Annually	Continuous Note3	BS EN14181	
		Particulate	No limit set <small>Note 2</small>	Annually	-	Agreed Factor	
A6	ST3401	Sulphur dioxide	2000 mg/Nm <sup>3</sup>	Hourly	Continuous	Note 1	
			0.33 t/h	Hourly	Continuous	Note 1	
A6a	ST 3401	Sulphur dioxide	No limit set <small>Note 2, 7</small>	Average over sampling period	6 monthly	BS 6069 - 4.4	
		LCP	Oxides of nitrogen (as NO <sub>2</sub> )	No limit set <small>Note 2</small>	Average over sampling period	6 monthly Note 9	ISO 10849
			Particulate	No limit set <small>Note 2</small>	Annually	-	Agreed Factor
A6b	ST3401	Sulphur dioxide	No limit set	Hourly	Continuous	BS EN14181	
		FCCU Regenerator	Oxides of nitrogen (as NO <sub>2</sub> )	300 mg/Nm <sup>3</sup>	Daily	Continuous	BS EN14181
			Particulate	100 mg/Nm <sup>3</sup>	Daily	Continuous	Dust Density
				<small>Note 11</small>	-	-	CEMs Calibration
CO	200 mg/Nm <sup>3</sup>	Daily	Continuous	BS EN14181			
A7	ST 3501	Sulphur dioxide	No limit set <small>Note 7</small>	Hourly	Continuous	Note 1	

		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set <sup>Note 2</sup>	Average over sampling period	Annually Note 9	ISO 10849
		Particulate	No limit set	-	-	-
A8	ST 401	Sulphur dioxide	55000 mg/Nm <sup>3</sup>	Hourly	Continuous	Note 1
			0.42 t/h	Hourly	Continuous	Note 1
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set	-	-	-
A9	ST 5601	Sulphur dioxide	1700 mg/Nm <sup>3</sup>	Hourly	Continuous	BS EN14181 Notes 1, 6
			0.16 t/h	Hourly	Continuous	BS EN14181 Notes 1, 6
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set <sup>Note 4</sup>	Hourly	Continuous	BS EN14181 Note 6
		Particulate	150 mg/Nm <sup>3</sup>	Daily	Continuous	Dust Density
				-	CEMs Calibration	BS ISO 9096
A10	ST 6001	Sulphur dioxide	35 mg/Nm <sup>3</sup>	Monthly	Continuous	BS EN14181 Note 1
		Oxides of nitrogen (as NO <sub>2</sub> )	300 mg/Nm <sup>3</sup>	Monthly	Continuous	BS EN14181
		Particulate	5 mg/Nm <sup>3</sup>	Daily	Continuous	Agreed Factor
A11	ST 601	Sulphur dioxide	1700 mg/Nm <sup>3</sup>	Hourly	Continuous	BS EN14181 Note 1, 6
			0.2 t/h	Hourly	Continuous	BS EN14181 Note 1, 6
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set <sup>Note 4</sup>	Hourly	Continuous	BS EN14181 Note 6
		Particulate	150 mg/Nm <sup>3</sup>	Daily	Continuous	Dust Density
				-	CEMs Calibration	BS ISO 9096
A12	ST 602	Particulate	230 mg/Nm <sup>3</sup>	Daily	Continuous	Dust Density
A13	ST 701	Sulphur dioxide	No limit set <sup>Note 7</sup>	Hourly	Continuous	Note 1
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set	Average over sampling period	Annually Note 9	ISO 10849
A14	ST 703	Sulphur dioxide	No limit set <sup>Note 7</sup>	-	-	-
		Oxides of nitrogen (as NO <sub>2</sub> )	125 mg/Nm <sup>3</sup> <sup>Note 8</sup>	Daily	Continuous	-
		Particulate	5 mg/Nm <sup>3</sup>	Daily	Continuous	Agreed Factor
A15	ST801	VOC's	35 g/m <sup>3</sup> <sup>Note 5</sup>	Daily	Continuous	Infrared Absorption
A16	H 4102	Sulphur dioxide	No limit set <sup>Note 7</sup>	Hourly	Continuous	Note 1
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set	Average over sampling period	Annually Note 9	ISO 10849

		Particulate	No limit set	-	-	-
A17	H 571	Sulphur dioxide	No limit set <sup>Note 7</sup>	Hourly	Continuous	Note 1
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set	Average over sampling period	Annually <sup>Note 9</sup>	ISO 10849
		Particulate	No limit set	-	-	-
A18	H 572	Sulphur dioxide	No limit set <sup>Note 7</sup>	Hourly	Continuous	Note 1
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set	Average over sampling period	Annually <sup>Note 9</sup>	ISO 10849
		Particulate	No limit set	-	-	-
A19	H 6301/2	Sulphur dioxide	No limit set <sup>Note 2, 7</sup>	Hourly	Continuous	Note 1
				Average over sampling period	6 monthly	BS 6069 - 4.4
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set <sup>Note 2</sup>	Average over sampling period	6 monthly <sup>Note 9</sup>	ISO 10849
		Particulate	No limit set <sup>Note 2</sup>	Annually	-	Agreed Factor
A20	H 6303/4/5	Sulphur dioxide	No limit set <sup>Note 7</sup>	Hourly	Continuous	Note 1
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set	Average over sampling period	Annually <sup>Note 9</sup>	ISO 10849
		Particulate	No limit set	-	-	-
A21	No 1 Flare	Sulphur dioxide	0.4 t/h equivalent	15 minutes	-	Note 1
A22	No 3 Flare	Sulphur dioxide	0.7 t/h equivalent	15 minutes	-	Note 1
A23	H 151	Sulphur dioxide	No limit set <sup>Note 7</sup>	Hourly	Continuous	Note 1
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set	Average over sampling period	Annually <sup>Note 9</sup>	ISO 10849
		Particulate	No limit set	-	-	-
A24	H 501	Sulphur dioxide	No limit set <sup>Note 7</sup>	Hourly	Continuous	Note 1
		Oxides of nitrogen (as NO <sub>2</sub> )	No limit set	Average over sampling period	Annually <sup>Note 9</sup>	ISO 10849
		Particulate	No limit set	-	-	-
A25	PSV3671	HF	No Release Permitted	-	-	-
A26	PSV3680	Tetrachloro ethene	No Release Permitted	-	-	-
A27	PSV T502	Tetrachloro ethene	No Release Permitted	-	-	-
A28	AEU PSVs	Benzene	No Release Permitted	-	-	-
		Toluene	No Release Permitted	-	-	-
A28	W801	-	-	-	-	-
A30	W781 HOBD	VOCs (Class B)	No limit set	-	-	-

A31	D6305 CR2 Regen	VOCs (Class B)	No limit set	-	-	-
A32	D6004 CR3 Regen	VOCs (Class B)	No limit set	-	-	-
A33	ST4401 Amine filtration	Water vapour	No limit set	-	-	-
A34	D5422 Merox CPU	VOCs (Class B)	No limit set	-	-	-
A35	D3609 Merox PRU	VOCs (Class B)	No limit set	-	-	-
A36	Coking/Calciner silo vents and solid handling system vents	Particulate	Non visible	Average over Assessment Period	Daily	-
A37	Hydrocarbon Storage Tank Vents	VOCs (Class B)	No limit set	-	-	Note 10
A38	PSVs/PRVs	VOCs (Class A)	No Release Permitted	-	-	-
		Benzene	No Release Permitted	-	-	-

Note 1 Continuous estimate of releases based on the method agreed with the Agency. Reference conditions for normalised flow (3% O<sub>2</sub>, dry).

Note 2 Releases controlled under the NERP, monitoring for NERP reporting requirements only.

Note 3 NERP reporting basis finalised following completion of condition IC17.

Note 4 Limit to be agreed following completion of condition IC9.

Note 5 Limit does not apply when PSVs 8202/8203/8204 are releasing VOCs.

Note 6 Monitoring method to be revised to BS EN14181 following completion of condition IC9.

Note 7 RFG limit in table 3.1 provides control.

Note 8 A limit of 145 mg/m<sup>3</sup> applies during supplementary firing.

Note 9 Monitoring required for compliance with reporting condition 4.2.1 (h)

Note 10 Based on the USEPA method 21.

Note 11 The limit does not apply at start up and shutdown.

**Table S4.1a Point Source emissions to air – bubble emission limit and monitoring requirements**

Release Points	Parameter	Sources	Bubble Limit	Reference Period	Monitoring frequency	Method
A1-A11 A16-A20 A23-A24	Sulphur Dioxide	FCCU SRUs Calciners Heaters	1000 mg/Nm3	Hourly	Continuous	Table S4.1 Note 1 applies
			1.04 t/h			
A1-A11 A16-A24		FCCU SRUs Calciners Heaters Flares	1.13 t/h			



**Table S4.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements**

Emission point ref. & location	Parameter	Source	Limit (incl. unit)	Reference Period	Monitoring frequency	Monitoring standard or method
W1 on site plan in schedule 2 emission to Harborough Marsh Drain	COD	South Tank Farm	125 mg/l			METH 423 BS ISO 15705-2002
	Oil	Surface Water	15 mg/l	Instantaneous	Monthly	METH 410 IP426
W2a/W2b on site plan in schedule 2 emission to South Killingholme Drain	Flow (Dry Weather)		16000 m <sup>3</sup>	Day	Continuous	BS 3680
	Temperature		30°C	Hourly	Continuous	Thermometer
	pH		5 – 9			Meter
	TOC		50 mg/l	Instantaneous	Daily	METH 421/422 BS EN 1484:1997
	Oil		5 mg/l			METH 410 IP426
	COD		200 mg/l			METH 423 BS ISO 15705-2002
	Ammoniacal Nitrogen	Effluent Treatment Plant	10 mg/l	Time related 24h composite	Weekly	METH 414/417 BS6068 2.33 – 1987 ISO7150/2 – 1986
	Phenols		0.5 mg/l			METH 416 BS EN ISO 14402
	Fluoride		20 mg/l			METH 426 Hach 8029 – EPA340.1
	Sulphide		0.25 mg/l			METH 415/418 EPA 376.2
	Suspended Solids		30 mg/l			METH 407 BS EN 872 – 2005
	Cyanide		-			METH 420 ASTM D2036
	Arsenic		15 µg/l			BS EN ISO 11969 EPA3015
	Cadmium		10 µg/l	Instantaneous	Quarterly	BS EN ISO 15586 EPA3015
	Chromium		250 µg/l			
	Copper		100 µg/l			
Lead		250 µg/l				
Mercury		0.5 µg/l				
Nickel		250 µg/l				
Zinc		750 µg/l				

**Table S4.4(a) Annual limits**

Substance	Medium	Limit (including unit)
Sulphur dioxide 2008-2015 inclusive	Air	6300 tonnes
Sulphur dioxide 2016 onwards	Air	4500 tonnes

**Table S4.4(b) LCPD Annual limits (Excluding start up and shut down except where otherwise stated).**

Substance	Medium	Limit (including unit)	Release Points	
Particulate matter, Sulphur dioxide and Oxides of nitrogen	Air	Assessment year	LCP NERP Limit	A1 – LCP Ref 9
		01/01/08-31/12/08 and subsequent years until 31/12/15	Emission allowance figure shown in the NERP Register as at 30 April the following year	
Particulate matter, Sulphur dioxide and Oxides of nitrogen	Air	Assessment year	LCP NERP Limit	A5 – LCP Ref 10
		01/01/08-31/12/08 and subsequent years until 31/12/15	Emission allowance figure shown in the NERP Register as at 30 April the following year	
Particulate matter, Sulphur dioxide and Oxides of nitrogen	Air	Assessment year	LCP NERP Limit	A3 – LCP Ref 11
		01/01/08-31/12/08 and subsequent years until 31/12/15	Emission allowance figure shown in the NERP Register as at 30 April the following year	
Particulate matter, Sulphur dioxide and Oxides of nitrogen	Air	Assessment year	LCP NERP Limit	A6a – LCP Ref 12
		01/01/08-31/12/08 and subsequent years until 31/12/15	Emission allowance figure shown in the NERP Register as at 30 April the following year	
Particulate matter, Sulphur dioxide and Oxides of nitrogen	Air	Assessment year	LCP NERP Limit	A19 – LCP Ref 13
		01/01/08-31/12/08 and subsequent years until 31/12/15	Emission allowance figure shown in the NERP Register as at 30 April the following year	

**Table S4.8 Process monitoring requirements**

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
SRU Survey	Performance Evaluation	Every 2 years	Not applicable	
RFG on-line analyser	H2S	Continuous	Not applicable	

## Schedule 5 - Reporting

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

**Table S5.1 Reporting of monitoring data**

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air – sulphur dioxide Parameters as required by condition 3.6.1.	A1-A11, A13, A14, and A16-A24.	Every 3 months	01/01/08
Emissions to air – oxides of nitrogen Parameters as required by condition 3.6.1.	A1-A11, A13, A14, A16-A20 and A23-A24	Every 3 months	01/01/08
Emissions to air – particulate matter Parameters as required by condition 3.6.1.	A1-A7, A9-A12, A14, A16-A20 and A23-A24	Every 3 months	01/01/08
Emissions to air – VOCs Parameters as required by condition 3.6.1.	A15	Every 12 months	01/01/08
Emissions to water – oil Parameters as required by condition 3.6.1	W1 and W2a/b	Every 3 months	01/01/08
Emissions to water – COD Parameters as required by condition 3.6.1	W1 and W2a/b	Every 3 months	01/01/08
Emissions to water – Flow Parameters as required by condition 3.6.1	W2a/b	Every 3 months	01/01/08
Emissions to water – Temperature Parameters as required by condition 3.6.1	W2a/b	Every 3 months	01/01/08
Emissions to water – pH Parameters as required by condition 3.6.1	W2a/b	Every 3 months	01/01/08
Emissions to water – TOC Parameters as required by condition 3.6.1	W2a/b	Every 3 months	01/01/08
Emissions to water – Suspended Solids Parameters as required by condition 3.6.1	W2a/b	Every 3 months	01/01/08
Emissions to water – Ammoniacal Nitrogen Parameters as required by condition 3.6.1	W2a/b	Every 3 months	01/01/08
Emissions to water – Phenols Parameters as required by condition 3.6.1	W2a/b	Every 3 months	01/01/08
Emissions to water – Sulphides Parameters as required by condition 3.6.1	W2a/b	Every 3 months	01/01/08
Emissions to water – Fluorides Parameters as required by condition 3.6.1	W2a/b	Every 3 months	01/01/08
Emissions to water – Cyanides Parameters as required by condition 3.6.1	W2a/b	Every 3 months	01/01/08
Emissions to water – Heavy Metals Parameters as required by condition 3.6.1	W2a/b	Every 3 months	01/01/08

**Table S5.2: Annual production/treatment**

Parameter	Units
Road and other transport fuels	Tonnes
Non-transport / heating fuels	Tonnes
Chemical / petrochemical feedstocks	Tonnes
Bitumen / petcoke / other heavy-end products	Tonnes

**Table S5.3 Performance parameters**

Parameter	Frequency of assessment	Units
LCPD Annex VIII(B) mass releases of SO <sub>2</sub> , NO <sub>x</sub> and Dust	Annually	Tonnes
LCPD Annex VIII(B) energy useage by fuel type	Annually	GJ
LCPD NERP mass releases of SO <sub>2</sub> , NO <sub>x</sub> and Dust	Annually	Tonnes
LCPD NERP energy useage by fuel type	Annually	GJ
NO <sub>x</sub> Factors by fuel type	Annually	Kg/tonne
Crude oil and other hydrocarbons import (i.e. feedstocks)	Annually	Tonnes
Water usage	Annually	Tonnes
Energy usage (electrical)	Annually	MWh
Energy usage (all fuels)	Annually	MJ
Total release of oil to water per tonne of feedstock	Annually	g oil / 1000 tonnes feedstock

**Table S5.4 Reporting forms**

<b>Media/parameter</b>	<b>Reporting format</b>	<b>Date of form</b>
Air – LCPD SO <sub>2</sub> , NO <sub>x</sub> , Dust	Form Air – 1 Discontinuous monitoring or other form as agreed in writing by the Agency	01/01/08
Air – LCPD SO <sub>2</sub> , NO <sub>x</sub> , Dust	Form Air – 2 continuous monitoring or other form as agreed in writing by the Agency	01/01/08
Air – LCPD SO <sub>2</sub> , NO <sub>x</sub> , Dust	Form Air – 3 continuous measurement systems invalidation log or other form as agreed in writing by the Agency	01/01/08
Air – LCPD	Form Air – RTA 1 NERP LCP mass reporting or other form as agreed in writing by the Agency	01/01/08
Air - LCPD	Form Energy – AAE 1 NERP LCP annual energy useage	01/01/08
Air – LCPD Fuels used	Form Air – 4 Annual fuels used (in GJ, ncv basis) and mass release report for SO <sub>2</sub> , NO <sub>x</sub> , Dust for each LCP over 4 quarters to annual mass release report in accordance with Annex VIII B of the LCPD	01/01/08
Air – Fuels, Sulphur Balance, SRU performance	Form Air – 5 Refinery fuel analyses (daily average data – RFO, RFG), Refinery Sulphur Balance and SRU availability and efficiency	01/01/08
Air – FCCU SO <sub>2</sub> , NO <sub>x</sub> , CO, Dust	Form Air – 6 continuous monitoring or other form as agreed in writing by the Agency	01/01/08
Air - Flares	Form Air – 7 Report of the flaring rate and energy loss and SO <sub>2</sub> released from flaring.	01/01/08
Air - VOCs	Form Air – 8 Report of VOC losses [following the Institute of Petroleum protocol]	01/01/08
Air – VOCs	Form Air – 9 PRV VOC releases	01/01/08
Air - NO <sub>x</sub> Factors	Form Air - 10 NO <sub>x</sub> factor annual review	01/01/08
Air – SO <sub>2</sub> ELVs	Form Air – 11 SO <sub>2</sub> Hourly Stack ELVs and Refinery Bubble	01/01/08
Water	Form Water – 1 Daily. Flow, oil, pH, temperature and TOC	01/01/08
Water	Form Water – 2 Weekly. COD, Ammoniacal Nitrogen, phenols, sulphide, Fluoride and suspended solids.	01/01/08
Water	Form Water – 3 Quarterly Cyanide and Heavy Metals	01/01/08
Water usage	Form Water Usage1 or other form as agreed in writing by the Agency	01/01/08
Energy usage	Form Energy 1 or other form as agreed in writing by the Agency	01/01/08
Waste	Form Waste1 or other form as agreed in writing by the Agency	01/01/08
Other performance indicators	Form Performance 1 or other form as agreed in writing by the Agency Tables S5.2 and S5.3 indicators.	01/01/08

## Schedule 6 - 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 PPC Regulations.

### Part A

Permit Number	
Name of operator	
Location of Installation	
Time and date of the detection	

#### **(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission which has caused, is causing or may cause significant pollution**

##### **To be notified within 24 hours of detection**

Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

#### **(b) Notification requirements for the breach of a limit**

##### **To be notified within 24 hours of detection unless otherwise specified below**

Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

<b>Time periods for notification following detection of a breach of a limit</b>	
<b>Parameter</b>	<b>Notification period</b>

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

**Part B - to be submitted as soon as practicable**

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

<b>Name*</b>	
<b>Post</b>	
<b>Signature</b>	
<b>Date</b>	

\* authorised to sign on behalf of ConocoPhillips Ltd

## Schedule 7 - Interpretation

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

"*annually*" means once every year.

"*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 4 to the PPC Regulations.

"*assessment year*" means the 15 month period up to 31 March each year for NERP assessment and allocation transfer resolution.

"*authorised officer*" means any person authorised by the 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.

"*Sector Guidance Note*" means IPPC Sector Guidance Note on Gasification, Liquefaction and Refining Activities, IPPC S1.02.

"*CEM*" means continuous emission monitor.

"*CEN*" means Comité Européen de Normalisation.

"*Class A VOCs*" means as referenced in TGN M16 pg 5.

"*DSD*" means Dangerous Substances Directive.

"*emissions to land*", includes emissions to groundwater.

"*FCCU*" means fluidised catalytic cracking unit.

"*fugitive emission*" means an emission to air, water or land from the activities which is not controlled by an emission 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.

"*ISO*" means International Standards Organisation.

"*land protection guidance*", means Agency guidance "H7 - Guidance on the protection of land under the PPC Regime: application site report and site protection monitoring programme".

"*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 MWth or more, based on gross calorific value.

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

"*LCP plant closure*" means when the rated capacity of a LCP falls below 50 MWth



*“Invalid hourly average”* means an hourly average period invalidated due to malfunction of, or maintenance work being carried out on, the continuous measurement system. However, to allow some discretion for zero and span gas checking, or cleaning (by flushing), an hourly average period will count as valid as long as data has been accumulated for at least two thirds of the period (40 minutes). Such discretionary periods are not to exceed more than 5 in any one 24-hour period unless agreed in writing. Where plant may be operating for less than the 24-hour period, such discretionary periods are not to exceed more than one quarter of the overall valid hourly average periods unless agreed in writing.

*“invalid day”* means any day in which more than three hourly average values are invalid.

*“LDAR”*, means Leak Detection and Repair, a managed scheme and programme for testing potential sources of fugitive emissions, from operational plant at the installation, and repairing or carrying out other actions to prevent, or where that is not possible, minimise continued emissions from those sources. The LDAR programme at the installation shall be consistent with the requirements of the API Protocol.

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

*“METH”* means the Operator in house laboratory method reference that is in general accordance with the national/international standard quoted along with that standard.

*“National Emission Reduction Plan”* (NERP) is the plan issued by Defra in accordance with Article 4.6 of the Large Combustion Plants Directive and associated guidance

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

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

*“ncv”* means net calorific value.

*“notify without delay”* and *“notified without delay”* means that a telephone call can be used, whereas all other reports and notifications must be supplied in writing, either electronically or on paper.

*“PPC Regulations”* means the Pollution, Prevention and Control (England and Wales) Regulations SI 2000 No.1973 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

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

*“site protection and monitoring programme”* means a document which meets the requirements for site protection and monitoring programmes described in the Land Protection Guidance.

*“SRU”* means sulphur recovery unit.

*“SRU performance evaluation”* means measurement of process stream compositions, overall and inter-stage material balances, calculation of overall and inter-stage recovery efficiency, performance check of key equipment items [reaction furnaces, condensers, reheaters, converters (including superclaus), incinerator], key analyser performance checks and recommendations for unit performance improvements [including how to restore recovery to design capability]

“*hourly bubble*” means the average release concentration for the release points included within the bubble over a discrete one hour period.

“*t/h equivalent*” means for periods of flaring the total release in tonnes over any hour.

“Waste code” means the six digit code referable to a type of waste in accordance with the List of Wastes (England) Regulations 2005, or List of Wastes (Wales) Regulations 2005, as appropriate, and in relation to hazardous waste, includes the asterisk.

“*year*” means calendar year ending 31 December.

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:

- (a) 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
- (b) in relation to emissions from gas turbine and compression ignition engine 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 15% dry for liquid and gaseous fuels; and/or
- (c) 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

END OF PERMIT