

Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Total Lindsey Oil Refinery Limited

Total Lindsey Oil Refinery
Eastfield Road
North Killingholme
Immingham
North Lincolnshire
DN40 3LW

Variation application number

EPR/TP3633NH/V003

Permit number

EPR/TP3633NH

Total Lindsey Oil Refinery

Permit number EPR/TP3633NH

Introductory note

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

Under the Environmental Permitting (England & Wales) Regulations 2016 (schedule 5, part 1, paragraph 19) a variation may comprise a consolidated permit reflecting the variations and a notice specifying the variations included in that consolidated permit.

Schedule 1 of the notice specifies 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 2016 (the EPR).

This Permit, for the operation of an oil refinery which includes a 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. The IED makes special provisions for LCP under Chapter III, introducing new Emission Limit Values (ELVs) applicable to LCP, referred to in Article 30(2) and set out in Annex V.

The Operator has chosen to operate this LCP under the ELV compliance for LCP 355, LCP 356, LCP 357 and LCP 358.

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

- LCP 22 is changed to LCP 356
- LCP 23 is changed to LCP 357;
- LCP 24 is changed to LCP 358
- And LCP 26 is changed to LCP 355.

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

The Total Lindsey Oil Refinery is located at North Killingholme in North Lincolnshire and is operated by Total Lindsey Oil Refinery Limited. The refinery processes a mix of sour and sweet crudes for the production of fuels and bitumen.

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.

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 UP3430LQ	Duly made 11/08/06	
Additional information requested	08/12/06	
Additional Information received	02/02/07	
Additional Information requested	03/04/07	
Additional Information received	07/06/07	
Additional Information received	04/07/07	
Permit determined EPR/UP3430LQ	14/12/07	
Application EPR/TP3633NH/T001 (full transfer of permit EPR/UP3430LQ)	Duly made 21/03/13	Application to transfer the permit in full to Total Lindsey Oil Refinery Limited.
Transfer determined EPR/TP3633NH	26/03/13	Full transfer of permit complete.
Environment Agency variation determined EPR/TP3633NH/V002	25/06/13	Environment Agency variation to implement the changes introduced by IED.
Regulation 60 Notice sent to the Operator	05/08/15	Issue of a Notice under Regulation 60(1) of the EPR. Environment Agency Initiated review and variation to vary the permit.
Regulation 60 Notice response	30/09/15	Response received from the Operator.
Variation determined EPR/TP3633NH/V003 (PAS Billing ref: JP3230RN)	03/03/17	Varied permit issued.

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 2016 varies and consolidates

Permit number

EPR/TP3633NH

Issued to

Total Lindsey Oil Refinery Limited (“the operator”)

whose registered office is

**Eastfield Road
North Killingholme
Immingham
North Lincolnshire
DN40 3LW**

company registration number **564599**

to operate a regulated facility at

**Total Lindsey Oil Refinery
Eastfield Road
North Killingholme
Immingham
North Lincolnshire
DN40 3LW**

to the extent set out in the schedules.

The notice shall take effect from 03/03/2017

Name	Date
Tom Swift	03/03/2017

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 2016

Permit number

EPR/TP3633NH

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/TP3633NH/V003 authorising,

Total Lindsey Oil Refinery Limited (“the operator”),

whose registered office is

**Eastfield Road
North Killingholme
Immingham
North Lincolnshire
DN40 3LW**

company registration number 564599

to operate an installation at

**Total Lindsey Oil Refinery
Eastfield Road
North Killingholme
Immingham
North Lincolnshire
DN40 3LW**

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

Name	Date
Tom Swift	03/03/2017

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

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

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

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

1.2 Energy efficiency

1.2.1 The operator shall:

- (a) take appropriate measures to ensure that energy is used efficiently in the activities;
- (b) review and record at least every four 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.

1.3 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 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.

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

2.3.4 For the following activities referenced in schedule 1, table S1.1: LCP 355, LCP 356, LCP 357 and LCP 358. The end of the start up period and the start of the shutdown period shall conform to the specifications set out in Schedule 1, table S1.2.

2.3.5 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.

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

2.4 Improvement programme

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

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

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 and S3.2.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 Total annual emissions from the emission points set out in tables schedule 3 S3.1 and S3.2 of a substance listed in schedule 3 table S3.3 shall not exceed the relevant limit in table S3.3.
- 3.1.4 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 schedule 1 table S1.4, 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 schedule 1 table S1.5 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 and S3.2;
- (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 Newly installed Continuous Emission Monitors (CEMs), or CEMs replacing existing CEMs, shall have MCERTS certification and have an MCERTS certified range which is not greater than 2.5 times the daily emission limit value (ELV) specified in schedule 3 table S3.1. The CEM shall also be able to measure instantaneous values over the ranges which are to be expected during all operating conditions. If it is necessary to use more than one range setting of the CEM to achieve this requirement, the CEM shall be verified for monitoring supplementary, higher ranges.

3.5.5 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 and S3.2 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 the monitoring results for more than 10 days a year are invalidated within the meaning set out in condition 3.6.7, the operator shall:

- (a) within 28 days of becoming aware of this fact, review the causes of the invalidations and submit to the Environment Agency for approval, proposals for measures to improve the reliability of the continuous measurement systems, including a timetable for the implementation of those measures; and
- (b) implement the approved proposals.

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

3.6.4 Unless otherwise agreed in writing by the Environment Agency in accordance with condition 3.6.5 below, the operator shall carry out the methods, including the reference measurement methods, to

use and calibrate continuous measurement systems in accordance with the appropriate CEN standards.

- 3.6.5 If CEN standards are not available, ISO standards, national or international standards which will ensure the provision of data of an equivalent scientific quality shall be used, as agreed in writing with the Environment Agency.
- 3.6.6 Where required by a condition of this permit to check the measurement equipment, the operator shall submit a report to the Environment Agency in writing, within 28 days of the completion of the check.
- 3.6.7 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in schedule 3, table S3.1; the Continuous Emission Monitors shall be used such that:
- (a) for the continuous measurement systems fitted to the LCP release points defined in Table S3.1 the validated hourly, monthly and daily averages shall be determined from the measured valid hourly average values after having subtracted the value of the 95% confidence interval;
 - (b) the 95% confidence interval for nitrogen oxides and sulphur dioxide of a single measured result shall be taken to be 20%;
 - (c) the 95% confidence interval for dust releases of a single measured result shall be taken to be 30%;
 - (d) the 95% confidence interval for carbon monoxide releases of a single measured result shall be taken to be 10%;
 - (e) an invalid hourly average means an hourly average period invalidated due to malfunction of, or maintenance work being carried out on, the continuous measurement system. However, to allow some discretion for zero and span gas checking, or cleaning (by flushing), an hourly average period will count as valid as long as data has been accumulated for at least two thirds of the period (40 minutes). Such discretionary periods are not to exceed more than 5 in any one 24-hour period unless agreed in writing. Where plant may be operating for less than the 24-hour period, such discretionary periods are not to exceed more than one quarter of the overall valid hourly average periods unless agreed in writing; and
 - (f) any day, in which more than three hourly average values are invalid shall be invalidated.

4 Information

4.1 Records

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

- (a) be legible;
- (b) be made as soon as reasonably practicable;
- (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
- (d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
 - (i) off-site environmental effects; and
 - (ii) matters which affect the condition of the land and groundwater.

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

4.2 Reporting

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

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

- (a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;
- (b) the annual production /treatment data set out in schedule 4 table S4.2;
- (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.

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

- (a) in respect of the parameters and emission points specified in schedule 4 table S4.1;
- (b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4; and
- (c) giving the information from such results and assessments as may be required by the forms specified in those tables.

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

4.3 Notifications

4.3.1 In the event:

- (a) that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—
 - (i) inform the Environment Agency,
 - (ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and
 - (iii) take the measures necessary to prevent further possible incidents or accidents;
- (b) of a breach of any permit condition the operator must immediately—
 - (i) inform the Environment Agency, and
 - (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;
- (c) of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.

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

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

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

Where the operator is a registered company:

- (a) any change in the operator's trading name, registered name or registered office address; and
- (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

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

- (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 listed in Schedule 1 of the PPC Regulations	Description of specified activity	Limits of specified activity
S1.1 A(1) (a)	Boiler plant	Refinery fuel oil storage and supply, boilers and abatement plant including: (i) 1 x 120MWth GT (ii) 1 x 100MWth HRSG
S4.2 A(1)(a)(i)	Producing inorganic chemicals such as gases	Steam methane reformer 4.38 MWth
S1.2 A(1)(d)	Refining mineral oil	From feed to oil refining unit to use, storage or export including each of the following units and associated heaters: (i) 1 x 5 MWth Bitumen unit (ii) Cryogenic unit (iii) 2x 20 MWth FCC unit (iv) 1 x 30 MWth HDS2 unit (v) 1 x 5 MWth HDS3 unit (vi) 1 x 20 MWth HFA unit (vii) Super Fractionator unit (viii) 1 x 19.9 MWth Unifiner 1unit (ix) 1 x 38 MWth Unifiner 2unit (x) 1 x80 MWth VDU 2 unit (xi) 1 x43 MWth VDU 2 unit (xii) 1 x25 MWth VBR unit (xiii) 1 x72 MWth Platformer2 unit
S1.2 A(1)(e)(i)	Handling and processing crude oil	From receipt of crude to operation of crude distillation unit including: (i) 1 x 90MWth CDU2
S4.1 A(1)(a)(i)	Producing Organic Hydrocarbons	Catalytic polymerisation unit (CPU)

S4.1 A(1)(a)(ii)	Producing Organic compounds containing Oxygen	Methyl Tertiary Butyl Ether (MTBE) Unit
S4.1 A(1)(a)(ii)	Producing Organic compounds containing Oxygen	Tertiary Amyl Methyl Ether (TAME) Unit
S4.2 A(1)(a)(v)	Sulphur recovery and production	Amine systems and sulphur recovery unit plant including: (i) SRU2 (ii) SRU3
S5.4 A(1)(a)(i)	Biological treatment of waste waters and storage of sludge	Including oil separators, dissolved air flotation units, biological trickle filters, clarifiers (sedimentation plant).
S5.4 A(1)(a)(ii)	Physico-chemical treatment of waste waters and storage of sludge	South oil separator and holding sump.
Directly Associated Activity		
Flaring of gases	Burning of sour and sweet gases at flares.	Hydrocarbon gas recovery compressor, flare headers, knock-out pots and flare stacks and any ancillary equipment.
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		
Description	Parts	Date Received
Application	The response to section 2.1 to 2.2.	11/08/06
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	02/02/07 02/02/07
Response to Schedule 4 Notice dated 03/04/07	Response to FCCU Regenerative Scrubbing BAT review.	07/06/07
Additional information	Response to include HDS3 Expansion Project.	04/07/07
Response to regulation 60(1) Notice – request for information dated 05/08/15	Compliance route and operating techniques identified in response to questions 1 (ELV and monitoring requirements) and 2c (LCP configuration, layout, fuel options available and flue configuration), 2d (methodology for assessing which ELVs apply in accordance with Articles 40(2) and 40(3) of IED), 2e (methodology for assessing compliance with relevant ELVs for NOx, SO ₂ and dust by reference to parts 3 and 4 of Annex V of Chapter III of IED) and 2f (methodology for assigning periods of start up and shutdown).	Received 30/09/15

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>	Completed
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>	Completed
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>	Completed
IC4	<p>A written plan shall be submitted to the Agency for approval detailing the measures to be taken to improve the sulphur recovery efficiency of SRU2 and/or SRU1. 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>	Completed
IC5	<p>A written plan shall be submitted to the Agency for approval detailing the measures to be taken to achieve a reduction in</p>	Completed

	<p>the sulphur dioxide emission concentration from the FCCU regenerator. 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>	
IC6	<p>A written plan shall be submitted to the Agency for approval detailing the measures to be taken to reduce particulate 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>	Completed
IC7	<p>A written plan shall be submitted to the Agency for approval detailing the measures to be taken to achieve continuous measurement of sulphur dioxide emission to air 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>	Completed
IC8	<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>	Completed
IC9	<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>	Completed

	The procedure shall be implemented by the operator from the date of approval in writing by the Agency	
IC10	<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> <p>The plan shall be implemented by the operator from the date of approval by the Agency.</p>	Completed
IC11	<p>A written plan shall be submitted to the Agency for approval detailing the measures to be taken to cease burning of vacuum distillation unit (VDU) off-gases in combustion plant at the installation and to ensure that their sulphur content is recovered via the sulphur recovery unit. 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>	Completed
IC12	<p>A written plan shall be submitted to the Agency for approval detailing the measures to be taken to recover gases which would otherwise be flared. 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>	Completed
IC13	<p>A written plan shall be submitted to the Agency for approval detailing the installation of continuous NOx monitors to assess releases from release points A1-A3 at the refinery installation.</p> <p>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>	Completed
IC14	<p>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</p>	Completed

	<p>introduction of any techniques necessary to ensure the following in relation to the above wastes:</p> <ul style="list-style-type: none"> (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 impossible is carried out in a way that avoids or reduces any impact on the environment. <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>	
IC15	<p>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 planned implementation of individual measures. The notification requirements of 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>	Completed
IC16	<p>A written evaluation shall be submitted to the Agency for approval detailing the technical and economic feasibility of routing surface water discharges from the south separator to the ETP. Where appropriate the evaluation shall contain dates for the planned implementation of individual measures.</p> <p>The notification requirements of 2.5.2 shall be deemed to have been complied with on submission of any plan.</p> <p>The plan shall be implemented by the operator from the date of approval by the Agency.</p>	Completed
IC17	<p>A written report shall be submitted to the Agency for approval detailing the findings of an evaluation of particulate arisings from RFG gas firing on combustion plant covered by the NERP. The report shall propose factors for estimating annual particulate releases based on fuel use.</p> <p>The notification requirements of 2.5.2 shall be deemed to have been complied with on submission of the report.</p>	Completed
IC18	<p>A written report shall be submitted to the Agency confirming the individual measures taken to replace the cryo unit refrigeration Freon-22 inventory with a propane based refrigerant. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the report.</p>	Completed

IC19	<p>A written report shall be submitted to the Agency confirming the individual measures taken to install guide pole covers on motor spirit tanks.</p> <p>The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the report.</p>	Completed
IC20	<p>A written report shall be submitted to the Agency for approval detailing the findings of an evaluation for abating emissions from SRU1 pit eductor.</p> <p>Where appropriate the report shall contain dates for the planned 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>	Completed
IC21	<p>A written report shall be submitted to the Agency confirming the individual measures taken to install overfill protection on the bitumen road loading lances.</p> <p>The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the report.</p>	Completed
IC22	<p>A written report shall be submitted to the Agency confirming the individual measures taken to replace ammonia solution corrosion inhibitors with neutralising amines</p> <p>The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the report.</p>	Completed
IC23	<p>A written report shall be submitted to the Agency confirming the individual measures taken to refurbish heater 16F-1 and recommence processing of sour water stripper off gas.</p> <p>The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the report.</p>	Completed

Table S1.4 Appropriate measures for odour	
Measure	Dates
<p>The operator shall maintain the odour management plan as described in section 2.2.6 of the application.</p> <p>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.</p>	From date of permit issue.

Table S1.5 Appropriate measures for noise	
Measure	Dates
<p>A noise management plan shall be submitted to the Agency, detailing the measures to be used to control emissions of noise and shall be accordance with Appendix 4 (noise management plan) of Horizontal Guidance Note H3 (Horizontal Odour Guidance) Part 2).</p> <p>The plan shall be implemented by the operator from the date of approval in writing by the Agency.</p> <p>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.</p>	<p>The plan shall be submitted by 01/04/08</p>

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	Specification
Refinery fuel gas (RFG)	Less than 200 ppmv sulphur as hydrogen sulphide (daily average)

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
A1	South Stack	Sulphur dioxide	2700 mg/m ³	Hourly	Continuous	Note 1
		Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	No limit set	Annually	Continuous	BS EN 14181
		Dust	No limit set	Annually	Continuous	-
					CEMs calibration	BS ISO 9096
A1	South Stack (LCP 356)	Sulphur dioxide	35 mg/m ³	-	At least every 6 months	BS EN 14791
	Firing on RFG, and Natural Gas.	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	300 mg/m ³	-	At least every 6 months	BS EN 14792
A1	South Stack (LCP 356) Firing on RFG, and Natural Gas.	Dust	5 mg/m ³	-	At least every 6 months	BS EN 13284-1
A1	South Stack (LCP 356) Firing on RFG, and Natural Gas.	Carbon monoxide	-	-	At least every 6 months	BS EN 15058

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
A2	North Stack (LCP 357) Firing on RFG and Natural Gas.	Sulphur dioxide	35 mg/m ³	Calendar monthly mean of validated hourly averages	Continuous	BS EN 14181
			38.5 mg/m ³	Daily mean of validated hourly averages	Continuous	BS EN 14181
			70 mg/m ³	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
		Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	300 mg/m ³	Calendar monthly mean of validated hourly averages	Continuous	BS EN 14181
			330 mg/m ³	Daily mean of validated hourly averages	Continuous	BS EN 14181
			600 mg/m ³	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A2	North Stack (LCP 357) Firing on RFG and Natural Gas.	Dust	5 mg/m ³	-	At least every 6 months	BS EN 13284-1
A2	North Stack (LCP 357) Firing on RFG and Natural Gas.	Carbon monoxide	-	-	Continuous	BS EN 14181
		Oxygen	-	-	Continuous as appropriate to reference	BS EN 14181

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
		Water vapour	-	-	Continuous as appropriate to reference	BS EN 14181
		Stack gas temperature	-	-	Continuous as appropriate to reference	Traceable to national standards
		Stack gas pressure	-	-	Continuous as appropriate to reference	Traceable to national standards
A3	Stg III/IV Stack	Sulphur dioxide	3500 mg/m ³	Hourly	Continuous	Note 1
		Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	No limit set	Annually	Continuous	BS EN 14181
		Dust	No limit set	Annually	Continuous	-
					CEMs calibration	BS ISO 9096
A3	Stg III/IV Stack (LCP 358) Firing on RFG, and Natural Gas.	Sulphur dioxide	35 mg/m ³	Calendar monthly mean of validated hourly averages	Continuous	BS EN 14181
			38.5 mg/m ³	Daily mean of validated hourly averages	Continuous	BS EN 14181
			70 mg/m ³	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181

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
A3	Stg III/IV Stack (LCP 358) Firing on RFG, and Natural Gas.	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	300 mg/m ³	Calendar monthly mean of validated hourly averages	Continuous	BS EN 14181
			330 mg/m ³	Daily mean of validated hourly averages	Continuous	BS EN 14181
			600 mg/m ³	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A3	Stg III/IV Stack (LCP 358) Firing on RFG, and Natural Gas.	Dust	5 mg/m ³	-	At least every 6 months	BS EN 13284-1
A3	Stg III/IV Stack (LCP 358) Firing on RFG, and Natural Gas.	Carbon monoxide	-	-	Continuous	BS EN 1418
A3	Stg III/IV Stack (LCP 358) Firing on RFG, and Natural Gas.	Oxygen	-	-	Continuous as appropriate to reference	BS EN 14181
		Water vapour	-	-	Continuous as appropriate to reference	BS EN 14181
		Stack gas temperature	-	-	Continuous as appropriate to reference	Traceable to national standards

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
		Stack gas pressure	-	-	Continuous as appropriate to reference	Traceable to national standards
A3a	FCCU Regenerator	Sulphur dioxide	No limit set	Hourly	Continuous	BS EN 14181
		Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	300 mg/m ³	Daily	Continuous	BS EN 14181
		Dust	115 mg/m ³ Note 2	Daily	Continuous	-
					CEMs calibration	BS ISO 9096
		Carbon monoxide	100 mg/m ³	Daily	Continuous	ISO 12039
A5	Bitumen Stack	Sulphur dioxide	No limit set Note 3	-	-	-
		Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	No limit set	Average over sampling period	Annually	ISO 10849
		Dust	No limit set	-	-	-
A6	HRSG Stack	Sulphur dioxide	No limit set Note 3	-	-	-
A6	HRSG Stack (LCP 355)	Oxides of nitrogen	50 -120 mg/m ³ Note 4	Calendar monthly mean of validated hourly averages	Continuous	BS EN 14181

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
	GT with supplementary firing waste heat boiler	(NO and NO ₂ expressed as NO ₂)	55 - 132 mg/m ³ Note 4	Daily mean of validated hourly averages	Continuous	BS EN 14181
		(RFG and natural gas firing)	100 - 240 mg/m ³ Note 4	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A6	HRSG Stack (LCP 355) GT with supplementary firing waste heat boiler	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂) (100% natural gas firing only)	50 mg/m ³	Calendar monthly mean of validated hourly averages	Continuous	BS EN 14181
			55 mg/m ³	Daily mean of validated hourly averages	Continuous	BS EN 14181
			100 mg/m ³	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A6	HRSG Stack (LCP 355) GT with supplementary firing waste heat boiler	Dust	No limit set	-	-	-
		Carbon monoxide (RFG and natural gas firing)	No limit set	-	-	-
		Carbon monoxide (100% natural gas firing only)	100 mg/m ³	Calendar monthly mean of validated hourly averages	Continuous	BS EN 14181
		Carbon monoxide (100% natural gas firing only)	110 mg/m ³	Daily mean of validated hourly averages	Continuous	BS EN 14181

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
			200 mg/m ³	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A6a	HRSG Stack (LCP 355) Auxillary firing waste heat boiler	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂) (100% RFG firing only)	120 mg/m ³	Calendar monthly mean of validated hourly averages	Continuous	BS EN 14181
			132 mg/m ³	Daily mean of validated hourly averages	Continuous	BS EN 14181
			240 mg/m ³	95% of validated hourly averages within a calendar year	Continuous	BS EN 14181
A6a	HRSG Stack (LCP 355) Auxillary firing waste heat boiler	Carbon monoxide (100% RFG firing only)	No limit set	-	Continuous	BS EN 14181
A7	GT Blast Stack	Sulphur dioxide	No limit set	-	-	-
		Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	No limit set	-	-	-
A9	SMR Stack	Sulphur dioxide	No limit set Note 3	-	-	-

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
		Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	No limit set	Average over sampling period	Annually	ISO 10849
		Dust	No limit set	-	-	-
A10	HDS3 Stack	Sulphur dioxide	No limit set Note 3	-	-	-
		Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	No limit set	Average over sampling period	Annually	ISO 10849
		Dust	No limit set	-	-	-
A11	Stage I/II Flare	Sulphur dioxide	0.47 t/h equivalent	15 minutes	Continuous	Note 1
A12	Stage III/IV	Sulphur dioxide	0.85 t/h equivalent	15 minutes	Continuous	Note 1
A13	HFA PSVs	Hydrogen fluoride	No release permitted	-	-	-
A14	PSVs	Benzene	No release permitted	-	-	-
		VOCs (Class A)	No release permitted	-	-	-
A15	Hydrocarbon Storage Tank Vents	VOCs (Class B)	No limit set	Annually	Continuous	Note 5

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
<p>Note 1 Continuous estimate of releases based on the method agreed with the Agency. Reference conditions for normalised flow (3% O₂, dry).</p> <p>Note 2 Start up and shutdown periods excluded.</p> <p>Note 3 RFG limit in table 3.1 provides control.</p> <p>Note 4 Where there is the simultaneous use of two or more types of fuel in a combustion plant with different emission limit values (ELVs) the emissions shall not exceed the instantaneous ELV value. The ELV value should be calculated according to the formula provided in IED Article 40(2).</p> <p>Note 5 Based on the USEPA method 21.</p>						

Table S3.1a Point Source emissions to air – bubble emission limit and monitoring requirements

Release Points	Parameter	Sources	Bubble Limit	Reference Period	Monitoring frequency	Method
A1 - A4	Sulphur Dioxide	SRUs FCCU Combustion Gas Incineration	2600 mg/Nm ³	Hourly	Continuous	Table S3.1 Note 1 applies
			2500 mg/Nm ³	Hourly		
A1 - A4 and A11	Sulphur Dioxide	SRUs FCCU	1.7 t/h	Hourly	Continuous	Table S3.1 Note 1 applies
A1 - A4 and A12		Combustion Gas Incineration Flares	2.0 t/h	Limit applies from 1/1/09.		

Table S3.2 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 South Killingholme Drain	COD	South Surface Water	125 mg/l	Instantaneous	Monthly	Dichromate-Hach LOR 3/30 ISO 15705							
	Oil		15 mg/l			Extraction / IR IP426							
W2 on site plan in schedule 2 emission to South Killingholme Drain	COD	Engineering Building Surface Water	125 mg/l	Instantaneous	Monthly	Dichromate-Hach LOR 3/30 ISO 15705							
	Oil		15 mg/l			Extraction / IR							
W5 on site plan in schedule 2 emission to North Killingholme Drain	Flow (Dry Weather)	Effluent Treatment Plant	12000 m ³	Day	Continuous	Ultrasonic							
	Temperature		30°C	Instantaneous	Continuous	Thermometer Meter							
	PH		5 – 9										
	TOC		50 mg/l	Daily	Daily	UV Digestion / IR							
	Oil		5 mg/l				Weekly	Weekly	Extraction / IR IP 426				
	COD		200 mg/l							Time related 24h composite	Weekly	Dichromate-Hach LOR 3/30 ISO 15705	
	Ammoniacal Nitrogen (as N)		10 mg/l	Nessler – Chemet LOR 3/11									
	Phenols		0.5 mg/l		Amino anti pyrene – Chemet LOR 3/28								
	Fluoride		20 mg/l			Spadns – Hach LOR 3/14							
	Sulphide		0.25 mg/l				Methylene Blue LOR 3/25						
	Suspended Solids		30 mg/l					GF/C Filter LOR 3/27					
	Cyanide		NLS						Quarterly				-
	Arsenic		15 µg/l										
	Cadmium		10 µg/l										
	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 S3.3 Annual limits (excluding start up and shut down except where otherwise stated).		
Substance	Medium	Limit (including unit)
Sulphur dioxide	Air	6,000 tonnes as sulphur dioxide

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
SRU survey	Performance evaluation	Every 2 years	Not applicable	
RFG on-line analyser	Hydrogen sulphide	Continuous	Not applicable	
Fugitive emissions of VOCs from operational plant at the installation, as described in Section 2.2.4 of their application.	VOCs	-	LDAR programme (to Tier 2 or higher with regard to the Institute of Petroleum [Energy Institute] protocol) for testing potential sources of fugitive emissions of VOCs	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.

Schedule 4 – Reporting

Table S4.1 Reporting of monitoring data			
Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air – sulphur dioxide Parameters as required by condition 3.5.1.	A1, A2, A3, A3a, A4, A11 and A12	Every 3 months	01/01/08
Emissions to air – oxides of nitrogen Parameters as required by condition 3.5.1.	A1, A2, A3, A3a, A4, A5, A6, A9 and A10	Every 3 months	01/01/08
Emissions to air – particulate matter Parameters as required by condition 3.5.1.	A1, A2, A3, A3a and A4	Every 3 months	01/01/08
Emissions to air – VOCs Parameters as required by condition 3.5.1.	A15	Every 12 months	01/01/08
Emissions to water – oil Parameters as required by condition 3.5.1	W1, W2 and W5	Every 3 months	01/01/08
Emissions to water – COD Parameters as required by condition 3.5.1	W1, W2 and W5	Every 3 months	01/01/08
Emissions to water – Flow Parameters as required by condition 3.5.1	W5	Every 3 months	01/01/08
Emissions to water – Temperature Parameters as required by condition 3.5.1	W5	Every 3 months	01/01/08
Emissions to water – pH Parameters as required by condition 3.5.1	W5	Every 3 months	01/01/08
Emissions to water – TOC Parameters as required by condition 3.5.1	W5	Every 3 months	01/01/08
Emissions to water – Suspended Solids Parameters as required by condition 3.5.1	W5	Every 3 months	01/01/08
Emissions to water – Ammoniacal Nitrogen Parameters as required by condition 3.5.1	W5	Every 3 months	01/01/08
Emissions to water – Phenols Parameters as required by condition 3.5.1	W5	Every 3 months	01/01/08
Emissions to water – Sulphides Parameters as required by condition 3.5.1	W5	Every 3 months	01/01/08

Emissions to water – Fluorides Parameters as required by condition 3.5.1	W5	Every 3 months	01/01/08
Emissions to water – Cyanides Parameters as required by condition 3.5.1	W5	Every 3 months	01/01/08
Emissions to water – Heavy Metals Parameters as required by condition 3.5.1	W5	Every 3 months	01/01/08
Noise monitoring Parameters as required by condition 3.5.1	As identified in the noise management plan reference Table S1.6	-	-

Table S4.2: 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 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	Tonnes
Total Emissions to Air of SO ₂ for each LCP	Annually	Tonnes
Total Emissions to Air of CO for each LCP	Annually	Tonnes
Total Emissions to Air of dust for each LCP	Annually	Tonnes
Operating Hours for each LCP	Annually	hr
NO _x 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 S4.4 Reporting forms				
Media/ parameter	Reporting format	Starting Point	Agency recipient	Date of form
Air & Energy	Form IED AR1 – SO ₂ , NO _x and dust mass emission and energy	01/04/17	National	31/12/15
LCP	Form IED HR1 – operating hours	01/04/17	National	31/12/15
Air	Form IED CON 2 – continuous monitoring CEMs reporting for Gas Turbines Only	01/04/17	Area Office	31/12/15
CEMs	Form IED CEM – Invalidation Log	01/04/17	Area Office	31/12/15
Air	Form IED PM1 - discontinuous monitoring and load.	01/04/17	Area Office	31/12/15
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	Area Office	01/01/08
Air – FCCU SO ₂ , NO _x , CO, Dust	Form Air – 6 continuous monitoring or other form as agreed in writing by the Agency	01/01/08	Area Office	01/01/08
Air - Flares	Form Air – 7 Report of the flaring rate and energy loss and SO ₂ released from flaring.	01/01/08	Area Office	01/01/08
Air - VOCs	Form Air – 8 Report of VOC losses [following the Institute of Petroleum protocol]	01/01/08	Area Office	01/01/08
Air – VOCs	Form Air – 9 PRV VOC releases	01/01/08	Area Office	01/01/08
Air - NO _x Factors	Form Air - 10 NO _x factor annual review	01/01/08	Area Office	01/01/08
Air – SO ₂ ELVs	Form Air – 11 SO ₂ Hourly Stack ELVs and Refinery Bubble	01/01/08	Area Office	01/01/08
Water	Form Water – 1 Daily. Flow, pH, temperature and TOC (W2)	01/01/08	Area Office	01/01/08
Water	Form Water – 2 Weekly. COD, Ammoniacal Nitrogen, phenols, sulphide, Fluoride, Oil and suspended solids (W2)	01/01/08	Area Office	01/01/08
Water	Form Water – 3 Quarterly Cyanide and Heavy Metals (W2)	01/01/08	Area Office	01/01/08
Water	Form Water – 4 Monthly Oil and COD (W1)	01/01/08	Area Office	01/01/08
Water usage	Form Water Usage1 or other form as agreed in writing by the Agency	01/01/08	Area Office	01/01/08
Energy usage	Form Energy 1 or other form as agreed in writing by the Agency	01/01/08	Area Office	01/01/08
Waste	Form Waste1 or other form as agreed in writing by the Agency	01/01/08	Area Office	01/01/08
Other performance indicators	Form Performance 1 or other form as agreed in writing by the Agency Tables S4.2 and S4.3 indicators.	01/01/08	Area Office	01/01/08

Schedule 5 – Notification

These pages outline the information that the operator must provide.

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

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

Part A

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

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

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

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
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.

“*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.

“*BS EN 14181*” will include the requirements of BS EN 15267-3 through QAL1. MCERTS certification for the appropriate ranges and determinands is a way of demonstrating of compliance with the requirements of BS EN 15267-3.

“*CEM*” Continuous emission monitor

“*CEN*” means Comité 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.

“*DSD*” means Dangerous Substances Directive.

“*DLN*” means dry, low NO_x burners.

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

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

“*emissions to land*” includes emissions to groundwater.

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

“*FCCU*” means fluidised catalytic cracking unit.

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

“*Industrial Emissions Directive*” means Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) as published in The Official Journal.

“*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.

“*ISO*” means International Standards Organisation.

“*hazardous property*” has the meaning given in Schedule 3 of the Hazardous Waste (England and Wales) Regulations 2005 No.894 and the Hazardous Waste (Wales) Regulations 2005 No. 1806 (W.138).

“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.

“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 Institute of Petroleum (Energy Institute) Protocol.

“mcr” means maximum continuous rating.

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

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

Multi-fuel firing” means the capability of burning more than one type of fuel.

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

“ncv” means net calorific value.

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

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

“Sector Guidance Note” means IPPC Sector Guidance Note on Gasification, Liquefaction and Refining Activities, IPPC S1.02.

“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]

“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.

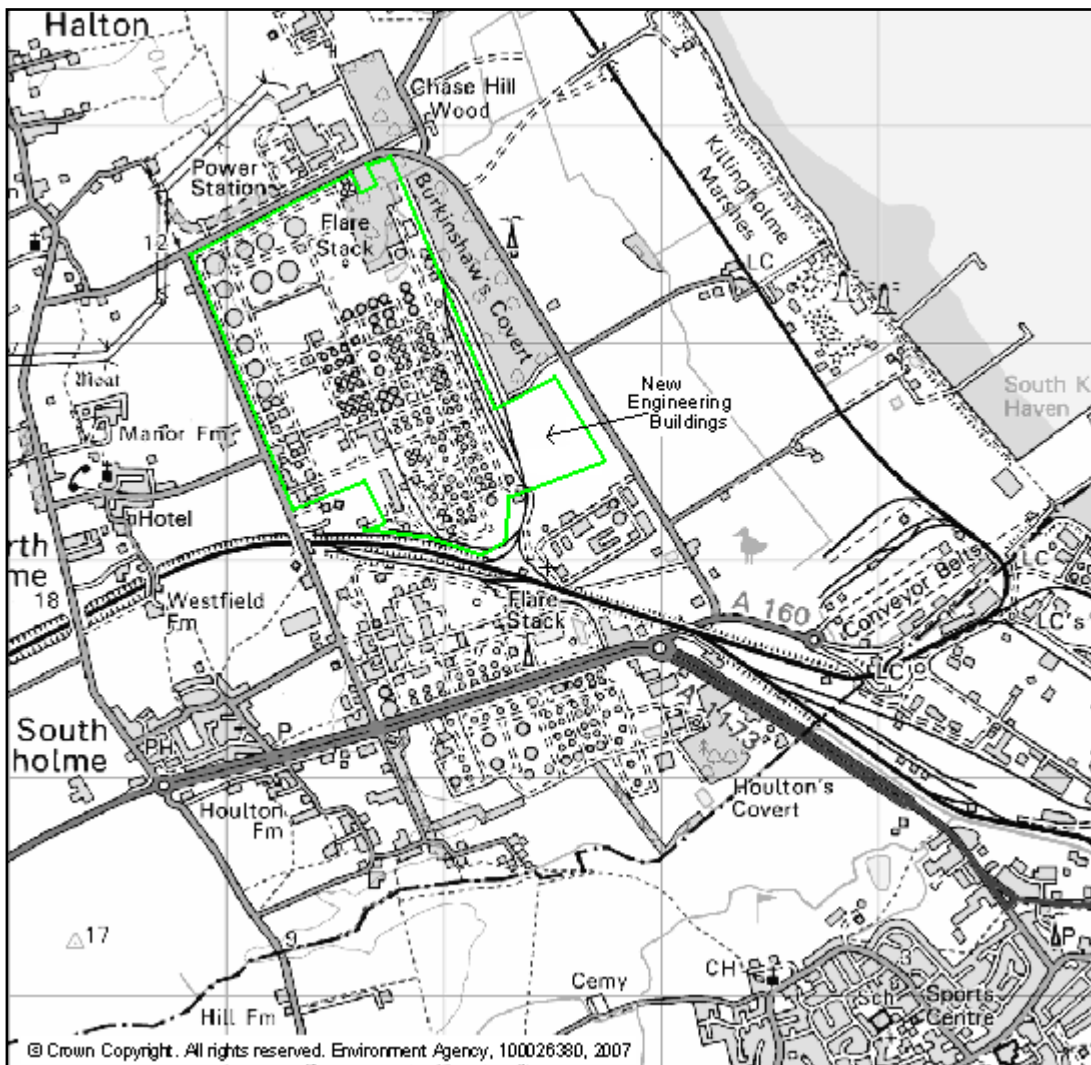
“year” means calendar year ending 31 December.

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

Schedule 7 – Site plan



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END OF PERMIT