

Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Esso Petroleum Company Limited

Esso Refinery
Fawley
Southampton
Hampshire
SO45 1TX

Variation application number

EPR/BR6996IC/V005

Permit number

EPR/BR6996IC

Fawley Refinery

Permit number EPR/BR6996IC

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.

The following notice gives notice of the variation of environmental permits BR6996IC and JP3631KW referred to in the status logs below, and replacement of those permits with a consolidated environmental permit.

Permit QP3536LT, originally issued to Npower Cogen Trading Limited, was transferred to Esso Petroleum Company Limited on 4 March 2010 under permit number JP3631KW. Esso Petroleum Company Limited is also the permit holder for permit number BR6996IC. As part of this variation, the activities permitted under JP3631KW have been combined by consolidated into permit BR6996IC.

In addition, the consolidated variation notice takes into account and brings together in a single document all previous variations that relate to permits BR6996IC and JP3631KW.

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 eight 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 LCP will be operated under the ELV compliance route.

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

- LCP 14 is changed to LCP 152;
- LCP 15 is changed to LCP 151;
- LCP 16 is changed to LCP 147;
- LCP 17 is changed to LCP 148;
- LCP 18 is changed to LCP 145;
- LCP 20 is changed to LCP 150; and
- LCP 21 is changed to LCP 146

The following LCP number has been assigned to the Cogen Plant: LCP 144.

The status log of the permit sets out permitting history, including any changes to the permit reference number.

The schedules specify the changes made to the 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 rest of the installation is unchanged and continues to be operated as follows:

Esso Petroleum Company, Limited (EPCo) is a UK based company, which is part of the ExxonMobil group of companies. The Fawley Refinery installation boundary includes the EPCo oil refinery, and the ExxonMobil Chemical Limited (EMCL) petrochemical plant. Nalco Manufacturing Limited (EPR permit number PP3432HA) operate within the outer perimeter of the installation but are not included as part of the installation.

The Fawley Refinery installation is located in Fawley, Hampshire, approximately 7.5km south-east of Southampton. The installation covers an area of 613 ha and the entire site is centred at National Grid Reference SU 455043.

The installation is bounded to the east and north-east by mudflats, saltmarsh and Southampton Water. To the west and south the site is bounded by Fawley Road, the A326 and Long Lane. Beyond Fawley Road to the south is Fawley Village and undeveloped marshland. The village of Holbury is located to the west. To the north the site is bounded by Cadland Road, beyond which are a number of industrial properties.

The first oil refinery was constructed at the site in 1921 and was subsequently expanded in 1951, with commissioning of refining and early petrochemical plants, to the area it occupies today. The refining and associated combustion activities have been authorised under IPC since 1992.

The primary activity authorised by this permit is under Section 1.2 A(1)(g); the refining of mineral oil. Other specified activities relating to the refinery include combustion, handling and thermal treatment of crude oil, odourising liquefied petroleum gas, producing inorganic chemicals (sulphur by-product) and disposal of hazardous and non-hazardous waste. The primary activity authorised by the EMCL permit ZP3839MG is under Section 1.2 A(1)(l); the further refining, conversion or use (otherwise than as a fuel or solvent) of the product of any activity falling within paragraphs (g) or (h) in the manufacture of a chemical.

The oil refining section of the installation regulated under this Permit, receives crude oil and other petroleum feedstocks, primarily by sea transport, which is then stored in bulk tanks before it is refined to form products such as LPG, automotive and aviation fuels, distillates, lubricant oils, fuel oils and feed streams for the EMCL petrochemicals plants.

The generic processes operated at the refinery include:

- Separation – for example, the initial stage of the refining process involves fractional distillation (atmospheric and vacuum) of the crude oil to produce product and intermediate streams for further refining into finished products.
- Reforming – changing the molecular structure to increase the value of the products (for example increasing octane number)
- Treating – improving the quality of the oil by reducing the concentration of sulphur, nitrogen and other impurities; sulphur is eventually recovered in its solid form using the Claus process
- Upgrading – for example catalytic cracking of a heavy oil material to increase production of the more valuable gasoline.

There are also a number of support activities including boilers, gas turbines for steam and electricity generation including two Combined Heat and Power (CHP) Plants, furnaces for heating hydrocarbons, cooling water systems, treatment of waste sludges using a biopile, raw water treatment for steam raising, waste water treatment prior to release and the flare system.

The refinery also provides fuel gas for EMCL and accepts waste water and other materials for treatment from EMCL.

The Cogen CHP Plant was originally permitted under EPR/QP3536LT to Npower Cogen Trading Limited. This permit was fully transferred under permit EPR/JP3631KW to Esso Petroleum Company Limited 4 March 2010. Variation EPR/JP3631KW/V002 amended the limits for SO₂ as a result of an increase in the ratio of MEDAL gas to natural gas fired.

The main environmental impacts associated with releases to air are from sulphur dioxide from the incomplete recovery of sulphur from the Sulphur Recovery Plant, from the burning off of sulphur from the catalytic cracker catalyst and from the combustion of fuel oil. The air quality management area (AQMA) declared by New Forest District Council in 2005, was revoked in 2013 due to reductions in the release of sulphur dioxide emissions to air from the permitted activities.

Other releases to air include nitrogen dioxide and dust from combustion and catalytic cracking activities and fugitive volatile organic compounds. None of these releases are significant in terms of the ambient air quality. Many of the combustion plant fall under the Large Combustion Plant Directive as existing plant.

Process, cooling and surface waters are discharged, following treatment, via three outfalls onto intertidal mudflats close to high water within the Solent and Southampton Water SPA. Other European Habitats designated sites that could be affected by releases from the installation include Solent Maritime SAC, River Itchen SAC, Portsmouth Harbour SPA/Ramsar and Chichester and Langstone Harbours. Clean and dirty waters are treated separately using oil separators, dual media filtration and dissolved air flotation.

Noise has been an issue at the installation, dealt with under previous legislation by New Forest District Council. The surrounding communities about the installation perimeter fences and the concerns have been addressed in this Permit through the noise management plan.

The site has an Environmental Management System that is regularly audited externally and has been attested to meet the requirements of ISO 14001, although not certified to this standard.

Variation EPR/BR6996IC/V002, issued 24/08/2010, incorporated a number of changes including the re-commissioning of the ENSR lubes hydrofiner (emission point A28 added), modification of the spent caustic neutralisation process from batch to continuous operation, use of effluent from the sour water stripper in the desalter wash water tank to reduced emissions of phenol to Southampton Water via W1 and addition of analyser vents associated with the refinery fuel gas (RFG) analysers omitted from the list of vents in the permit.

Variation EPR/BR6996IC/V003 was issued 28/5/13 to reflect the authorised activities in line with the Industrial Emissions Directive (IED).

Variation EPR/BR6996IC/V004 was issued to add an improvement condition to ensure the regulated facility complies with the Eels (England and Wales) Regulations 2009.

| Status log of permit BR6996IC | | |
|---|-------------------|---|
| Description | Date | Comments |
| Application BR6996IC | Duly made 5/10/06 | |
| Additional Information Received | | 02, 26/02/07 |
| Additional Information Received | | 21/03/07 |
| Additional Information Received | | 02, 14, 22, 25/05/07 |
| Additional information Received | | 13/08/07 |
| Additional information Received | | 04, 14, 18, 26/09/07 |
| Additional information Received | | 08, 24, 31/10/07 |
| Additional information Received | | 01, 06, 08/11/07 |
| Permit determined | 20/12/2007 | |
| Application EPR/BR6996IC/V002 | Duly made 10/2/10 | |
| Additional information received | | 25/5/10 |
| Variation issued | 24/8/10 | |
| Agency variation determined EPR/BR6996IC/V003 | 28/5/13 | Agency variation to implement the changes introduced by IED |
| Agency variation determined EPR/BR6996IC/V004 PAS/billing reference WP3530WN | 2/10/14 | Agency variation to clarify the position of WML 19877 and to ensure that the regulated facility will comply with the Eels (England and Wales) Regulations 2009. |
| 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 under IED to implement the special provisions for LCP under Chapter III, introducing new Emission Limit Values (ELVs) applicable to LCP, referred to in Article 30(2) and set out in Annex V. |
| Regulation 60 Notice response (variation and consolidation) | 30/09/15 | Response received from the Operator. |
| Additional information received. Fawley Refinery Large Combustion Plant (>50MW). DAJD/LCPD10. Correct LCP list and ratings. | | 19/10/15. |
| Additional information received – revised site plan incorporating the Cogen plant. | | 9/12/15 |
| Additional information received - email confirming minor change to the name of the registered office. | | 23/11/16 |
| Additional information received - updated site plan following the issue of permit ZP3133RH to Biogenie Site Remediation Limited which forms part of the installation. | | 10/01/17 |
| Variation determined EPR/BR6996IC/V005 (PAS Billing ref: AP3530RF) | 03/03/17 | Varied and consolidated permit issued. Effective from 01/04/17 |

Variation and consolidation
EPR/BR6996IC/V005

| Status log of permit JP3631KW | | |
|--|-------------------|---|
| Description | Date | Comments |
| Application QP3536LT | Duly made 5/10/06 | Application from Npower Cogen Trading Limited |
| Application site report | Received 8/02/07 | |
| Information received during site meeting | 5/03/07 | |
| Information relating to leak detection measures in place, instrumentation installed to the interceptor, details of oil storage tank and bund and fuel oil tank filling procedure | Received 10/04/07 | |
| Site drawing detailing main emission points from permitted area | Received 10/04/07 | |
| Confirmation of air quality modelling scenarios | Received 18/04/07 | |
| Details of chemical storage bund capacities and revised proposed fuel oil tank filling procedure. Email from Npower Cogen Trading Limited (P Trott) | Received 24/04/07 | |
| SO ₂ monitoring data for quarter 1 2007, firing on fuel oil and MEDAL gas | Received 22/05/07 | |
| Calculation of estimated SO ₂ emission levels. Copy of email from Npower Cogen Trading Limited (R Smith) dated 19/9/06 | Received 22/05/07 | |
| Details of treatment undertaken to gas supplied from Esso Petroleum Company Limited. Email from Npower Cogen Trading Limited (P Trott) | Received 30/07/07 | |
| Concentration of sulphur in MEDAL gas and LPRFG as mg/m ³ . Email from Npower Cogen Trading Limited (P Trott) | Received 30/07/07 | |
| Details of calculations undertaken to estimate the levels of particulate matter and SO ₂ in emissions to air for gas and dual oil firing. Email from Npower Cogen Trading Limited (P Trott) | Received 30/07/07 | |
| Confirmation that fuel oil supply will comply with the Sulphur Content in Liquid Fuels Regulations. Email from Npower Cogen Trading Limited (P Trott) | Received 30/07/07 | |
| Confirmation of gas supply interruption period. Details of constraints on refinery fuel composition received by the CHP plant. Email from Npower Cogen Trading Limited (P Trott) | Received 30/07/07 | |
| Definition of start up and shut down. Email from Npower Cogen Trading Limited (P Trott) | Received 30/07/07 | |
| Draft protocol for switch to fuel oil for commercial purposes. Email from Npower Cogen Trading Limited (P Trott) | Received 04/09/07 | |

| | | |
|---|-----------------------|---|
| Details of SO ₂ measurements for gas firing. Email from Npower Cogen Trading Limited (P Trott) | Received 01/11/07 | |
| Permit determined | 20/12/07 | Permit issued to Npower Cogen Trading Limited |
| Application EPR/JP3631KW/T001 | Duly made 21/12/09 | Application for full transfer of permit QP3536LT |
| Transfer effective EPR/JP3631KW | 04/03/10 | Permit issued to Esso Petroleum Company Limited |
| Variation application EPR/JP3631KW/V002 | Duly made 31/10/13 | Application to vary sulphur dioxide limit and consolidate with permit |
| Variation issued EPR/JP3631KW/V002 | 13/01/14 | Varied and consolidated permit issued |
| 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 under IED to implement the special provisions for LCP under Chapter III, introducing new Emission Limit Values (ELVs) applicable to LCP, referred to in Article 30(2) and set out in Annex V. |
| Regulation 60 Notice response (variation and consolidation) | 30/09/15 | Response received from the Operator. |
| Variation determined EPR/BR6996IC/V005 (PAS Billing ref: AP3230RU) | 03/03/17 | Varied and consolidated permit issued. Effective from 01/04/17 |

Other Part A installation permits relating to this installation

| Operator | Permit number | Date of issue |
|-----------------------------------|---------------|---------------|
| Exxon Mobil Chemicals Limited | ZP3839MG | 20/12/2007 |
| Biogenie Site Remediation Limited | ZP3133RH | 04/11/2016 |

Other existing Licences/Authorisations relating to this site

| Holder | Reference Number | Date of issue |
|----------------------------|------------------|---------------|
| Esso Petroleum Company Ltd | WML19872 | 23/08/1985 |
| Esso Petroleum Company Ltd | WML19878 | 29/08/1986 |
| Esso Petroleum Company Ltd | GB-EA-ETCO2-0073 | 25/02/2004 |
| Esso Petroleum Company Ltd | AC3124/BF7074 | 27/07/2002 |
| Esso Petroleum Company Ltd | AC2586/BV6536 | 18/09/2003 |
| Esso Petroleum Company Ltd | D01543-1 to 11 | 16/12/1994 |

| Superseded or Partially Superseded Licences/Authorisations/Consents relating to this installation | | | |
|--|-------------------------|----------------------|--------------------------------------|
| Holder | Reference Number | Date of Issue | Fully or Partially Superseded |
| Esso Petroleum Company Ltd | AF8009/CA6610 | 31/08/1993 | Fully superseded |
| Esso Petroleum Company Ltd | WML19877 | 29/08/1984 | Fully superseded by EAWML 10237 |
| Esso Petroleum Company Ltd | EAWML10237 | 11/05/04 | Fully superseded by EPR/BR6996IC |
| Npower Cogen Trading Limited | JP3631KW | 20/12/2007 | Fully superseded |

End of introductory note

Notice of variation and consolidation

The Environmental Permitting (England and Wales) Regulations 2016

The Environment Agency in exercise of its powers under regulations 18 and 20 of the Environmental Permitting (England and Wales) Regulations 2016 varies and consolidates environmental permits

permit numbers

EPR/BR6996IC

EPR/JP3631KW

issued to

Esso Petroleum Company Limited (“the operator”)

whose registered office is/ whose principal office is

**Ermyn House
Ermyn Way
Leatherhead
Surrey
KT22 8UX**

company registration number 26538

to operate part of an installation at

**Marsh Lane
Fawley
Southampton
Hampshire
SO45 1TX**

to the extent set out in the schedules.

The notice shall take effect from 01/04/2017

The number of the consolidated permit is EPR/BR6996IC/V005

| Name | Date |
|------------------|-------------------|
| Tom Swift | 03/03/2017 |

Authorised on behalf of the Environment Agency

Schedule 1

Note: The condition numbers used in this schedule refer to those in the consolidated permit.

The following conditions/tables were varied by the consolidated permit as a result of an Environment Agency initiated variation.

| Conditions | |
|-----------------------|---|
| Schedule 2 | Updated site plan incorporating the area previously permitted separately by permit JP3631KW (Cogen Plant) |
| 2.3.6 and table S1.2 | Condition relating to specification of start up and shutdown periods for LCP as specified in table S1.2 |
| 3.1.6 | Template IED condition added to specify the requirement of periodic groundwater and soil monitoring requirements, already included in Cogen permit JP3631KW. |
| 3.7.1 | Template condition relating to monitoring requirements under IED for LCP. |
| 3.7.2 | Template condition relating to action required in the event of cems monitoring results for > 10 days a year being invalid. |
| 3.7.7 | Template IED condition relating to cems monitoring requirements for LCP. |
| Table S1.1 | Amended to include Cogen Plant activities previously permitted under JP3631KW |
| Table S1.3 | Amended to update completion dates for outstanding Improvement Conditions, and to show Improvement Conditions that have been completed. |
| Table S3.1 | Updated to remove specifications for alternative liquid fuels, H2S content in refinery fuel gases and raw material content of water treatment chemicals. These restrictions related only to the Cogen plant when operated by Npower Cogen Trading Ltd to provide controls to raw materials received from and effluent discharged to Esso Petroleum Company Ltd. They are no longer relevant since the permit was transferred to Esso Petroleum Company Ltd and the operation of the Cogen plant has been integrated within the refinery operation. Updated to include fuel specifications for specific release points. |
| Table S4.1a | Table amended by inclusion of new source descriptions for LCPs, inclusion of Cogen Plant emissions points. Inclusion of LCP emission limit values and monitoring requirements in line with IED. Where tighter emission limits already apply, these remain unchanged. Notes to table: <ul style="list-style-type: none"> • removed where no longer relevant; • added to reflect IED requirements; and • added to show units currently shut down for clarity. |
| Table S4.1b | Sulphur bubble limit updated to show reduced limit. Note to table deleted as no longer relevant. |
| Table S4.2b | Nerp allocation table deleted as no longer relevant. |
| Table S4.3 | Table S4.3a amended to remove historic SO2 limits. Table renumbered from S4.3a to S4.3 following deletion of Table S4.3b. |
| Table S4.2 (JP3631KW) | Table relating to internal effluent transfer from the Cogen Plant into the refinery sewer systems deleted as no longer relevant. |
| Table S5.1 | Updated to include monitoring reporting for LCP plant and Cogen Plant. |
| Table S5.4 | Updated to include amended/new reporting forms. |
| Schedule 7 | Interpretations amended/added to incorporate terms relevant to Cogen Plant and IED |

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number
EPR/BR6996IC

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/BR6996IC/V005 authorising,

Esso Petroleum Company Limited (“the operator”),
whose registered office is

Ermyn House
Ermyn Way
Leatherhead
Surrey KT22 8UX

company registration number **26538**

to operate part of an installation at

Esso Refinery
Marsh Lane
Fawley
Southampton
Hampshire SO45 1TX

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

Signed

Date

| | |
|------------------|-------------------|
| Tom Swift | 03/03/2017 |
|------------------|-------------------|

Authorised to sign on behalf of the Environment Agency

Schedule 2

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.

1.7 Multiple operator installations

1.7.1 Where the operator notifies the Agency under condition 4.3.1 (a) or 4.3.1 (c), the operator shall also notify without delay the other operator(s) of the installation of the same information.

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").

2.1.2 Where there are wastes on site that are not subject to this permit then the wastes subject to the activities authorised under condition 2.1.1, shall be clearly identified.

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 that represents the extent of the installation covered by this permit and the permit of the other operator of the installation. This excludes the land shaded in yellow and blue, which forms part of the installation, and the land shaded in red which does not form part of the installation.

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(s) S3.2, S3.3, S3.4, S3.5; 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.
- 2.3.5 The operator shall ensure that prior to storing or treating any material using the biopile it has obtained sufficient information about the hazardous waste to demonstrate compliance with schedule 3 table S3.1, table S3.2 and/or table 3.3.
- 2.3.6 For the following activities referenced in Schedule 4, table S4.1a LCP145, LCP146, LCP147, LCP148, LCP150, LCP151, LCP152 and LCP 144. 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.

2.4 Off-site conditions

- 2.4.1 The operator shall, unless otherwise agreed in writing by the Agency, undertake monitoring for the parameters, at the locations and at not less than the frequencies specified, in the following tables in schedule 4 to this permit
- (a) ambient air monitoring specified in table S4.5.

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

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 S4.1a & b, 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 S4.1a & b and S4.2 and of a substance listed in schedule 4 tables S4.3a & b shall not exceed the relevant limit in tables S4.3a & b.
- 3.1.4 Releases to air from the installation shall not cause a breach of the limit values for sulphur dioxide specified in the Council Directive 1999/30/EC (the 1st Air Quality Daughter Directive) outside the boundary of the site. A measurement shall not be regarded as having exceeded the limit if the measured value does not exceed the limit by more than the allowed measurement uncertainty which is to be agreed in writing with the Agency.
- 3.1.5 Releases to air from the installation shall not cause a breach of the objective specified in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (as amended) for sulphur dioxide over a period of 15 minutes, detected at any off-site monitor specified in table S4.5. A measurement shall not be regarded as having exceeded the limit if the measured value does not exceed the limit by more than the allowed measurement uncertainty which is to be agreed in writing with the Agency.
- 3.1.6 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless monitoring is based on a systematic appraisal of the risk of contamination.

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 Mud or dust arising from the activities shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures have been used to prevent or where that is not practicable, minimise the mud and dust.
- 3.3.3 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 S4.1a & b, S4.2 and S4.3;
 - (b) noise specified in table S4.4;
 - (c) ambient air monitoring specified in table S4.5; and
 - (d) process monitoring specified in table S4.6.
- 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 and the environmental or other monitoring 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 S4.1a 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 Chapter III of the Industrial Emissions Directive

- 3.7.1 All monitoring required by this permit shall be carried out in accordance with the provisions of Annex V of the Industrial Emissions Directive.
- 3.7.2 If the monitoring results for more than 10 days a year are invalidated within the meaning set out in condition 3.7.7, 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.
- 3.7.3 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.
- 3.7.7 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in schedule 4, table S4.1, the Continuous Emissions Monitors shall be 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 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; and
- (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 non-hazardous and hazardous ballast water accepted onto the site for treatment and disposal shall be made annually. It shall be submitted to the Agency within one month of the end of the year and shall be in the format required by the Agency
- 4.2.6 A summary report of the waste types and quantities accepted and removed from the biopile treatment and storage plant shall be made for each quarter. 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.
- 4.2.7 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) flaring or combustion of more than 100 kg/hour acid or sour gas;
 - (d) any significant adverse environmental effects;
 - (e) any recorded exceedance of any limit value for sulphur dioxide specified in the First Air Quality Daughter Directive, which is detected at any off-site monitor specified in Table S4.5;
 - (f) any recorded breach of the objective specified in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (as amended) for sulphur dioxide over a period of 15 minutes, detected at any off-site monitor specified in Table S4.5.
- 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.

Climate Change Agreement

- 4.3.7 Where the operator has entered into a climate change agreement with the Government, the 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 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

- 4.3.9 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 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) | Boiler Plant and CHP | <p>Receipt of fuel oil and storage of fuel oil. Fuel oil and refinery fuel 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, ash removal from the combustion process and the export of steam to the steam systems, including:</p> <ul style="list-style-type: none"> • 2 x 400 MW(th) boilers with software interlock installed to limit combined capacity to <500MW in accordance with Environment Agency Regulatory Guidance Note 2 and subject to provisions set out in Section 4 of the MFF Protocol: SP4(1) & SP4(2). <p>From gas feed to electricity and steam generation via gas turbine (GT) with associated HRSG:</p> <ul style="list-style-type: none"> • 1 x 196 MW(th): GTG/HRSG • 1 x 451 MWt Cogen Plant |
| S1.2 A1 (d) | Refining mineral oils. | <p>From feed to oil refining unit to use, intermediate or product storage, or export including each of the following units:</p> <ul style="list-style-type: none"> • distillation units: PS/PV1, NS1, NF1, PS/PV2, PS/PV3, • LESR • Jet treaters: CS3, CS4 • reformer units: PH1, PH2, • hydrotreatment units: SCAN, HD3, 4, 5, 6, 7, 8, Resid, WCHD • isomeriser unit : ISOM • hydroisomerisation and dewaxing: WISR • solvent extraction and hydrofining and ketone waxing: ENSR, KDSR • catalytic cracker unit : FCCU • merox unit : MS1, MS2, MS3, MS5 • bitumen unit: BIT1, BIT2 <p>Oil refining units are taken to include their process heaters and energy supply systems, as well as any unit-specific abatement system.</p> |
| S1.2 A1 (d) | Refining mineral oils Secondary operations – oil movements and blending | <p>From receipt of feed, through blending (where necessary) to feed, intermediate and product storages including:</p> <ul style="list-style-type: none"> • liquified petroleum gases, • white oils, gas oils/ black oils, • crude oil/ slops. |

| Table S1.1 activities | | |
|---|---|---|
| Activity listed in Schedule 1 of the PPC Regulations | Description of specified activity | Limits of specified activity |
| S1.2 A1 (e) | The loading, unloading or other handling of, the storage of, or the physical, chemical or thermal treatment of - (i) crude oil; (ii) stabilised crude petroleum. | From receipt of crude to operation of crude distillation unit including: <ul style="list-style-type: none"> • crude unit PS1 (annual throughput, 3600Kte) • crude unit PS2 (annual throughput, 3600Kte) • crude unit PS3 (annual throughput, 8600Kte) • marine terminal • offsites operation |
| S4.2 A(1) (a)(v) | Producing inorganic chemicals such as non-metals, metal oxides, metal carbonyls or other inorganic compounds such as calcium carbide, silicon, silicon carbide, titanium dioxide. | Including amine systems, amine recovery unit, sour water stripper units and sulphur recovery unit plant including: <ul style="list-style-type: none"> • SRU train SU3 (daily feed rate of 130 tonnes) • SRU train SU4 (daily feed rate of 130 tonnes) • tail-gas unit • tail-gas incinerator • sulphur storage prior to export |
| S5.3 A1 (a) (i) | Disposal or recovery of hazardous waste in a facility with a capacity exceeding 10 tonnes per day involving biological treatment | From collection and treatment of biopile material sourced from the refinery (BR6996IC) and chemical manufacture (ZP3839MG) sites to the discharge from site to landfill. Waste types from EPCo Refinery as specified in S3.2. Waste types from other permitted areas of the installation as specified in S3.3. |
| S5.3 A1 (a) (ii) | Disposal or recovery of hazardous waste in a facility with a capacity exceeding 10 tonnes per day involving physico-chemical treatment. | From collection and neutralisation of spent caustic to disposal off site, SWS. |
| S5.3 A1 (a) (ii) | Disposal or recovery of hazardous waste in a facility with a capacity exceeding 10 tonnes per day involving physico-chemical treatment. | From receipt of ballast water, through treatment (oil recovery operations) to disposal of treated water. |
| S5.4 A(1) (a)(ii) | Disposal of non-hazardous waste in a facility with a capacity of more than 50 tonnes per day by physico - chemical treatment. | Including oil separators, dissolved air flotation units, clarifiers (sedimentation plant), general filtration plant, reverse osmosis plant and sludge tanker loading. |

| Directly Associated Activity | | |
|---|---|--|
| Odourising natural gas | Odourising natural gas or liquefied petroleum gas where that activity is related to a Part A activity | From feed to unit to discharge for storage or export C3, C4 stenching |
| 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, provision of utilities | Systems used for cooling. | All cooling water systems including storage, pipelines and equipment, to discharge to ETP or directly to river or sea. |
| Surface water drainage | Collection and handling of surface waters within installation | Handling and storage of site drainage until discharge to the site wastewater treatment system or to discharge off-site. |
| Water treatment | All water treatment activities | From receipt of raw materials to dispatch of effluents to sewer or site waste water treatment system and export of demineralised water to the refinery for use in processes. |
| Steam and electrical power supply. | The generation and export of electricity | The receipt of steam at the steam turbine to the export of electricity to the refinery installation or the national grid and the direct generation of electricity from the gas turbines. Includes fuel receipt and storage, any boiler or gas turbine and its associated plant and release points. |
| Waste handling | Handling and storage of wastes arising | From waste generation, storage and monitoring to waste dispatch. |

Table S1.2
Operating techniques permit BR6996IC

| Description | Parts | Date Received |
|---|--|----------------------|
| Application | The response to section 2.1 and 2.2 in the application. | 05/10/06 |
| Response to Schedule 4 Notice dated 08/12/06 | Response to question 1 detailing process releases. | 02/02/07 |
| Additional Information | Vents and raw material data | 26/02/07 |
| Additional Information | Refinery fuel gas data | 14/05/07 |
| Additional information | Water quality data | 26/09/07 |
| Additional information | Air release data | 24/10/07 |
| Variation Application EPR/BR6996IC/V002 | The response to section 2 – Form EPC in the application | 10/02/10 |
| Additional Information | Response to question 2 | 25/05/10 |
| Response to regulation 60(1) Notices – request for information dated 05/08/2015 | Compliance route and operating techniques identified in response to questions 1 (ELV and monitoring requirements), 2c (LCP configuration, layout, fuel options available and flue configuration), 2d (method 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 NO _x , 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) provided in Table 7 of the response. | 30/09/15 |

| Operating techniques permit JP3631KW | | |
|---|--|----------|
| Application QP3536LT | The response to section 2.1 (parts B2.1 and B2.2) in the application | 2/8/06 |
| Response to regulation 60(1) Notices – request for information dated 05/08/2015 | Compliance route and operating techniques identified in response to questions 1 (ELV and monitoring requirements), 2c (LCP configuration, layout, fuel options available and flue configuration), 2d (method 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 NO _x , 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) provided in Table 7 of the response. | 30/09/15 |

| Table S1.3 Improvement programme requirements Permit BR6996IC | | |
|--|--|---|
| Reference | Requirement | Date |
| IC1 | <p>The Site Protection and Monitoring Plan (SPMP), the subject of Condition 2.8, shall include proposals to deal with issues identified within the ASR, specifically:</p> <ul style="list-style-type: none"> • Surveys, monitoring and maintenance of drains • Surveys, monitoring and maintenance of other underground structures • Surveys, monitoring and maintenance of bunds <p>The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of these proposals within the SPMP.</p> | Completed – subject to ongoing monitoring and review. |
| IC2 | <p>The operator shall complete installation, operation and use of continuous emission monitors on release points SP4, PS/V3, PH2 and GTG/WHB and installation of the sampling points for release points PH1, PS2 and ENSR. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on completion of the above.</p> | Completed 27/5/08. |
| IC3 | <p>The Operator shall submit a written report to the Agency following completion of the PV1 barometric system modifications. The report shall detail the environmental impact of the changes, including reductions in odour and the risk of blockage. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on completion of the above</p> | Completed. |
| IC4 | <p>The Operator shall submit a written report to the Agency detailing the impact of the modifications of the PV2 barometric sump on the effluent system; the results of trials of the “sewer sweep” system and plans for further development and improvement of that system. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on completion of the above.</p> <p>The plans shall be implemented by the operator from the date of approval by the Agency.</p> | Completed. |
| IC 5 | <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 equivalent to not less than 70.5% from the FCCU regenerator, based on unabated emission levels.</p> <p>The plan shall include an option to re-assess BAT if necessary.</p> <p>The plan shall contain, as a minimum, dates for: (i) the implementation of any individual measures; (ii) submission of a written report on the outcome of any trials; (iii) submission of a written report, if necessary, to the Agency for approval on the re-assessment of BAT; and (iv) implementation of final agreed abatement 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 22/12/12 |
| IC 6 | <p>A written plan shall be submitted to the Agency for approval detailing the measures to be taken to reduce the release of zinc from W3. Where appropriate the plan shall contain dates for implementation of individual measures. 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 subject to ongoing actions. |

| Table S1.3 Improvement programme requirements Permit BR6996IC | | |
|--|---|--|
| Reference | Requirement | Date |
| IC 7 | <p>A written report shall be submitted to the Agency providing an estimate of the reduction of phenol discharged through W1 that will occur through implementation of the project re-routing stripped sour water to the desalters. The report shall contain dates for implementation of individual measures. The 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> | Partial completion subject to further modifications in 2016. |
| IC8 | <p>A written plan shall be submitted to the Agency for approval detailing the measures to be taken to ensure necessary monitoring and infrastructure is in place at the installation to allow the operator to demonstrate compliance against an hourly bubble limit for sulphur dioxide from 1 January 2009. 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, 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 in writing by the Agency</p> | Completed. |
| IC10 | <p>A written plan shall be submitted to the Agency for approval detailing the measures to be taken to achieve an oil in water emission limit value of 2.5mg/litre applies as a daily average. Where appropriate the plan shall contain dates for implementation of individual measures. 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 report shall be submitted to the Agency for approval reviewing the performance of the particulate abatement measures on the FCC regenerator. Where appropriate the report shall contain proposals for improvement and 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 28/08/08 |
| IC12 | <p>“A written plan shall be submitted to the Agency for approval detailing the work to be undertaken to achieve MCERTS accreditation for effluent flow to release point(s) W1, W2 and W3 by 31 December 2008. Where</p> | Completed. |

| Table S1.3 Improvement programme requirements Permit BR6996IC | | |
|--|---|-------------|
| Reference | Requirement | Date |
| | <p>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> | |
| IC13 | <p>A written plan shall be submitted to the Agency for approval detailing the method to be used to obtain, update and validate oxides of nitrogen (NOx) emission factors for all relevant plant the refinery installation. The plan shall demonstrate how the NOx factors will be used in the calculation of NOx emissions. 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. |
| IC 14 | <p>The operator shall submit a written report to the Agency following a review of the techniques used for ensuring good combustion at the flare tip during flaring events. The review shall include but not be limited to an appraisal of the security of the steam supply to the flares. The report shall include a plan with dates for the implementation of improvements identified. 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.</p> | Completed. |
| IC 15 | <p>A written plan shall be submitted to the Agency for approval detailing the measures necessary to validate the model used for predicting sulphur dioxide ground level concentration occurring as a result of releases from the refinery. The plan shall include a review of the meteorological monitoring equipment for provision of accurate wind speed, wind direction and temperature data for use in the model. The plan shall also include measures to be taken to install, commission and operate further offsite air quality monitoring stations if necessary. 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. |

| Table S1.3 Improvement programme requirements Permit BR6996IC | | |
|--|--|-------------|
| Reference | Requirement | Date |
| IC 16 | <p>The operator shall update the present Air Quality Management Plan to include, as a minimum:</p> <ul style="list-style-type: none"> • Details of ambient air quality and meteorological monitoring equipment, techniques, methodologies and procedures including operation and calibration of equipment, and handling, quality assurance, quality control and reporting of data. Due regard shall be paid to the Guidance Note Defra (2003) Local Air Quality Management Technical Guidance LAQM TG4(03) and industry best practice • Details of a 'pre-year assessment' method, used for demonstrating that the anticipated operating scenario will prevent, or where that is not possible, minimise, breaches of the air quality objectives using dispersion modelling • Details of a method for 'continuous comparison' of the actual and predicted exceedances throughout the year, including any necessary amendments to the AQMP, to ensure the annual compliance objectives are achieved. This shall also include arrangements for advising the Agency of the implementation of the 'Emissions Management' technique for avoidance of exceedances and on the occurrence of an air quality measurement for sulphur dioxide over a period of 15 minutes, in excess of 266µg/m³; • Details of an 'Annual review' of the AQMP, addressing all aspects including process management and releases to air, on and offsite monitoring, modelled impact and annual compliance. The review shall consider the success of the ongoing assessment throughout the year and propose any necessary improvements. • Proposed date for submission of the Annual Review to the Agency each year. <p>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.</p> | Completed. |
| IC17 | <p>A written report shall be submitted to the Agency detailing the results of the energy study carried out for the purpose of improving site wide efficiency and conversion of SP4 to full gas firing. The report shall include a plan with dates for approval for the implementation of improvements. The notification requirements of Condition 2.5.2 shall be deemed to have been complied with in submission of the plan. The plan shall be implemented by the operator from the date of approval in writing by the Agency.</p> | Completed. |
| IC 18 | <p>A written plan shall be submitted to the Agency for approval detailing the measures to be taken to reduce the release of copper from W2. Where appropriate the plan shall contain dates for implementation of individual measures. 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. |

| Table S1.3 Improvement programme requirements Permit BR6996IC | | |
|--|---|-----------------------------|
| Reference | Requirement | Date |
| IC19 | <p>A written report shall be submitted to the Agency for approval proposing and justifying an alternative to the outfall discharge sulphide testing and analysis at present carried out, and one that would most accurately reflect the impact on the receiving water.</p> <p>Where appropriate the report shall include proposals for improvement and 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>Proposals shall be implemented by the operator from the date of approval by the Agency...</p> | Completed. |
| IC20 | <p>A written report shall be submitted to the Agency reviewing the results of suspended solids, COD and cyanide monitoring of the releases to water from OF1, OF2 and OF3 for the purpose of setting limits for these substances. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the report.</p> | Completed. No ELV required. |
| IC21 | <p>A written report shall be submitted to the Agency reviewing the results of the particulate releases from the GTG/HRSG CEMS, prior to the setting of a limit. The 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</p> | Completed. No ELV required. |

| Table S1.3 Improvement programme requirements Permit BR6996IC | | |
|--|--|--|
| Reference | Requirement | Date |
| IC22 | A written plan shall be submitted to the Agency for approval detailing the measures to be taken to achieve continuous measurement of sulphur dioxide of the emissions to air from the SRU. 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. The plan shall be implemented by the operator from the date of approval by the Agency. | Completed. |
| IC23 | A written plan shall be submitted to the Agency for approval detailing the measures to be taken to reduce the mass of sulphur dioxide released from combustion plants at the installation by 31 December 2010. The plan shall include detail on how higher sulphur fuels will be replaced with lower sulphur fuels, as well as any steps taken to increase energy efficiency which will also lead to reductions in sulphur dioxide emissions. A BAT assessment of the refinery fuel scrubbing facilities shall be programmed into the plan. 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. The plan shall be implemented by the operator from the date of approval by the Agency. | Completed. |
| IC24 | The operator shall carry out a waste minimisation audit, having regard to section 2.4.2 of the Agency's IPPC Sector Guidance Note S1.02. A written report of the audit shall be submitted to the Agency and shall include a plan with dates for the implementation of improvements. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan. | Completed, subject to regular review. |
| IC25 | The operator shall carry out a waste recovery and disposal options appraisal, having regard to section 2.6 of the Agency's IPPC Sector Guidance Note S1.02. A written report of the options appraisal shall be submitted to the Agency and shall include a plan with dates for the implementation of improvements. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan | Completed, subject to regular review. |
| IC26 | The operator shall review the biopile working plan with reference to Sector Guidance Note S5.06 and, where necessary, amend written procedures. The operator shall submit a report to the Agency for approval summarising the amendments and any changes to the OIMS. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan. The amended procedures shall be implemented by the operator from the date of approval by the Agency. | Not required; process no longer carried out by the operator. |
| IC27 | The operator shall submit a written report to the Agency detailing: (i) an assessment of the effectiveness of the biopile treatment, including correlation of all relevant parameters; and (ii) an options appraisal for treatment of the material at present treated in the biopile. Where appropriate the report shall include proposals for improvement and 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. Proposals shall be implemented by the operator from the date of approval by the Agency... | Not required; process no longer carried out by the operator. |

| Table S1.3 Improvement programme requirements Permit BR6996IC | | |
|--|---|---|
| Reference | Requirement | Date |
| IC28 | <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, subject to completion of planned improvements. |
| IC 29 | <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 not less than 99% in accordance with the 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. |
| IC30 | <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 of Sector Guidance Note S 1.02 and other relevant extant guidance. 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 subject to ongoing improvements. |
| IC31 | <p>A written report shall be submitted to the Agency detailing the results of 3:D thermal modelling of the discharges from W1 and 2. The report shall include an assessment of the heat load reductions throughout the year necessary to ensure, at the edge of the mixing zone, the temperature does not exceed ambient by more than 5°C and with a maximum of 28°C.</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. |
| IC32 | <p>A written report shall be submitted to the Agency detailing the likely impact on the European sites during construction and operation of an outfall that extended into the main body of Southampton Water. Particular reference shall be made to Lamprey for the operational impact.</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 S1.3 Improvement programme requirements Permit BR6996IC | | |
|--|---|-------------|
| Reference | Requirement | Date |
| IC33 | <p>A written report shall be submitted to the Agency detailing a BAT options appraisal of measures for reducing the heat load in W1 and 2 discharges to meet the WQTAG60 guidance. The report shall include, but not be limited to: (i) identification of those areas in the Energy study that could reduce the heat load with quantification of the reductions; (ii) identification of those areas where air-fin cooling or cooling towers could be employed, with quantification of the reduction; (iii) assessment of the options for exporting low level heat for use beyond the site. Where appropriate the report shall include proposals for improvement and dates for the implementation of individual measures.</p> <p>The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan.</p> <p>Proposals shall be implemented by the operator from the date of approval by the Agency.</p> | Completed. |
| IC34 | <p>The operator shall complete installation of the sampling points for release point PS/V1. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on completion of the above.</p> | Completed |
| IC35 | <p>A written report shall be submitted to the Agency comprising a BAT assessment of the quantities of VOC released to atmosphere during ship, rail and road tanker loading.</p> <p>Where appropriate the report shall include proposals for improvement and dates for the implementation of individual measures.</p> <p>The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan.</p> <p>Proposals shall be implemented by the operator from the date of approval by the Agency.</p> | Completed |
| IC36 | <p>A written report shall be submitted to the Agency for approval. The report shall contain a protocol for a monitoring programme to assess changes in acidification and eutrophication deposition and ecological effects at an appropriate Natura 2000 site. The protocol will include the selection of the Natura 2000 sites and a time scale for implementation of the programme.</p> <p>The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the report. The protocol detailed in the report shall be implemented by the Operator from the date of approval by the Environment Agency.</p> | Completed |

| Table S1.3 Improvement programme requirements Permit BR6996IC | | |
|--|---|-------------------------|
| Reference | Requirement | Date |
| IC37 | <p>The Operator shall undertake a review of the existing screening measures at the intakes and outfalls which provide and discharge water to and from the Installation. The review shall be undertaken with reference to the Eels (England and Wales) Regulations 2009 (SI 2009/3344) and the Environment Agency "Safe Passage for Eel" Regulatory Position Statement dated February 2013.</p> <p>The Operator shall submit details of the arrangement suitable to meet the requirements for the safe passage of eels [of the Eels (England and Wales) Regulations 2009 (SI 2009/3344)] by either:-</p> <ul style="list-style-type: none"> • Providing a written proposal for the installation of an eel screen. • Providing a written proposal to the modification of existing screening arrangements. • Providing a written response with an explanation and description of how the existing screening arrangements can be regarded to meet the requirements for the safe passage of eels [of SI 2009/3344] either without change or with mitigation measures. • Providing a written response setting out a case for an exemption <p>In all cases, the proposal shall be submitted in writing for the approval of the Environment Agency. Where appropriate, each proposal shall contain an assessment of alternative options considered including impacts on other fish species and an explanation of why the proposed option has been chosen.</p> <p>Where installation of eel screen; modification of existing arrangements; or mitigation measures are proposed, the submission shall contain relevant timescales for installation in accordance with the Safe Passage for Eel Regulatory Position Statement dated February 2013.</p> <p>The proposals shall be implemented in accordance with the Environment Agency's written approval.</p> | Extended to 30/03/17 |
| IC38 | <p>A review shall be carried out of soot blowing and dust monitoring on SP4 (LCP 152, emission point A1). The review shall include, but not be limited to:</p> <ul style="list-style-type: none"> • an assessment of the conditions under which soot blowing is required; • the frequency and duration of soot blowing events; • an estimation of the level of dust released during soot blowing activities; and • the performance and capability of the current dust analyser and details of any proposed improvements with indicative timescales for completion. <p>A written report shall be submitted to the Environment Agency detailing the findings following the review. The report shall identify any measures to be taken to reduce soot blowing activities, a methodology to estimate the quantity of dust releases (for the purposes of annual mass release reporting) during these periods and any proposed improvements to the current dust analyser.</p> <p>The measures, methodology and improvements shall be implemented by the operator from the date of approval by the Agency.</p> | 31 August 2017 |

| Table S1.3 Improvement programme requirements Permit BR6996IC | | |
|--|---|-----------------------|
| Reference | Requirement | Date |
| Improvement programme requirements permit JP3631KW | | |
| Reference | Requirement | Date |
| IC1 | <p>The operator shall install and operate continuous emission monitors for particulate matter (dust) on the 70 m and 45 m stacks (A1 and A2). The operator shall provide written confirmation when this has been completed. The written confirmation shall include:</p> <ul style="list-style-type: none"> • Details of the location of the monitoring equipment • Measures to be used so that monitoring equipment, personnel and organisations employed for the emissions monitoring programme shall have either MCERTS certification or accreditation in accordance with condition 3.6.3 • Date of commencement of operation <p>The plan shall be implemented by the operator from the date of approval in writing by the Agency.</p> | Completed |
| IC2 | <p>The operator shall submit a written protocol for use when switching to agreed alternative distillate fuel oil under commercial conditions as permitted by condition 2.3.3. The protocol shall include but not be limited to:</p> <ul style="list-style-type: none"> • Calculation methodology used to determine the decision to switch fuels • Details of documentary evidence that will be made available to support the decision (including any commercial in confidence considerations) • Measures in place to ensure that fuel is purchased to cover commercially advantageous periods only • Procedures detailing when and how the intention to switch fuels will be notified to the Agency. <p>The protocol shall be implemented from the date of approval by the Agency.</p> | Completed 24/07/09 |
| IC3 | <p>The operator shall undertake a review of waste storage in accordance with Section 2.5 of the IPPC Sector Guidance Note Combustion Activities, with particular regard to the provision of impermeable surfacing, drainage arrangements and potential contamination of land, and submit a report to the Agency detailing findings. The report shall include but not be limited to</p> <ul style="list-style-type: none"> • A review of all individual waste storage areas including temporary storage in process areas • A review of arrangements for storage of empty containers currently stored in the oil tank bund • Labelling of containers • A review of compliance with the Duty of Care requirements for containment and storage of wastes • Identification of areas where impermeable surfacing and spill containment for waste storage areas is not provided • Identification of improvement measures • A plan for the implementation of the measures including timescales for completion. <p>The corrective actions shall be implemented from the date of approval by the Agency.</p> | Completed 16/02/09 |
| IC4 | <p>The operator shall undertake a drainage survey and provide a written report detailing findings of the survey. The report shall include but not be limited to:</p> <ul style="list-style-type: none"> • Details of drainage arrangements for the underground pipe area and | Completed 11/02/09 |

| Table S1.3 Improvement programme requirements Permit BR6996IC | | |
|--|---|---|
| Reference | Requirement | Date |
| | <p>fate of potential leakages from this area</p> <ul style="list-style-type: none"> • Identification of improvements to systems in place to minimise leakages from underground pipework in accordance with Section 2.2.9 of the IPPC Sector Guidance Note Combustion Activities • Identification of improvements to systems in place to prevent overflows from the interceptor (e.g. level monitoring equipment, location of local display) • A plan for the implementation of all improvements with timescales for completion. <p>The plan shall be implemented by the operator from the date of approval in writing by the Agency.</p> | |
| IC5 | <p>The operator shall undertake an environmental noise assessment in accordance with Horizontal Guidance Note IPPC H3 and submit a report to the Agency detailing the findings of the assessment. The report shall include but not be limited to:</p> <ul style="list-style-type: none"> • Identification of sensitive receptors • Identification of all potential measures for noise reduction • A plan for the implementation of all measures identified including timescales for completion or justification where these are not considered appropriate. <p>The corrective actions shall be implemented from the date of approval by the Agency.</p> | Completed 16/02/10 subject to implementation of agreed action plan. |
| IC6 | <p>The operator shall undertake an assessment of the existing aspects register and relevant procedures against section 2.8 of the IPPC Sector Guidance Note Combustion Activities to identify and address any deficiencies. The assessment shall include but not be limited to:</p> <ul style="list-style-type: none"> • Identification of hazards listed in the Guidance Note • An assessment of the risks for each hazard identified in line with the Guidance note • Identification of techniques necessary to reduce the risks associated with each hazard identified <p>A written report of the assessment, including a plan for corrective actions, timescales and revisions to existing documents and procedures shall be submitted to the Agency for approval.</p> <p>The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the report.</p> <p>The corrective action plan shall be implemented from the date of approval by the Agency.</p> | Completed 11/02/09 |
| IC7 | <p>An energy efficiency plan shall be submitted to the Agency in accordance with Section 2.7 of the IPPC Sector Guidance Note Combustion Activities. The plan shall include but not be limited to:</p> <ul style="list-style-type: none"> • Identification of initiatives to minimise the amount of 'works power' used on site • Identification of energy efficiency measures relevant to the site • The Specific Energy Consumption (SEC) for each fuel type. • Procedures in place requiring the routine regular reporting of energy efficiency <p>The plan shall be implemented from the date of approval by the Agency. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the plan.</p> | Completed 21/12/09 subject to completion of agreed improvement plan |
| IC8 | <p>A water efficiency audit shall be submitted to the Agency in accordance with Section 2.4.3 of the IPPC Sector Guidance Note Combustion Activities. The audit shall include but not be limited to:</p> | Completed 07/10/09 subject to |

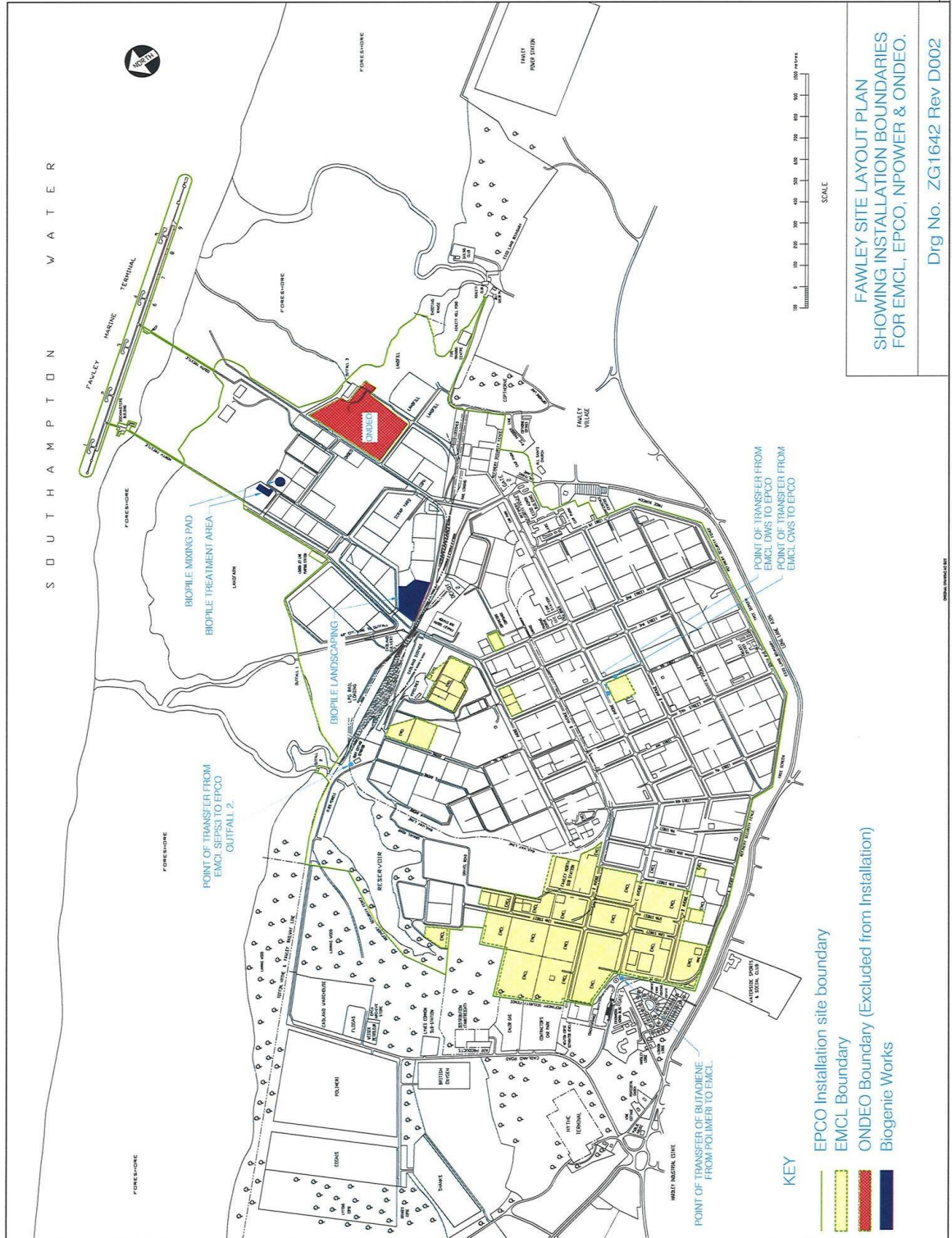
| Table S1.3 Improvement programme requirements Permit BR6996IC | | |
|--|--|---|
| Reference | Requirement | Date |
| | <ul style="list-style-type: none"> • Details of procedures in place to monitor water use • Investigate the means of reducing water use • Investigate the potential and means for condensate return and provide justification where this is not feasible • Details of procedures in place requiring the routine regular review of water use and implementation of actions generated from these reviews <p>The audit shall contain dates for the implementation of individual improvement measures.</p> <p>The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the audit.</p> | completion of agreed improvement plan |
| IC9 | <p>A waste minimisation audit shall be submitted to the Agency in accordance with Section 2.4.2 of the IPPC Sector Guidance Note Combustion Activities. The audit shall include but not be limited to:</p> <ul style="list-style-type: none"> • Details of procedures in place to identify reductions in raw material usage • Investigation of means to reduce waste generated • Identification of best practicable options for waste disposal for all waste streams <p>The audit shall contain dates for the implementation of individual improvement measures.</p> <p>The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the audit.</p> | Completed 09/02/10 subject to implementation of improvement objectives. |
| IC10 | <p>The operator shall produce a written site closure plan in line with the requirements of Section 2.11 of the IPPC Sector Guidance Note Combustion Activities. A copy of the site closure plan shall be submitted to the Agency for approval.</p> | Completed 22/01/10 |

| Table S1.4 Appropriate measures for fugitive emissions | |
|---|---------------------------|
| Measure | Dates |
| <p>The operator shall carry out a managed LDAR programme for testing potential sources of fugitive emissions of VOCs from operational plant at the installation, as described in Sections 2.2.4 and 2.10.1 of their application or as agreed in writing with the Environment Agency. 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.</p> | From date of permit issue |
| <p>The operator shall carry out boundary VOC speciation monitoring for measurement of VOCs from operational plant at the installation in accordance with the March 2004 Energy Institute Protocol. The operator shall prevent, or where that is not possible, minimise continued emissions from those sources</p> | From date of permit issue |
| <p>The operator shall carry out boundary benzene monitoring for measurement of benzene from operational plant at the installation as described in Section 2.10.2 of their application or as agreed in writing with the Environment Agency. The operator shall prevent, or where that is not possible, minimise continued emissions from those sources</p> | From date of permit issue |

| Table S1.5 Appropriate measures for odour | |
|---|---|
| Measure | Dates |
| <p>An odour management plan shall be submitted to the Agency, detailing the measures to be used to control emissions of odour.</p> <p>The plan shall be implemented and maintained 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 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 12 months following permit issue</p> |

| Table S1.6 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 Noise Guidance) Part 2).</p> <p>The plan shall build on the operator's proposed Environment Noise Management Procedures scoping document ref EA763. Additional points shall include, but not be limited to:</p> <ul style="list-style-type: none"> (i) Identification and assessment of the impact of current noise emissions arising from the permitted activities using the 'survey methodology: process or site survey' given in H3 (Part 2) section 2.4.1.2 (ii) Detail an options appraisal for achieving Best Available Techniques for targeted noise attenuation and compliance, based on indicative benchmarks given in H3. (iii) Further to (ii), proposals for implantation of BAT with dates for the implementation of individual measures. (iv) Proposals to ensure that new items of plant and equipment minimize any potential to contribute to creeping ambient levels in the locality. (v) Proposals for measuring and assessing the impact of installation noise upon community noise levels using a hazard and risk-based approach. Dates for implementation of individual measures shall be included. <p>The plan shall be implemented and maintained 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 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 12 months following permit issue</p> |

Schedule 2 - Site plan



FAMLEY SITE LAYOUT PLAN
SHOWING INSTALLATION BOUNDARIES
FOR EMCL, EPCO, NPOWER & ONDEO.

Drig No. ZG1642 Rev D002

Schedule 3 - Waste types, raw materials and fuels

| Table S3.1 Raw materials and fuels | |
|---|---|
| Raw materials and fuel description | Specification |
| Biopile raw materials | No liquid or odour producing wastes |
| | Maximum of 2700 tonnes waste treated at the biopile per annum |
| Benzene heart cut vapour and propane support fuel | Less than 0.5mg/m ³ hydrogen sulphide |
| For release points A2, A3, A5, A7 and A8 where the fuel fired is a mixture of natural gas and refinery fuel gas | The fraction of natural gas must be less than 50% |
| For release point A29 | No liquid fuel shall be fired |

| Table S3.2 Waste types and quantities from refinery for biopile treatment | |
|--|---|
| Maximum quantity | 2700 tonnes |
| Waste code | Description |
| 05 01 02* | Desalter sludges |
| 05 01 03* | Tank bottom sludges |
| 05 01 06* | Oily sludges from maintenance of plant |
| 05 01 09* | Sludges from on-site effluent treatment |
| 07 01 11* | Sludges from chemicals manufacture effluent treatment |
| 13 05 02* | Sludges from oil/water separators |
| 13 05 03* | Interceptor sludges |
| 16 07 08* | Wastes containing oil from tank and barrel cleaning |
| 17 05 03* | Soil and stones |
| 19 13 01* | Solid wastes from soil remediation |
| 19 13 03* | Sludges from soil remediation |
| 19 13 05* | Sludges from groundwater remediation |

| Table S3.3 Permitted waste types and quantities from other permitted areas of the installation for biopile treatment | |
|---|---|
| Maximum quantity | 2700 tonnes per annum |
| Waste code | Description |
| 07 01 11* | Sludges from chemicals manufacture effluent treatment |
| 13 05 02* | Sludges from oil/water separators |
| 13 05 03* | Interceptor sludges |
| 16 07 08* | Wastes containing oil from tank and barrel cleaning |
| 17 05 03* | Soil and stones |
| 19 13 01* | Solid wastes from soil remediation |
| 19 13 03* | Sludges from soil remediation |
| 19 13 05* | Sludges from groundwater remediation |

Table S3.4 Permitted waste types and quantities for treatment of ballast water

| | |
|-------------------------|--|
| Maximum quantity | No limit |
| Waste code | Description |
| 16 07 08* | Ship ballast water containing oil / wastes from ship transport tanks containing oil. |

Table S3.5 Permitted waste types and quantities for treatment of spent caustic from EMCL (ZP3839MG)

| | |
|-------------------------|--------------------|
| Maximum quantity | No limit |
| Waste code | Description |
| 06 02 04* | Spent caustic |

Schedule 4 – Emissions and monitoring

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
|--|--|---|-------------------------------|---|--|--|
| A1 on Authorised stack locations drawing (SP4) | LCP No 152 2 x 400MWth Boiler Plant fired on gaseous and liquid fuels Note 2 Note 3 | Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂) | 424 mg/m ³ | Calendar monthly mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 466 mg/m ³ | Daily mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 848 mg/m ³ | 95% of validated hourly averages within a calendar year | Continuous | BS EN 14181 |
| | | Carbon Monoxide | - | - | Continuous | BS EN 14181 |
| | | Sulphur Dioxide | 1000 mg/m ³ | Calendar monthly mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 1000 mg/m ³ | Daily mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 1000 mg/m ³ | 95% of validated hourly averages within a calendar year | Continuous | BS EN 14181 |
| | | Dust | 30 mg/m ³ | Calendar monthly mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 33 mg/m ³ | Daily mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 60 mg/m ³ | 95% of validated hourly averages within a calendar year | Continuous | BS EN 14181 |
| | | Oxygen | - | - | Continuous as appropriate to reference | BS EN 4181 Note 4 |
| | | Water vapour | - | - | Continuous as appropriate to reference | BS EN 4181 Note 4 |
| | | Stack gas temperature | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 |

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
|---|---------------|--------------------|--------------------------------------|-------------------------|--|---|
| | | Stack gas pressure | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 |

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
|---|---|---|--------------------------------------|--|---|---|
| A2 (PS/V3) | LCP No 151 1 x 125 and 1 x 38.7 MWth Distillation fired on in- condensable and different types of gaseous fuels | 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 |
| | | Carbon Monoxide | - | - | Continuous | BS EN 14181 |
| | | Sulphur Dioxide | 1000 mg/m ³ | Calendar monthly mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 1000 mg/m ³ | Daily mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 1000 mg/m ³ | 95% of validated hourly averages within a calendar year | Continuous | BS EN 14181 |
| | | Oxygen | - | - | Continuous as appropriate to reference | BS EN 14181 Note 4 |
| | | Water vapour | - | - | Continuous as appropriate to reference | BS EN 14181 Note 4 |
| | | Stack gas temperature | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 |
| | | Stack gas pressure | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 |
| Dust | 5 mg/m ³ | - | At least every 6 months | BS EN 13284- 1 | | |
| A3 (PH-1) | LCP No 147 1 x 21.5 and 1 x 43.7 MWth Additional non-LCP inputs: 1 x 10.5 and 1 x | Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂) | 300 mg/m ³ | - | At least every 6 months | BS EN 14792 |
| | | Carbon Monoxide | - | - | At least every 6 months | BS EN 15058 |
| | | Sulphur Dioxide | 1000 mg/m ³ | - | At least every 6 months | BS EN 14791 |

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
|---|---|---|--------------------------------------|---|---|--|
| | 7.1 MWth Powerformer fired on different types of gaseous fuel | Dust | 5 mg/m ³ | - | At least every 6 months | BS EN 13284-1 |
| A4 (PH1-F4) | Powerformer fired on gaseous fuel | Sulphur dioxide | 2500 mg/m ³ | Hourly average | Continuous | As agreed in writing with the Environment Agency |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 |
| | | Oxides of nitrogen | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |
| A5 (PH2) | LCP No 148 1 x 16, 1 x 70, 1 x 17, 1 x 27 and 1 x 35 MWth Powerformer fired on different types of gaseous fuel | 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 |
| | Note 5 | Carbon Monoxide | - | - | Continuous | BS EN 14181 |
| | | Sulphur Dioxide | 1000 mg/m ³ | Calendar monthly mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 1000 mg/m ³ | Daily mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 1000 mg/m ³ | 95% of validated hourly averages within a calendar year | Continuous | BS EN 14181 |
| | | Oxygen | - | - | Continuous as appropriate to reference | BS EN 14181 Note 4 |
| | | Water vapour | - | - | Continuous as appropriate to reference | BS EN 14181 Note 4 |

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
|---|---------------|-----------------------|--------------------------------------|-------------------------|--|--|
| | | Stack gas temperature | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 |
| | | Stack gas pressure | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 |
| | | Dust | 5 mg/m ³ | - | At least every 6 months | BS EN 13284-1 |

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
|---|--|---|--------------------------------------|------------------------------|---|--|
| A6 (PS2) Note 11 | Crude distillation fired on liquid and gaseous fuel | Sulphur dioxide | 3000 mg/m ³ | Hourly average | Continuous | As agreed in writing with the EA |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 |
| | | Dust | No limit set | Annual | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 13284-2 |
| | | Oxides of nitrogen | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |
| A7 (ENSR) | LCP No 145 1 x 50 and 1 x 19 MWth Exxol-N-Finer fired on different types of gaseous fuel | Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂) | 300 mg/m ³ | - | At least every 6 months | BS EN 14792 |
| | | Carbon Monoxide | - | - | At least every 6 months | BS EN 15058 |
| | | Sulphur Dioxide | 1000 mg/m ³ | - | At least every 6 months | BS EN 14791 |
| | | Dust | 5 mg/m ³ | - | At least every 6 months | BS EN 13284-1 |
| A8 (PS/V1) | LCP No 150 1 x 37.9 and 1 x 23.9 MWth Distillation fired on different types of gaseous fuel and incondensables | Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂) | 300 mg/m ³ | - | At least every 6 months | BS EN 14792 |
| | | Carbon Monoxide | - | - | At least every 6 months | BS EN 15058 |
| | | Sulphur Dioxide | 1000 mg/m ³ | - | At least every 6 months | BS EN 14791 |
| | | Dust | 5 mg/m ³ | - | At least every 6 months | BS EN 13284-1 |
| A9 (PV2) Note 11 | Vacuum Distillation fired on gaseous fuel and incondens- | Sulphur dioxide | 2500 mg/m ³ | Hourly average | Continuous | As agreed in writing with the Environment Agency |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 |

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
|---|---------------------------------------|--------------------|--------------------------------------|------------------------------|---|--|
| | sables | Oxides of nitrogen | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |
| A10 (HD5/6/7) | Hydrofiner fired on gaseous fuel | Sulphur dioxide | 2500 mg/m ³ | Hourly average | Continuous | As agreed in writing with the Environment Agency |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 |
| | | Oxides of nitrogen | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |
| A11 (ISOM) | Isomeriser fired on gaseous fuels | Sulphur dioxide | 2500 mg/m ³ | Hourly average | Continuous | As agreed in writing with the Environment Agency |
| | | Oxides of nitrogen | No limit set | Hourly average | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |
| A12 (LESR) | Light Ends Unit fired on gaseous fuel | Sulphur dioxide | 2500 mg/m ³ | Hourly average | Continuous | As agreed in writing with the EA |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 |
| | | Oxides of nitrogen | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |
| A13 (HD3) | Hydrofiner fired on gaseous fuel | Sulphur dioxide | 2500 mg/m ³ | Hourly average | Continuous | As agreed in writing with the EA |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 |
| | | Oxides of nitrogen | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
|---|---|---|--------------------------------------|---|---|--|
| A14 (HD4) | Hydrofiner fired on gaseous fuel | Sulphur dioxide | 2500mg/m ³ | Hourly average | Continuous | As agreed in writing with the Environment Agency |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 |
| | | Oxides of nitrogen | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |
| A15 (RESID) | Hydrofiner fired on gaseous fuel | Sulphur dioxide | 2500 mg/m ³ | Hourly average | Continuous | As agreed in writing with the EA |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 |
| | | Oxides of nitrogen | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |
| A16 (GTG/ HRSG) | LCP No 146 1 x 196 MWth Gas Turbine and Heat Recovery Steam Generation plant fired on refinery fuel gas only. Note 12 | Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂) | 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 |
| | | Carbon Monoxide | - | - | Continuous | BS EN 14181 |
| | | Sulphur Dioxide | 850 mg/m ³ | Validated hourly average | Continuous | BS EN 14181 |
| | | Dust | - | - | Continuous | BS EN 14181 |
| | | Oxygen | - | - | Continuous as appropriate to reference | BS EN 14181 Note 4 |
| | | Water vapour | - | - | Continuous as appropriate to reference | BS EN 14181 Note 4 |
| | | Stack gas temperature | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 |

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | Reference period | Monitoring frequency | Monitoring standard or method | |
|----------------------------------|--|---|-------------------------------|---|---|--|--|
| | | Stack gas pressure | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 | |
| A16 (GTG/HRSG) | LCP No 146 1 x 196 MWth Gas Turbine and Heat Recovery Steam Generation plant fired on a mixture of liquid fuel and refinery fuel gas. | Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂) Note 3 | 90 mg/m ³ | Calendar monthly mean of validated hourly averages | Continuous | BS EN 14181 | |
| | | | 99 mg/m ³ | Daily mean of validated hourly averages | Continuous | BS EN 14181 | |
| | | | 180 mg/m ³ | 95% of validated hourly averages within a calendar year | Continuous | BS EN 14181 | |
| | | | Carbon Monoxide | - | - | Continuous | BS EN 14181 |
| | | | Sulphur Dioxide | 850 mg/m ³ | Validated hourly average | Continuous | BS EN 14181 |
| | | | Dust | - | - | Continuous | BS EN 14181 |
| | | | Oxygen | - | - | Continuous as appropriate to reference | BS EN 14181 Note 4 |
| | | | Water vapour | - | - | Continuous as appropriate to reference | BS EN 14181 Note 4 |
| | | | Stack gas temperature | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 |
| | Stack gas pressure | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 | | |
| A17 (BIT1) Note 11 | Bitumen Plant 1 fired on liquid fuel | Sulphur dioxide | 4500 mg/m ³ | Hourly average | Continuous | As agreed in writing with the Environment Agency | |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 | |
| | | Dust | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 13284-2 | |

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
|---|---|--------------------|--------------------------------------|------------------------------|---|--|
| | | Oxides of nitrogen | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |
| A18 (BIT2) Note 11 | Bitumen Plant 1 fired on gaseous fuel | Sulphur dioxide | 2500 mg/m ³ | Hourly average | Continuous | As agreed in writing with the Environment Agency |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 |
| | | Oxides of nitrogen | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |
| A19 (MVEC) | Combustion of recovered vapour from ships loading | Sulphur dioxide | No limit set | Hourly average | Continuous | As agreed in writing with the Environment Agency |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 |
| | | Oxides of nitrogen | 700 mg/m ³ | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |
| | | Carbon monoxide | 50 mg/m ³ | | | ISO 12039 |
| | | Benzene | 5 mg/m ³ | | | As agreed in writing with the Environment Agency |
| | | VOC Note 6 | 35 mg/m ³ | | | |
| A20 (WISR) | Wax isomeriser fired on gaseous fuels | Sulphur dioxide | 2500 mg/m ³ | Hourly average | Continuous | As agreed in writing with the EA |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 |
| | | Oxides of nitrogen | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
|---|---|---|--------------------------------------|--|---|--------------------------------------|
| A21 (SCAN) | Scanfiner fired on gaseous fuels | Sulphur dioxide | 2500 mg/m ³ | Hourly average | Continuous | As agreed in writing with the EA |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 |
| | | Oxides of nitrogen | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |
| A22 (FCC) | FCCU Regen | Sulphur dioxide | 3000 mg/m ³ | Hourly average | Continuous | BS EN 14181 |
| | | Dust | 130 mg/m ³ Note 7 | Calendar monthly mean of validated hourly averages | Continuous | BS EN 14181 |
| | | Oxides of nitrogen | 1500 mg/m ³ | Hourly average | Continuous | BS EN 14181 |
| | | Carbon monoxide | 1000 mg/m ³ | Daily average | Continuous | ISO 12039 |
| 130 mg/m ³ | Calendar monthly average | | | | | |
| A23 (SU3/4) | SRU | Sulphur dioxide | 66,900 mg/m ³ | Hourly average | Continuous (IC29) | BS EN 14181 |
| | | | 38,000 mg/m ³ Note 8 | Daily average | | |
| A24, A25, A26, A27 | Flares | Flare gas mass flow | No limit set Tonnes | Calendar monthly | Continuous | As agreed in writing with the EA |
| | | Sulphur dioxide mass flow | | | | |
| A28 HD8 | ENSR Hydrofiner Furnace fired on gaseous fuel | Sulphur dioxide | 2500 mg/m ³ | Hourly average | Continuous | BS EN 15267-3 |
| | | | | Average over sampling period | Bi-annual discontinuous | BS EN 14791 |
| | | Oxides of nitrogen | No limit set | Average over sampling period | Bi-annual discontinuous or as agreed in writing with the Environment Agency | BS EN 14792 |
| A29 (Cogen Plant) | LCP No 144 1 x 451 MWth Gas turbine and Heat Recovery | Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂) Note 3 | 77 mg/m ³ | Calendar monthly mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 85 mg/m ³ | Daily mean of validated hourly averages | Continuous | BS EN 14181 |

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
|---|--|---|--|---|--|---|
| | Steam Generation Plant fired on different types of gaseous fuel. Note 3 Note 12 | | 154 mg/m ³ | 95% of validated hourly averages within a calendar year | Continuous | BS EN 14181 |
| | | Carbon Monoxide | 25 mg/m ³ | Daily mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 30 mg/m ³ | 95% of validated hourly averages within a calendar year | Continuous | BS EN 14181 |
| | | Sulphur Dioxide | 95 mg/m ³ | Daily mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 95 mg/m ³ | 95% of validated hourly averages within a calendar year | Continuous | BS EN 14181 |
| | | Oxygen | - | - | Continuous as appropriate to reference | BS EN 14181 Note 4 |
| | | Water vapour | - | - | Continuous as appropriate to reference | BS EN 14181 Note 4 |
| | | Stack gas temperature | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 |
| Stack gas pressure | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 | | |
| A29 (Cogen Plant) | LCP No 144 1 x 176 MWth Auxiliary firing on the Heat Recovery Steam Generation Plant only fired on natural gas. Note 13 Note 14 | Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂) Note 3 | 100 mg/m ³ | Calendar monthly mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 110 mg/m ³ | Daily mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 200 mg/m ³ | 95% of validated hourly averages within a calendar year | Continuous | BS EN 14181 |
| | | Carbon Monoxide | 100 mg/m ³ | Calendar monthly mean of validated hourly averages | Continuous | BS EN 14181 |
| | | | 110 mg/m ³ | Daily mean of validated hourly averages | Continuous | BS EN 14181 |

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | 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 |
| | | 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 |
| | | Oxygen | - | - | Continuous as appropriate to reference | BS EN 14181 Note 4 |
| | | Water vapour | - | - | Continuous as appropriate to reference | BS EN 14181 Note 4 |
| | | Stack gas temperature | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 |
| | | Stack gas pressure | - | - | Continuous as appropriate to reference | Traceable to national standards Note 4 |
| A30 Cogen Plant | GTG by pass stack 45 m | - | - | - | - | - |
| Process vents | Distillation, Lubes, Cat, Reforming, Utilities, Lab note9 | VOCs | No limit set | - | - | Note 10 |
| Process vents | Bulk storage tanks | VOCs (Class B) | No limit set | Annually | Continuous | Based on API method. Note 10 |
| Bulk loading vents | Ship, rail and tanker loading | VOCs | No limit set | - | - | Note 10 |
| Relief valves | Process units | VOCs Class A | No release permitted | - | - | Note 10 |
| | | Benzene | | | | |
| Diesel fire pumps | Diesel fire pumps | Combustion products | No limit set | - | - | - |

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

| Emission point ref. & location | Source | Parameter | Limit (including unit) Note 1 | Reference period | Monitoring frequency | Monitoring standard or method |
|--|---------------|-------------------|--------------------------------------|-------------------------|-----------------------------|--------------------------------------|
| Gas Vents and Steam and pressure release valves on the Cogen Plant | Process areas | No parameters set | No limits set | - | - | Permanent access not required |

Note 1 Subject to note 7 below, the limit does not apply at start up or shutdown and excludes soot blowing

Note 2 Capacity limited to <500MW by application of software interlock in accordance with RGN2 and guidance provided in the MFF Protocol

Note 3 Based on representative fuel split which shall be subject to annual review or within 28 days if there are significant changes to the fuel split in accordance with section 6 of the MFF Protocol

Note 4 Equivalent monitoring conditions, as specified in the response to the Regulation 60 Notice of 05/08/2015, are agreed.

Note 5 Emission Limit Values exclude regens that occur approximately once a year

Note 6 Excluding benzene

Note 7 . a) FCC regenerator releases during start-up, after oil into the unit, during catalyst addition and during catalyst re-circulation to be agreed in writing with the Environment Agency; b) Limit of 160 mg/m³ applies when there is no residue feed to the FCC for more than seven days.

Note 8 Limit of 55,000mg/m³ applies when there is insufficient acid gas to sustain normal operation; “normal operation” to be agreed in writing with the Environment Agency.

Note 9 As detailed in Minor Vents additional information.

Note 10 Permanent sampling access not required

Note 11 Unit currently shut down

Note 12 These Emission Limit values apply above 70% load

Note 13 These Emission Limit Values apply only when the HRSG is operating in auxiliary mode (also known as Cold Air Firing) under emergency conditions where there is a credible plan to recover the operation of the Gas Turbine.

Note 14 The use of other gaseous fuels and associated ELVs shall be agreed in writing with the Environment Agency.

Table S4.1b Point source emissions to air – bubble emission limit and monitoring requirements

| Emission point ref. & location | Parameter | Source | Limit (including unit) | Reference period | Monitoring frequency | Monitoring standard or method |
|--|------------------|--|-------------------------------|-------------------------|--|--|
| A1, A2, A3, A4, A5, A6 , A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A28 | Sulphur dioxide | Stacks releasing sulphur dioxide as a combustion product, FCC Regenerator and Sulphur Recovery Units | 1680 mg/m ³ | Hourly average | Continuous or as agreed in writing with the Environment Agency | As agreed in writing with the Environment Agency through completion of IC8 |

| Table S4.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements | | | | | | | | |
|--|--------------------------------------|-----------------------------------|---------------------------|---------------------------|-----------------------------|--------------------------------------|------------|--|
| Emission point ref. & location | Source | Parameter | Limit (incl. unit) | Reference Period | Monitoring frequency | Monitoring standard or method | | |
| W1 on site plan in schedule 2 Outfall 1 emission to Southampton Water | SEPS 1 & Sanitary effluent treatment | pH | 6 – 9 | 24 hour composite average | Daily | FAW 370.07A | | |
| | | Oil | 5 mg/l | | | FAW 370.02 / IP 426 | | |
| | | Ammoniacal Nitrogen (as N) | 5 mg/l | | | BS 1427 / FAW370.14 | | |
| | | Total mono phenols | 1 mg/l | | | CHEMets (ASTM D1783) | | |
| | | TOC | 20 mg/l | | | Wet Test Method 85 | | |
| | | COD | No limit set | | | Note 2 | | |
| | | Suspended solids | No limit set | 24 hour composite average | Weekly | Note 2 | | |
| | | Sulphide (as S) | 500µg/l | | | CHEMets (EPA method 376.2) | | |
| | | Dissolved Copper (as Cu) | 10 µg/l | 24 hour composite average | Monthly | ISO/IEC 17025:2005 | | |
| | | | | Annual average | | | | |
| | | Total Zinc (as Zn) | 40 µg/l | 24 hour composite average | | ISO/IEC 17025:2005 | | |
| | | Total Nickel (as Ni) | 30 µg/l | | | ISO/IEC 17025:2005 | | |
| | | Total Lead (as Pb) | 15 µg/l | | | BS 6068-2.29:1987, ISO 8288-1986 | | |
| | | Total Chromium (as Cr) | 10 µg/l | | | ISO/IEC 17025:2005 | | |
| | | Total Cadmium (as Cd) | 2.5 µg/l | | | ISO/IEC 17025:2005 | | |
| | | Total Mercury (as Hg) | 0.3 µg/l | | | ISO/IEC 17025:2005 | | |
| | | Dissolved arsenic (as As) | No limit set | | | Note 2 | | |
| | | Cyanides (as CN) | No limit set | | | Note 2 | | |
| | | Temperature | 40 C (Note1) | | | Maximum | Continuous | Standard calibrated temperature probe |
| | | Flow under dry weather conditions | 12800m ³ /hr | | | Hour | Continuous | Radar level indication with flow calculation |
| Flow under dry weather conditions | 307200 m ³ /24hr | 24 hours | | | | | | |

| Table S4.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements | | | | | | | | |
|--|---|-----------------------------------|---------------------------|---------------------------|-----------------------------|--------------------------------------|------------|--|
| Emission point ref. & location | Source | Parameter | Limit (incl. unit) | Reference Period | Monitoring frequency | Monitoring standard or method | | |
| W2 on site plan in schedule 2 Outfall 2 emission to Southampton Water | SEPS 2, SEPS3 & Quay Cottage effluent treatment | pH | 6 – 9 | 24 hour composite average | Daily | FAW 370.07A | | |
| | | Oil | 5 mg/l | | | FAW 370.02 / IP 426 | | |
| | | Ammoniacal Nitrogen (as N) | 3 mg/l | | | BS 1427 / FAW370.14 | | |
| | | Total mono phenols | 0.5 mg/l | | | CHEMets (ASTM D1783) | | |
| | | TOC | 30 mg/l | | | Wet Test Method 85 | | |
| | | COD | No limit set | | | Note 2 | | |
| | | Suspended solids | No limit set | 24 hour composite average | Weekly | Note 2 | | |
| | | Sulphide (as S) | 300µg/l | | | CHEMets (EPA method 376.2) | | |
| | | Dissolved Copper (as Cu) | 15 µg/l | 24 hour composite average | Monthly | ISO/IEC 17025:2005 | | |
| | | | | Annual average | | | | |
| | | Total Zinc (as Zn) | 50µg/l | 24 hour composite average | | ISO/IEC 17025:2005 | | |
| | | Total Nickel (as Ni) | 30µg/l | | | ISO/IEC 17025:2005 | | |
| | | Total Lead (as Pb) | 15 µg/l | | | BS 6068-2.29:1987, ISO 8288-1986 | | |
| | | Total Chromium (as Cr) | 10 µg/l | | | ISO/IEC 17025:2005 | | |
| | | Total Cadmium (as Cd) | 2.5 µg/l | | | ISO/IEC 17025:2005 | | |
| | | Total Mercury (as Hg) | 0.3 µg/l | | | ISO/IEC 17025:2005 | | |
| | | Dissolved arsenic (as As) | No limit set | | | Note 2 | | |
| | | Cyanides (as CN) | No limit set | | | Note 2 | | |
| | | Temperature | 40 C (Note1) | | | Maximum | Continuous | Standard calibrated temperature probe |
| | | Flow under dry weather conditions | 9,500m ³ /hr | | | Hour | Continuous | Level gauge with flow calculation from depth |
| Flow under dry weather conditions | 228,000 m ³ /24 hr | 24 hours | | | | | | |

| Table S4.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements | | | | | | |
|--|----------------------------|-----------------------------------|---------------------------|---------------------------|-----------------------------|--------------------------------------|
| Emission point ref. & location | Source | Parameter | Limit (incl. unit) | Reference Period | Monitoring frequency | Monitoring standard or method |
| W3 on site plan in schedule 2 Outfall 3 emission to Southampton Water | SEPS 4 | pH | 6 – 9 | 24 hour composite average | Daily | FAW 370.07A |
| | | Oil | 10 mg/l | | | FAW 370.02 / IP 426 |
| | | Ammoniacal Nitrogen (as N) | 2 mg/l | | | BS 1427 / FAW370.14 |
| | | Total mono phenols | 0.5 mg/l | | | CHEMets (ASTM D1783) |
| | | TOC | 20 mg/l | | | Wet Test Method 85 |
| | | COD | No limit set | | | Note 2 |
| | | Suspended solids | No limit set | 24 hour composite average | Weekly | Note 2 |
| | | Sulphide (as S) | 500µg/l | | | CHEMets (EPA method 376.2) |
| | | Dissolved Copper (as Cu) | 5 µg/l | 24 hour composite average | Monthly | ISO/IEC 17025:2005 |
| | | Total Zinc (as Zn) | 130 µg/l | 24 hour composite average | | ISO/IEC 17025:2005 |
| | | | | Annual average | | |
| | | Total Nickel (as Ni) | 20 µg/l | 24 hour composite average | | ISO/IEC 17025:2005 |
| | | Total Lead (as Pb) | 25 µg/l | | | BS 6068-2.29:1987, ISO 8288-1986 |
| | | Total Chromium (as Cr) | 10 µg/l | | | ISO/IEC 17025:2005 |
| | | Total Cadmium (as Cd) | 2.5 µg/l | | | ISO/IEC 17025:2005 |
| | | Total Mercury (as Hg) | 0.3 µg/l | | | ISO/IEC 17025:2005 |
| | | Dissolved arsenic (as As) | No limit set | | | Note 2 |
| | | Cyanides (as CN) | No limit set | | | Note 2 |
| | | Temperature | 40 C (Note1) | | Maximum | Continuous |
| | | Flow under dry weather conditions | 350 m ³ /hr | Hour | Continuous | Magnetic flow meter |
| Flow under dry weather conditions | 8,400 m ³ /24hr | 24 hours | | | | |

Note 1 This limit applies only until measures identified in Improvement Conditions 31, 32 and 33 are implemented.

Note As agreed in writing with the Environment Agency.

Table S4.3 Annual Permit limits

| Substance | Medium | Limit (including unit) |
|---|--------|------------------------|
| Sulphur dioxide 2016 onwards | Air | 8,600 tonnes |
| Oxides of nitrogen 2017 onwards from emission point A1 | Air | 913 tonnes |
| Oxides of nitrogen 2017 onwards from emission point A29 | Air | 700 tonnes |
| Ammoniacal nitrogen | Water | 193 tonnes |
| Oil | Water | 205 tonnes |
| Oil per tonne feedstock | Water | 3g/t feedstock |
| Mono phenols | Water | 45.5 tonnes |
| Sulphide (as S) | Water | 18 tonne |
| Total Zinc (as Zn) | Water | 6 tonnes |
| Total Nickel (as Ni) | Water | 1 tonne |
| Total Lead (as Pb) | Water | 1tonne |
| Total Chromium (as Cr) | Water | 2 tonnes |
| Total Cadmium (as Cd) | Water | 0.4 tonnes |
| Total Mercury (as Hg) | Water | 0.06 tonnes |

Table S4.4 Noise monitoring requirements

| Location or description of point of measurement | Parameter | Monitoring frequency | Monitoring standard or method | Other specifications |
|---|-----------|----------------------|-------------------------------|----------------------|
| Perimeter noise survey | Noise | Annually | BS 4142:1997 | |

Table S4.5 Ambient air monitoring requirements

| Location or description of point of measurement | Parameter | Monitoring frequency | Monitoring standard or method | Other specifications |
|---|-----------------|----------------------|-------------------------------|--|
| DM1 at SU 42949 03934 (Holbury) | Sulphur dioxide | Continuous | | Monitor to meet AQ monitoring requirements |
| DM2 at SU 45881 03244 (Fawley) | Sulphur dioxide | Continuous | | Monitor to meet AQ monitoring requirements |

| Table S4.6 Process monitoring requirements | | | | |
|--|--------------------------------|---|--|---|
| Emission point reference or source or description of point of measurement | Parameter | Monitoring frequency | Monitoring standard or method | Other specifications |
| Sulphur Recovery Plants, SU3 and SU4 | Efficiency optimisation survey | Two yearly | Not applicable | To include review of analytical results and plant operating data; overall and interstage material and heat balances; overall and interstage efficiencies, evaluation of ammonia destruction efficiency, evaluation against stack emission analyser; recommendations on potential performance monitoring procedures and use of SRU modelling techniques. |
| Sulphur Recovery Plants, SU3 and SU4 | SRU availability | Continuous | Not applicable | |
| Sulphur content of fuel oil to SP4, PS/V3, PS2, GTG | Sulphur content | As agreed in writing with Environment Agency | As agreed in writing with Environment Agency | Average of spot samples taken |
| Refinery fuel gas monitoring | Sulphur content | Daily or as agreed in writing with Environment Agency | As agreed in writing with Environment Agency | Average and maximum of spot samples taken |
| Refinery sulphur balance | Sulphur | Monthly | Not applicable | Mass balance |
| Acid/sour gas flaring or combustion | Events | Continuous | Not applicable | To include date, source, duration, sulphur dioxide released, other comments eg impact on air quality |
| Biopile treatment effectiveness | TOC | Monthly | As agreed with Environment Agency | Reduction in TOC calculation method as agreed with Environment Agency |

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. | All emission points A1 – A29 as listed in Table S4.1 | Every 3 months | From permit issue |
| Emissions to air – oxides of nitrogen Parameters as required by condition 3.6.1. | All emission points A1 – A23 and A28- A29 as listed in Table S4.1 | Every 3 months | From permit issue |
| Emissions to air – dust Parameters as required by condition 3.6.1. | A1, A2, A3, A5, A6, A7 A8, A16, A17, A22 and A29 | Every 3 months | From permit issue |
| Emissions to air – carbon monoxide | A19, A22 and A29 | Every 3 months | From permit issue |
| Emissions to air – benzene, other VOCs | A19 | Every 3 months | From permit issue |
| Emissions to water – flow Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – temperature Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – pH Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – oil Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – ammoniacal nitrogen Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – mono phenols Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – sulphide Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – TOC, COD Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – suspended solids Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – dissolved copper Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – total zinc Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – total nickel Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – total lead Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – total chromium Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – total mercury Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – total cadmium Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – dissolved arsenic Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |
| Emissions to water – cyanide Parameters as required by condition 3.6.1 | W1, W2, W3 | Every 3 months | From permit issue |

| | | | |
|------------------------|-------------------------|------------------------|-------------------|
| CEMS EN14181 reporting | A1, A2, A5, A16 and A29 | As required by EN14181 | From permit issue |
| Flare mass release | A24, A25, A26, A27 | Every 3 months | From permit issue |
| Fugitive VOC releases | | Annual | From permit issue |

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 IED Chapter III Performance parameters for reporting to Defra and other Performance parameters

| Parameter | Frequency of assessment | Units |
|--|-------------------------|----------------------------|
| Crude oil and other oil import (feedstock) | Annually | tonnes |
| Water usage | Annually | tonnes/tonne feedstock |
| Energy usage (electrical) | Annually | MWh/ tonne feedstock |
| Energy usage (all fuels) | Annually | MJ/ tonne feedstock |
| Total release of oil to water per tonne of feedstock (net) | Annually | g oil / tonne feedstock |
| NOx factors for all combustion units | Annually | t NOx/t oil or t NOx/t gas |
| Biopile waste treated | Annually | tonnes |
| Biopile non-waste materials used | Annually | tonnes |
| Non-hazardous and hazardous ballast water | Annually | tonnes |
| Thermal input capacity for each LCP | Annually | MW |
| Annual fuel usage for each LCP | Annually | tJ |
| Total emission to air of NO _x for each LCP | Annually | tonnes |
| Total emission to air of SO ₂ for each LCP | Annually | tonnes |
| Total emission to air of CO for each LCP | Annually | tonnes |
| Total emission to air of dust for each LCP | Annually | tonnes |
| Operating hours for each LCP | Annually | hr |

| Table S5.4 Reporting forms | | |
|--|---|---------------------|
| Media/parameter | Reporting format | Date of form |
| Air and Energy - LCP | Form IED AR1 – energy usage and emissions for the year | 06/02/2017 |
| Air - LCP | Form IED CON 1 – monthly mean, maximum daily and annual percentile concentrations for boilers with continuous monitoring | 06/02/2017 |
| Air - LCP | Form IED CON 2 - monthly mean, maximum daily and annual percentile concentrations for gas turbines with continuous monitoring | 06/02/2017 |
| Air - LCP | Form IED PM1 – discontinuous monitoring results | 06/02/2017 |
| CEMs - LCP | Form IED CEM – continuous measurement systems invalidation log | 06/02/2017 |
| Air – non-LCP | Form Air – 1 – discontinuous monitoring of SO ₂ , NO _x and dust-for non LCPs | 06/02/2017 |
| Air – MVEC CO, Benzene, other VOCs | Form Air – 2 discontinuous monitoring or other form as agreed in writing by the Agency | 06/02/2017 |
| Air - LCPD and non-LCPD SO ₂ | Form Air – 4 continuous monitoring and measurement ELVs/ refinery bubble. | 06/02/2017 |
| Air – Fuels | Form Air – 7 Refinery fuel analyses (daily average data – RFO, RFG) | 06/02/2017 |
| Air – Sulphur balance | Form Air – 9 Refinery Sulphur Balance, SRU availability and efficiency | 06/02/2017 |
| Air – FCCU SO ₂ , NO _x , CO, Dust | Form Air – 10 continuous monitoring or other form as agreed in writing by the Agency | 06/02/2017 |
| Air – Flares | Form Air – 12 Report of the flaring rate and energy loss and SO ₂ from flaring for all flares | 06/02/2017 |
| Air – Sour gas flaring/combustion | Form Air 13 – Report of events | |
| Air – VOCs | Form Air 14 - Report of VOC losses [following the Institute of Petroleum protocol] | |
| Water | Form Water – 1 Daily flow, temperature, pH, oil, ammoniacal nitrogen, mono phenols, TOC and COD. | |
| Water | Form Water – 2 Weekly suspended solids and sulphide. | |
| Water | Form Water – Monthly metals and cyanide. | |
| Water usage | Form Water usage1 or other form as agreed in writing by the Agency | |
| Energy usage | Form Energy 1 or other form as agreed in writing by the Agency | |
| Biopile treatment effectiveness | Form Biopile 1 or other form as agreed in writing by the Agency | |
| Noise – perimeter survey | Report Noise 1 | |
| SRU efficiency optimisation survey | Report SRU Optimisation 1 | |

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 | |

| 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 installation in the preceding 24 months. | |

| | |
|------------------|--|
| Name* | |
| Post | |
| Signature | |
| Date | |

* authorised to sign on behalf of Esso Petroleum Company 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.

"*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.

"*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.

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

"*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.

"*DLN*" means dry, low NO_x burners.

"*DSD*" means Dangerous Substances Directive.

"*Duty of Care*" shall have the meaning given to it in the Environmental Protection Act 1990

"*ELV*" means Emission Limit Value

"*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.

"*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.

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

"*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.

“*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.

“*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.

‘*List of Wastes*’ means the list of wastes established by Commission Decision 2000/532/EC replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste, as amended from time to time

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

“*mcr*” means maximum continuous rating.

“*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.

“*ncv*” means net calorific value.

“*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 Plant (National Emission Reduction Plan) Regulations 2007.

“*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.

“*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.

“*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.

“*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]

“*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