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INDUSTRIAL EMISSIONS LICENCE

<b>Licence Register Number:</b>	P0738-03
<b>Company Register Number:</b>	316588
<b>Licensee:</b>	Shell E&P Ireland Limited
<b>Location of Installation:</b>	Bellanaboy Bridge Gas Terminal, Bellanaboy Bridge, Bellagelly South, County Mayo

ENVIRONMENTAL PROTECTION AGENCY ACT 1992 AS AMENDED

**INDUSTRIAL EMISSIONS LICENCE**

Decision of Agency, under Section 90(2) of the Environmental Protection Agency Act 1992 as amended.

Reference number in  
Register of licences: P0738-03

Further to notice dated 13/04/2015 the Agency in exercise of the powers conferred on it by the Environmental Protection Agency Act 1992 as amended, for the reasons hereinafter set out, hereby grants a revised Industrial Emissions licence to Shell E&P Ireland Limited, Corrib House, 52 Lower Leeson Street, Dublin 2, CRO number 316588,

to carry on the following activities

- : the operation of a gas refinery
- : combustion of fuels in installations with a total rated thermal input of 50 MW or more

at Bellanaboy Bridge Gas Terminal, Bellanaboy Bridge, Bellagelley South, County Mayo subject to the conditions as set out.

GIVEN under the Seal of the Agency this the 8<sup>th</sup> day of October 2015

PRESENT when the seal of the Agency  
was affixed hereto:

  
\_\_\_\_\_  
**Mary Turner, Authorised Person**



## **INTRODUCTION**

*This introduction is not part of the licence and does not purport to be a legal interpretation of the licence.*

This licence is for the operation of a gas refinery and for the combustion of fuels. Production fluid from the Corrib off-shore development containing natural gas, hydrocarbon condensate and aqueous liquid as well as treatment chemicals (methanol, corrosion inhibitors) are received and treated at the gas refinery.

The gas refinery is designed to process and produce 9.9 million standard cubic meters of natural gas per day from the production fluid for export to the Gas Networks Ireland (GNI) (formerly Bord Gáis Éireann) distribution network. Stabilised hydrocarbon condensate is exported off-site. Methanol (hydrate inhibitor) is recovered from the production fluid by distillation and reused in offshore sub-sea facilities. The majority of treated produced water is discharged 65 km off-shore, at the Corrib field, with the balance (approximately 15-20 m<sup>3</sup>/day) sent offsite for disposal. Treated drainage water from areas at risk of contamination is discharged to sea via a diffuser at a location 12.7 km from the landfill location.

The gas turbines will be operated on a duty and standby basis. Each gas turbine has a net rated thermal input of 25.7MW. They will be used to power mechanical drives to compress the product gas for export to the gas distribution network. Heat recovery systems on the gas turbine will provide most of the process heat requirements.

For the purposes of the EU Industrial Emissions Directive (IED) (2010/75/EU), this installation falls within the scope of Annex I categories:

Category 1.1: Combustion of fuels in installations with a total rated thermal input of 50 MW or more.

Category 1.2: Refining of gas.

Refining of gas is the main activity for the purposes of Article 21 of the IED and the BAT Reference document for Mineral Oil and Gas Refineries is the associated BAT reference document.

The gas refinery will be subject to statutory monitoring and reporting of carbon dioxide emissions from combustion and flaring sources according to a monitoring and reporting plan under the gas refinery's greenhouse gas emission (GHG) permit (No. IE-GHG161-01) from the Agency in accordance with the European Communities (Greenhouse Gas Emissions Trading) Regulations 2014, as amended (S.I. No. 437 of 2004 and amendments).

The licence sets out in detail the conditions under which Shell E&P Ireland Limited will operate and manage this installation.

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## ***Glossary of Terms***

All terms in this licence should be interpreted in accordance with the definitions in the Environmental Protection Agency Act 1992 as amended / Waste Management Act 1996 as amended, unless otherwise defined in the section.

<b>Adequate lighting</b>	20 lux measured at ground level.
<b>AER</b>	Annual Environmental Report.
<b>Agreement</b>	Agreement in writing.
<b>Annually</b>	All or part of a period of twelve consecutive months.
<b>Application</b>	The application by the licensee for this licence.
<b>Appropriate Facility</b>	A waste management facility, duly authorised under relevant law and technically suitable.
<b>Attachment</b>	Any reference to Attachments in this licence refers to attachments submitted as part of this licence application.
<b>Baseline Report</b>	Means information on the state of soil and groundwater contamination by relevant hazardous substances.
<b>BAT</b>	Best Available Techniques.
<b>BAT conclusions</b>	A document containing the parts of a BAT reference document laying down the conclusions on best available techniques, their description, information to assess their applicability, the emission levels associated with the best available techniques, associated monitoring, associated consumption levels and, where appropriate, relevant site remediation measures.
<b>BAT reference document</b>	A document drawn up by the Commission of the European Union in accordance with Article 13 of the Industrial Emissions Directive, resulting from the exchange of information in accordance with that Article of that Directive and describing, in particular, applied techniques, present emissions and consumption levels, techniques considered for the determination of best available techniques as well as BAT conclusions and any emerging techniques.
<b>BTEX</b>	Benzene, Toluene, Ethyl-benzene, Xylene.
<b>Biannually</b>	At approximately six – monthly intervals.
<b>Biennially</b>	Once every two years.
<b>BOD</b>	5 day Biochemical Oxygen Demand (without nitrification suppression).

<b>CEN</b>	Comité Européen De Normalisation – European Committee for Standardisation.
<b>COD</b>	Chemical Oxygen Demand.
<b>Construction and demolition (C&amp;D) waste</b>	Wastes that arise from construction, renovation and demolition activities: Chapter 17 of the EWC or as otherwise may be agreed.
<b>Containment boom</b>	A boom that can contain spillages and prevent them from entering drains or watercourses or from further contaminating watercourses.
<b>CRO Number</b>	Company Register Number.
<b>Daily</b>	During all days of plant operation and, in the case of emissions, when emissions are taking place; with at least one measurement on any one day.
<b>Day</b>	Any 24 hour period.
<b>Daytime</b>	0700 hrs to 1900 hrs.
<b>dB(A)</b>	Decibels (A weighted).
<b>Diffuse VOC emissions</b>	Non-channelled VOC emissions that are not released via specific emission points such as stacks. They can result from 'area' sources (e.g. tanks) or 'point' sources (e.g. pipe flanges).
<b>DO</b>	Dissolved oxygen.
<b>Documentation</b>	Any report, record, results, data, drawing, proposal, interpretation or other document in written or electronic form which is required by this licence.
<b>Drawing</b>	Any reference to a drawing or drawing number means a drawing or drawing number contained in the application, unless otherwise specified in this licence.
<b>Emission limits</b>	Those limits, including concentration limits and deposition rates, established in <i>Schedule B: Emission Limits</i> , of this licence.
<b>EMP</b>	Environmental Management Programme.
<b>Environmental damage</b>	As defined in Directive 2004/35/EC.
<b>EPA</b>	Environmental Protection Agency.
<b>European Waste Catalogue (EWC)</b>	A harmonised, non-exhaustive list of wastes drawn up by the European Commission and published as Commission Decision 2000/532/EC and any subsequent amendment published in the Official Journal of the European Community.

<b>Evening Time</b>	1900hrs to 2300hrs.
<b>Facility</b>	Any site or premises used for the purpose of the recovery or disposal of waste.
<b>Fortnightly</b>	A minimum of 24 times per year, at approximately two week intervals.
<b>Gas Oil</b>	Gas Oil as defined in Council Directive 1999/32/EC and meeting the requirements of S.I. No. 119 of 2008.
<b>GC/MS</b>	Gas chromatography/mass spectroscopy.
<b>Green Waste</b>	Waste wood (excluding timber), plant matter such as grass cuttings, and other vegetation.
<b>Groundwater</b>	Has the meaning assigned to it by Regulation 3 of the European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010).
<b>Hazardous substances</b>	Substances or mixtures as defined in Article 3 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures.
<b>Heavy metals</b>	This term is to be interpreted as set out in "Parameters of Water Quality, Interpretation and Standards" published by the Agency in 2001. ISBN 1-84095-015-3.
<b>HFO</b>	Heavy Fuel Oil as defined in Council Directive 1999/32/EC and meeting the requirements of S.I. No. 119 of 2008.
<b>Hours of operation</b>	The hours during which the installation is authorised to be operational.
<b>ICP</b>	Inductively coupled plasma spectroscopy.
<b>IE</b>	Industrial Emissions.
<b>Incident</b>	The following shall constitute as incident for the purposes of this licence: (i) an emergency; (ii) any emission which does not comply with the requirements of this licence; (iii) any trigger level specified in this licence which is attained or exceeded; and, (iv) any indication that environmental pollution has, or may have, taken place.
<b>Industrial Emissions Directive</b>	Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (Recast).

<b>Installation</b>	A stationary technical unit or plant where the activities concerned referred to in the First Schedule of EPA Act 1992 as amended are or will be carried on, and shall be deemed to include any directly associated activities, which have a technical connection with the activities and are carried out on the site of the activities.
<b>Irish Water</b>	Irish Water, Colvill House, 24/26 Talbot Street, Dublin 1.
<b>K</b>	Kelvin.
<b>kPa</b>	Kilopascals.
<b><math>L_{Aeq,T}</math></b>	This is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period (T).
<b><math>L_{Ar,T}</math></b>	The Rated Noise Level, equal to the $L_{Aeq}$ during a specified time interval (T), plus specified adjustments for tonal character and/or impulsiveness of the sound.
<b>Licensee</b>	Shell E&P Ireland Limited, Corrib House, 52 Lower Leeson Street, Dublin 2, CRO Number 316588.
<b>List I</b>	As listed in the EC Directives 2006/11/EC and 80/68/EEC and amendments.
<b>List II</b>	As listed in the EC Directives 2006/11/EC and 80/68/EEC and amendments.
<b>Local Authority</b>	Mayo County Council.
<b>Maintain</b>	Keep in a fit state, including such regular inspection, servicing, calibration and repair as may be necessary to perform its function adequately.
<b>Mass flow limit</b>	An emission limit value expressed as the maximum mass of a substance that can be emitted per unit time.
<b>Mass flow threshold</b>	A mass flow rate above which a concentration limit applies.
<b>Monthly</b>	A minimum of 12 times per year, at intervals of approximately one month.
<b>Night-time</b>	2300 hrs to 0700 hrs.
<b>Noise-sensitive location (NSL)</b>	Any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other installation or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.
<b>NMVOC</b>	VOC excluding methane.



<b>NO<sub>x</sub></b>	Oxides of nitrogen.
<b>Oil separator</b>	Device installed according to the International Standard I.S. EN 858-2:2003 (Separator system for light liquids, (e.g. oil and petrol) – Part 2: Selection of normal size, installation, operation and maintenance).
<b>PAH</b>	Polyaromatic hydrocarbons.
<b>Production fluid</b>	Production fluid comprises of gas, condensate, water and methanol containing a small quantity of corrosion inhibitor, which will be transported from the subsea facilities to the gas refinery.
<b>PRTR</b>	Pollutant Release and Transfer Register.
<b>Quarterly</b>	All or part of a period of three consecutive months beginning on the first day of January, April, July or October.
<b>Relevant Hazardous Substances</b>	Those substances or mixtures defined within Article 3 of Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP Regulation) which, as a result of their hazardousness, mobility, persistence and biodegradability (as well as other characteristics), are capable of contaminating soil or groundwater and are used, produced and/or released by the installation.
<b>Sample(s)</b>	Unless the context of this licence indicates to the contrary, the term samples shall include measurements taken by electronic instruments.
<b>Sanitary effluent</b>	Wastewater from installation toilet, washroom and canteen facilities.
<b>Soil</b>	The top layer of the Earth's crust situated between the bedrock and the surface. The soil is composed of mineral particles, organic matter, water, air and living organisms.
<b>SOP</b>	Standard operating procedure.
<b>Specified emissions</b>	Those emissions listed in <i>Schedule B: Emission Limits</i> , of this licence.
<b>Standard method</b>	A National, European or internationally recognised procedure (e.g. I.S. EN, ISO, CEN, BS or equivalent); or an in-house documented procedure based on the above references; a procedure as detailed in the current edition of "Standard Methods for the Examination of Water and Wastewater" (prepared and published jointly by A.P.H.A., A.W.W.A. & W.E.F.), American Public Health Association, 1015 Fifteenth Street, N.W., Washington DC 20005, USA; or an alternative method as may be agreed by the Agency.
<b>Storm water</b>	Rain water run-off from roof and non-process areas.
<b>The Agency</b>	Environmental Protection Agency.
<b>TC</b>	Total carbon

<b>TOC</b>	Total organic carbon.
<b>TPH</b>	Total Petroleum Hydrocarbons.
<b>Trade effluent</b>	Trade effluent has the meaning given in the Water Services Act, 2007.
<b>Trigger level</b>	A parameter value, the achievement or exceedance of which requires certain actions to be taken by the licensee.
<b>VOC</b>	Volatile organic compounds as defined in Article 3(45) of Directive 2010/75/EU.
<b>Volatile liquid hydrocarbon compounds</b>	Petroleum derivatives with a Reid vapour pressure (RVP) of more than 4 kPa, such as naphtha and aromatics.
<b>Waste</b>	Any substance or object which the holder discards or intends or is required to discard.
<b>Water Services Authority</b>	Mayo County Council.
<b>Weekly</b>	During all weeks of plant operation and, in the case of emissions, when emissions are taking place; with at least one measurement in any one week.
<b>WWTP</b>	Waste water treatment plant.

## ***Decision & Reasons for the Decision***

The Environmental Protection Agency is satisfied, on the basis of the information available, that subject to compliance with the conditions of this licence, any emissions from the licensed activities will comply with and will not contravene any of the requirements of Section 83(5) of the Environmental Protection Agency Act 1992 as amended.

The Agency also considers that the activities will not adversely affect the integrity of any European site, and has decided to impose conditions for the purposes of ensuring they do not do so. It has determined that the activities, if managed, operated and controlled in accordance with the licence, will not have any adverse effect on the integrity of any of those sites.

The Agency has accordingly decided to grant a licence to Shell E & P Ireland Limited to carry on the activities listed in Part I, Schedule of Activities Licensed, subject to the conditions set out in Part III, Conditions; such licence to take effect in lieu of Licence Register Number: P0738-01.

In reaching this decision the Agency has considered the documentation relating to:

- the existing licence, Register Number: P0738-01;
- the review application, Register Number: P0738-03 and the supporting documentation received from the applicant;
- the submissions received;
- the Inspector's Report dated 23 March 2015 and addendum reports;
- the Proposed Determination;
- the objection received from the Licensee;
- the objections and a submission on the objections received from other parties; and
- the Technical Committee Report on the objections to the Proposed Determination and on the related submission on objections received

and has carried out an Environmental Impact Assessment (EIA) and an Appropriate Assessment of the likely significant effects of the licensed activities on European sites.

The Agency has applied the Commission Implementing Decision of 9 October 2014 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions, for the refining of mineral oil and gas (2014/738/EU) as a reference when setting licence conditions.

The Agency notes that the main emissions from the licensed activities relate to the permitted emissions to water and emissions to air. There is a potential risk of an explosive accident at or near the licensed installation, or involving the incoming and outgoing pipelines associated with it. The risk of a potential accident is extremely low, and any accident would be of short duration due to the required mitigation measures.

It is considered that the Inspector's Report dated 23 March 2015, the Inspector's Addendum Reports and the Technical Committee Report contain a fair and reasonable examination, evaluation and analysis of the likely significant effects of the licensed activities on the environment, and adequately and accurately identify, describe and assess those effects. The assessment in those documents is adopted as the environmental impact assessment of the Agency. Having regard to this assessment, it is considered that the activities, if managed, operated and controlled in accordance with the licence will not result in the contravention of any relevant environmental quality standards or cause environmental pollution.

A screening for Appropriate Assessment was undertaken to assess, in view of best scientific knowledge and the conservation objectives of the site, if the activities, individually or in combination with other plans or projects are likely to have a significant effect on any European Site. In this context, particular attention was paid to the European sites specified in Table 1.0 below. The Agency considered, for the reasons set out below, that the activities are not directly connected with or necessary to the management of any European Site and that it cannot be excluded, on the basis of objective information, that the activities, individually or in combination with other plans or projects, will have a significant effect on any European site and accordingly determined that an Appropriate Assessment of the

activities was required. This determination is based on the proximity of the installation to the European sites and the nature and scale of the activities at the installation.

Table 1.0 below specifies the designated European sites that were considered by the Agency during the Appropriate Assessment process.

Table 1.0 European sites considered by the Agency

No.	Site Code	Site Name	Designation
1	000476	Carrowmore Lake Complex	SAC
2	004052	Carrowmore Lake	SPA
3	004037	Blacksod Bay/Broadhaven	SPA
4	000500	Glenamoy Bog Complex	SAC
5	000472	Broadhaven Bay	SAC
6	004074	Illanmaster	SPA
7	000470	Mullet/Blacksod Bay Complex	SAC
8	004072	Stags of Broadhaven	SPA
9	004227	Mullet Peninsula	SPA
10	001501	Erris Head	SAC
11	004093	Termoncarragh Lake & Annagh Machair	SPA
12	004084	Inishglora & Inniskeeragh	SPA
13	004111	Duvillaun Islands	SPA
14	000495	Duvillaun Islands	SAC
15	004004	Inishkea Islands	SPA
16	000507	Inishkea Islands	SAC
17	0002998	West Connacht Coast	SAC
18	000542	Slieve Fyagh Bog	SAC
19	004098	Owenduff/ Nephin Complex	SPA
20	000534	Owenduff/Nephin Complex	SAC
21	001922	Bellacorick Bog Complex	SAC

The Agency has completed the Appropriate Assessment of potential impacts on these sites and has made certain, based on best scientific knowledge in the field and in accordance with the *European Communities (Birds and Natural Habitats) Regulations 2011 and 2013*, pursuant to Article 6(3) of the Habitats Directive, that the activities, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site, in particular those specified in Table 1.0 above, having regard to their conservation objectives and will not affect the preservation of these sites at favourable conservation status if carried out in accordance with this licence and the conditions attached hereto for the following reasons:

- The licence requires the licensee to ensure that a documented Accident Prevention Procedure is in place that addresses the hazards on-site, particularly in relation to the prevention of accidents with a possible impact on the environment. This will minimise the risk of accident.
- Dispersion zone modelling indicates that the receiving water quality will not be impacted by the treated produced water discharge (SW3) and the treated drainage water from areas at risk of contamination discharge (SW1).
- The licence requires the licensee to discharge treated produced water (SW3) further out to sea than previously permitted in the current licence Register Number: P0738-01 (greater than 58 km from the European sites specified above and at a significant depth (350m)) which will further reduce the likelihood of a negative impact on the water quality at SW1 (located just outside Broadhaven Bay).
- The licence requires the licensee to install an automatic shut-off at the gas refinery for emission point SW3 within six months from the date of grant of the licence. In the event of a loss of integrity of the core in the umbilical which conveys treated produced water, this valve will automatically shut to prevent the discharge to emission point SW3.
- *Schedule A: Limitations*, of this licence limits the amount of biocide to be used in line with the risk assessment submitted as part of the licence application. This will reduce the likelihood of the biocide discharge having a negative impact on the marine environment and any protected species.

- The storm water drainage system includes an emergency holding tank upstream of the settlement ponds which will be isolated in the event of hydrocarbon contamination as detected by on-line TOC (total organic carbon) and TC (total carbon) monitors fitted at the emergency holding tank to prevent the exceedance of environmental quality standards in the receiving water.
- The licence requires the licensee to meet emission limit values set in *Schedule B.2: Emissions to Water* of this licence, for SW1, SW2 and SW3, to ensure that the discharge will not negatively impact water quality and ensure the continued protection of water-dependent protected species.
- The licence specifies noise limits of 45dB(A) $L_{Ar,T}$  (daytime), 40dB(A) $L_{Ar,T}$  (evening-time) and 35dB(A) $L_{Aeq,T}$  (night-time), at any noise sensitive locations, which will reduce the potential for noise to negatively impact protected species in designated Natura sites.
- The licence requires continuous monitoring at a permanent noise monitoring location and quarterly monitoring at AN5, AN6, AN8, AN9, AN10 and other locations as may be required.
- Air dispersion modelling has demonstrated that emissions from the installation will not cause breaches of relevant air quality standards beyond the site boundary.
- *Schedule B.1: Emissions to Air* of this licence, specifies limit values for emissions to air that will minimise the potential risk to protected species and habitats.
- The licence requires the provision of impervious areas and bunding, and requires containment to prevent contamination to soil/groundwater from leaks and spills.
- The licence specifies that all tank, container and drum storage areas shall be rendered impervious to the materials stored therein. Bunds shall be designed having regard to Agency guidelines 'Storage and Transfer of Materials for Scheduled Activities' (2004) which will minimise the potential for contamination of soil/groundwater.

The Agency is satisfied that no reasonable scientific doubt remains as to the absence of adverse effects on the integrity of those European sites specified in Table 1.0 above.

## ***Part I Schedule of Activities Licensed***

In pursuance of the powers conferred on it by the Environmental Protection Agency Act 1992 as amended, the Agency hereby grants this revised Industrial Emissions licence to:

Shell E&P Ireland Limited, Corrib House, 52 Lower Leeson Street, Dublin 2, and CRO Number 316588 under Section 90(2) of the said Act to carry on the following activities:

- The operation of a gas refinery
- Combustion of fuels in installations with a total rated thermal input of 50 MW or more

at Bellanaboy Bridge Gas Terminal, Bellanaboy Bridge, Bellagelley South, County Mayo subject to the following twelve Conditions, with the reasons therefor and associated schedules attached thereto.

## ***Part II Schedule of Activities Refused***

None of the activities as set out in the licence application have been refused.

## Part III Conditions

### Condition 1. Scope

- 1.1 Industrial Emissions Directive activities at this installation shall be restricted to those listed and described in *Part I Schedule of Activities Licensed*, and shall be as set out in the licence application or as modified under Condition 1.4 of this licence and subject to the conditions of this licence.
- 1.2 Activities at this installation shall be limited as set out in *Schedule A: Limitations*, of this licence.
- 1.3 For the purposes of this licence, the installation authorised by this licence is the area of land outlined in red on Drawing No. IPPC-003, entitled 'Ownership & Site Boundary Plan' of the licence review application and the discharge pipelines as shown on the revised map labelled Corrib Bellanaboy Bridge Gas Terminal Treater Water Discharge Locations MXD: EP20080322 4000004, Revision D (08.04.2014), Article 10(2)(b)(ii) response (received 17 April 2014) of the licence review application. Any reference in this licence to "installation" shall mean the area thus outlined in red. The licensed activities shall be carried on only within the area outlined.
- 1.4 No alteration to, or reconstruction in respect of, the activities, or any part thereof, that would, or is likely to, result in
- (i) a material change or increase in:
- the nature or quantity of any emission;
  - the abatement/treatment or recovery systems;
  - the range of processes to be carried out;
  - the fuels, raw materials, intermediates, products or wastes generated, or
- (ii) any changes in:
- site management, infrastructure or control with adverse environmental significance;
- shall be carried out or commenced without prior notice to, and without the agreement of, the Agency.
- 1.5 The installation shall be controlled, operated and maintained, and emissions shall take place as set out in the licence. All programmes required to be carried out under the terms of this licence become part of this licence.
- 1.6 This licence is for the purpose of IE licensing under the EPA Act 1992 as amended only and nothing in this licence shall be construed as negating the licensee's statutory obligations or requirements under any other enactments or regulations.
- 1.7 This shall have effect in lieu of the licence granted to the licensee on 12 November 2007 (Register No P0738-01).

**Reason:** To clarify the scope of this licence.

## Condition 2. Management of the Installation

### 2.1 Installation Management

- 2.1.1 The licensee shall employ a suitably qualified and experienced installation manager who shall be designated as the person in charge. The installation manager or a nominated, suitably qualified and experienced deputy shall be present on the installation at all times during its operation or as otherwise required by the Agency.
- 2.1.2 The licensee shall ensure that personnel performing specifically assigned tasks shall be qualified on the basis of appropriate education, training and experience as required and shall be aware of the requirements of this licence.

### 2.2 Environmental Management System (EMS)

- 2.2.1 The licensee shall establish, maintain and implement an Environmental Management System (EMS), which shall incorporate the following:
  - (i) An energy efficiency management system;
  - (ii) A water management scheme;
  - (iii) A solid waste management scheme.

The EMS shall be reviewed by senior management, for suitability, adequacy and effectiveness and updated on an annual basis.

- 2.2.2 The EMS shall include, as a minimum, the following elements:
  - 2.2.2.1 Commitment of the management, including senior management.
  - 2.2.2.2 An environmental policy defined for the installation that includes the continuous improvement for the installation by the management.
  - 2.2.2.3 Management and Reporting Structure and responsibility.
  - 2.2.2.4 The necessary procedures, objectives and targets, in conjunction with financial planning and investment.
  - 2.2.2.5 Procedures that ensure employee involvement in ensuring compliance with environmental legislation.
  - 2.2.2.6 A procedure for checking performance by sectoral benchmarking on a regular basis including energy efficiency.
  - 2.2.2.7 Schedule of Environmental Objectives and Targets.

The licensee shall prepare, maintain and implement a Schedule of Environmental Objectives and Targets. The schedule shall, as a minimum, provide for a review of all operations and processes, including an evaluation of practicable options, for energy and resource efficiency, the use of cleaner technology, cleaner production and the prevention, reduction and minimisation of waste and shall include waste reduction targets. The schedule shall include time frames for the achievement of set targets and shall address a five-year period as a minimum. The schedule shall be reviewed annually and amendments thereto notified to the Agency for agreement as part of the Annual Environmental Report (AER).

- 2.2.2.8 Environmental Management Programme (EMP)

The licensee shall, prepare, maintain and implement an EMP, including a time schedule, for achieving the Environmental Objectives and Targets prepared under Condition 2.2.2.7. The EMP shall include:

- designation of responsibility for targets;
- the means by which they may be achieved;
- the time within which they may be achieved.

The EMP shall be reviewed annually and amendments thereto notified to the Agency for agreement as part of the Annual Environmental Report (AER).



A report on the programme, including the success in meeting agreed targets, shall be prepared and submitted to the Agency as part of the AER. Such reports shall be retained on-site for a period of not less than seven years and shall be available for inspection by authorised persons of the Agency.

2.2.2.9 Documentation

- (i) The licensee shall establish, maintain and implement an environmental management documentation system which shall be to the satisfaction of the Agency.
- (ii) The licensee shall issue a copy of this licence to all relevant personnel whose duties relate to any condition of this licence.

2.2.2.10 Corrective and Preventative Action

- (i) The licensee shall establish, maintain and implement procedures to ensure that corrective and preventative action is taken should the specified requirements of this licence not be fulfilled. The responsibility and authority for persons initiating further investigation and corrective and preventative action in the event of a reported non-conformity with this licence shall be defined.
- (ii) Where a breach of one or more of the conditions of this licence occurs, the licensee shall without delay take measures to restore compliance with the conditions of this licence in the shortest possible time and initiate any feasible preventative actions to prevent recurrence of the breach.
- (iii) All corrective and preventative actions shall be documented.

2.2.2.11 Internal Audits

The licensee shall establish, maintain and implement a programme for independent (where practicable) internal audits of the EMS. Such audits shall be carried out at least once every three years. The audit programme shall determine whether or not the EMS is being implemented and maintained properly, and in accordance with the requirements of the licence. Audit reports and records of resultant corrective and preventative actions shall be maintained as part of the EMS in accordance with condition 2.2.2.9.

2.2.2.12 Awareness, Training and Competence

The licensee shall establish, maintain and implement procedures for identifying training and competence needs, and for providing appropriate training, for all personnel whose work can have a significant effect upon the environment to ensure awareness and competence in their work area. Appropriate records of training shall be maintained.

2.2.2.13 Communications Programme

- (i) The licensee shall establish, maintain and implement a Public Awareness and Communications Programme to ensure that members of the public are informed, and can obtain information at the facility or at a location as agreed by the Agency, at all reasonable times, concerning the environmental performance of the facility.
- (ii) The licensee shall notify the public, in advance, of any planned operation of the flares. The means of notifying the public shall be agreed by the Agency and incorporated into the Public Awareness and Communications Programme, not later than three months from the date of grant of this licence.

2.2.2.14 Maintenance Programme

The licensee shall establish, maintain and implement a programme for maintenance of all plant and equipment based on the instructions issued by

the manufacturer/supplier or installer of the equipment. Appropriate record keeping and diagnostic testing shall support this maintenance programme. The licensee shall clearly allocate responsibility for the planning, management and execution of all aspects of this programme to appropriate personnel (see Condition 2.1 above). The maintenance programme shall use appropriate techniques and measures to ensure the optimisation of energy efficiency in plant and equipment.

#### 2.2.2.15 Efficient Process Control

The licensee shall establish, maintain and implement a programme to ensure there is adequate control of processes under all modes of operation. The programme shall identify the key indicator parameters for process control performance, as well as identifying methods for measuring and controlling these parameters. Abnormal process operating conditions shall be documented, and analysed to identify any necessary corrective action.

**Reason:** *To make provision for management of the activities on a planned basis having regard to the desirability of ongoing assessment, recording and reporting of matters affecting the environment.*

### Condition 3. Infrastructure and Operation

#### 3.1 Installation

- 3.1.1 The licensee shall establish and maintain, for each component of the installation, all infrastructure referred to in this licence, or as required by the conditions of this licence. Infrastructure specified in the application that relates to the environmental performance of the installation and is not specified in the licence, shall be installed in accordance with the schedule submitted in the application.
- 3.1.2 In accordance with the Commission Implementing Decision of 9 October 2014 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions, for the refining of mineral oil and gas (2014/738/EU), the licensee shall ensure that the following, or other techniques which ensure at least an equivalent level of environmental protection, are in place from 1 October 2018:
- (i) Heat recovery system on the gas turbines for the process heat requirements on site;
  - (ii) Segregated contaminated and uncontaminated drainage systems;
  - (iii) Monitoring and maintenance activities are facilitated by ensuring access to potentially leaking components;
  - (iv) Robust commissioning and hand-over procedures to ensure that the plant is installed in line with the design requirements;
  - (v) Floating roof storage tanks equipped with high efficiency seals;
  - (vi) Use equipment with a closed loop system when undertaking internal inspection, cleaning and or maintenance on tanks used for storage of volatile liquid hydrocarbon;
  - (vii) Sufficient tank farm bund containment to prevent emissions to soil and groundwater;
  - (viii) High-integrity relief valves to prevent or reduce emissions from flaring.
- 3.1.3 Prior to the installation of any alternative technique to that listed in Condition 3.1.2(i) to (viii), the licensee shall submit to the Agency a proposal which demonstrates that the alternative technique proposed ensures at least an equivalent level of environmental protection. The use of any alternative technique shall be as agreed by the Agency.

- 3.2 The licensee shall have regard to the following when choosing and/or designing any new plant/infrastructure: (i) energy efficiency; and, (ii) the environmental impact of eventual decommissioning.
- 3.3 Installation Notice Board
  - 3.3.1 The licensee shall, maintain an Installation Notice Board on the installation so that it is legible to persons outside the main entrance to the installation. The minimum dimensions of the board shall be 1200 mm by 750 mm. The notice board shall be maintained thereafter.
  - 3.3.2 The board shall clearly show:
    - (i) the name and telephone number of the installation;
    - (ii) the normal hours of operation;
    - (iii) the name of the licence holder;
    - (iv) an emergency out of hours contact telephone number;
    - (v) the licence reference number; and
    - (vi) where environmental information relating to the installation can be obtained.
- 3.4 In the case of composite sampling of aqueous emissions from the operation of the installation, a separate composite sample or homogeneous sub-sample (of sufficient volume as advised) shall be refrigerated immediately after collection and retained as required for EPA use.
- 3.5 The licensee shall clearly label and provide safe and permanent access to all on-site sampling and monitoring points and to off-site points as required by the Agency. The requirement with regard to off-site points is subject to the prior agreement of the landowner(s) concerned.
- 3.6 Tank, Container and Drum Storage Areas
  - 3.6.1 All tank, container and drum storage areas shall be rendered impervious to the materials stored therein. Bunds shall be designed having regard to Agency guidelines 'Storage and Transfer of Materials for Scheduled Activities' (2004).
  - 3.6.2 All tank and drum storage areas shall, as a minimum, be bunded, either locally or remotely, to a volume not less than the greater of the following:
    - (i) 110% of the capacity of the largest tank or drum within the bunded area; or
    - (ii) 25% of the total volume of substance that could be stored within the bunded area.
  - 3.6.3 The contents of the bunded area shall be diverted to the appropriate on-site systems for treatment. In the event that the contents of any bund cannot be effectively treated on-site to a standard that ensures compliance with the emission limit values for emissions to water in this licence, the bund contents shall be removed for safe disposal off-site.
  - 3.6.4 All inlets, outlets, vent pipes, valves and gauges must be within the bunded area.
  - 3.6.5 All tanks, containers and drums shall be labelled to clearly indicate their contents.
  - 3.6.6 The licensee shall as part of the maintenance programme in Condition 2.2.2.14 include corrosion monitoring, prevention and control in accordance with BAT 51 of the BAT conclusions for refining of mineral oil and gas.
- 3.7 The licensee shall recover heat from the gas turbines.
- 3.8 The licensee shall operate the Maintenance Ground Flare in such a way as to ensure it is smokeless.
- 3.9 The licensee shall only use flaring for safety reasons or for non-routine operational conditions.
- 3.10 The licensee shall establish and maintain, within six months of date of grant of this licence, a leak detection and repair programme in accordance with BAT. This programme shall identify the leak detection measurement methods, frequency of measurements and repair/replacement priorities for identified leaking components. The licensee shall ensure that the gas leak detection and alarm system fully incorporates the fuel gas system.

- 3.11 The licensee shall have in storage an adequate supply of containment booms and/or suitable absorbent material to contain and absorb any spillage at the installation. Once used, the absorbent material shall be disposed of at an appropriate facility.
- 3.12 Site Drainage
- 3.12.1 All process effluent gullies, drainage grids and manhole covers shall be painted with red squares whilst all storm water discharge gullies, drainage grids and manhole covers shall be painted with blue triangles. These colour codes shall be maintained so as to be visible at all times during installation operation, and any identification designated in this licence (e.g. SW1) shall be inscribed on these gullies, grids and manholes.
- 3.12.2 The licensee shall alter the extent of the open drains system (potentially contaminated drainage waters) as may be required by the Agency following completion of the Environmental Liabilities Risk Assessment (ELRA) (Condition 12.2).
- 3.13 Silt Traps and Oil Separators
- 3.13.1 The licensee shall, within six months of date of grant of this licence, install and maintain silt traps and oil separators or other techniques which ensure at least an equivalent level of environmental protection, to control silt and oil in surface water run-off from the installation:
- (i) Silt traps or an equivalent silt collection system to ensure that all storm water discharges, other than from roofs and landscaped green areas outside of the terminal footprint, pass through a silt control system in advance of discharge;
  - (ii) An oil separator or an equivalent oil collection system on the storm water discharge from yard areas. The separator shall be a Class 1 by-pass separator.
- The silt traps and separator shall be in accordance with I.S. EN-858-2: 2003 (separator systems for light liquids).
- 3.13.2 Prior to the installation of any alternative technique to that listed in Condition 3.13.1 (i) to (ii) the licensee shall submit to the Agency a proposal which demonstrates that the alternative technique proposed ensures at least an equivalent level of environmental protection. The use of any alternative technique shall be as agreed by the Agency.
- 3.14 Fire-water Retention
- 3.14.1 The licensee shall provide and maintain a firewater collection system and retention facility for the efficient and safe interception, collection and storage of used firewater. The licensee shall provide a level indicator on the firewater retention facility to demonstrate sufficient available capacity. The licensee shall have regard to any guidelines issued by the Agency with regard to used firewater.
- 3.14.2 The firewater collection and retention facility shall be designed so as to accommodate all firewater and chemical spillage in the event of a major fire on the site and the simultaneous loss of integrity of the three largest methanol storage tanks.
- (a) In the event of a fire or a spillage to the uncontaminated surface water system, the water within the surface water drains shall be automatically retained within the firewater retention facility.
  - (b) In the event of detection of contamination in the groundwater drains as indicated by the continuous online TOC/TC analysers, the groundwater valve in manhole 26 shall be manually closed. On confirmation of contamination in the groundwater drains, the groundwater will be pumped to the firewater retention facility for appropriate treatment and disposal.
- 3.14.3 A duty and stand-by pump shall be installed and maintained on the emergency holding tank for the transfer of contaminated water and firewater to the Used

Firewater Pond. Both pumps shall be plumbed independently and shall be capable of simultaneous operation.

- 3.14.4 A duty and stand-by pump shall be installed and maintained on the Open Drain Sump for the transfer of contaminated water and firewater to the Used Firewater Pond. Both pumps shall be plumbed independently and shall be capable of simultaneous operation. In the event of a failure of the emergency generator both pumps shall be capable of being driven by an alternative power source.
- 3.15 All pump sumps, storage tanks, lagoons or other treatment plant chambers from which spillage of environmentally significant materials might occur in such quantities as are likely to breach local or remote containment or separators, shall be fitted with high liquid level alarms (or oil detectors as appropriate).
- 3.16 The provision of a catchment system to collect any leaks from flanges and valves of all over-ground pipes used to transport material other than water shall be examined. This shall be incorporated into a Schedule of Environmental Objectives and Targets set out in Condition 2. of this licence for the reduction in diffuse VOC emissions.
- 3.17 All wellheads, as shown on Drawing No. 233447\_IPPCL-024, Revision B, of the licence review application shall be adequately protected to prevent contamination or physical damage.
- 3.18 The licensee shall, maintain in a prominent location on the site a wind sock, or other wind direction indicator, which shall be visible from the public roadway outside the site.
- 3.19 The licensee shall operate a weather monitoring station on the site at a location agreed by the Agency, which records conditions of wind speed and wind direction.
- 3.20 The licensee shall provide and manage a Wastewater Treatment system at the installation, for the treatment of sanitary effluent arising on-site, in accordance with the EPA Wastewater Treatment Manuals and relevant technical specifications. The specification of the treatment plant and percolation area shall, as a minimum, be as described in the Environmental Impact Statement: Response to request for further information Ref: P03/3343, March 2004 and as varied by the final grant of planning permission. The monitoring programme shall include as a minimum the quantification of system inflow, piezometric and phosphorus saturation monitoring. Documentation and maintenance records shall be available to the Agency for inspection at all reasonable times. The licensee shall report annually as part of the AER on the effectiveness and efficiency of the Wastewater Treatment system at the installation.
- 3.21 The licensee shall install on all emission points such sampling points or equipment, including any data-logging or other electronic communication equipment, as may be required by the Agency. All such equipment shall be consistent with the safe operation of all sampling and monitoring systems.

**Reason:** *To provide for appropriate operation of the installation to ensure protection of the environment.*

## Condition 4. Interpretation

- 4.1 Emission limit values for emissions to atmosphere in this licence shall be interpreted in the following way:
- 4.1.1 Continuous Monitoring
- (i) The value of the 95% confidence intervals determined at the emission limit values shall not exceed the following percentages of the emission limit value:
- |                 |     |
|-----------------|-----|
| Nitrogen Oxides | 20% |
| Carbon Monoxide | 10% |
- (ii) The validated hourly and daily average values shall be determined within the effective operating time (excluding start-up and shut-down periods), from the measured valid hourly average values after subtraction of the confidence interval specified in Condition 4.1.1 (i) above. Any day's results in which more than three hourly average values are invalid due to malfunction or maintenance

of the continuous measurement system shall be invalidated. If more than 10 days a year are invalidated the licensee shall take action as appropriate to improve the reliability of the continuous monitoring system.

- (iii) No validated daily average value shall exceed 110% of the relevant emission limit value.
- (iv) 95% of all the validated hourly average values over the year shall not exceed 200% of the relevant emission limit value.
- (v) No validated monthly average value shall exceed the emission limit value.

#### 4.1.2 Non-Continuous Monitoring

- (i) For flow, no hourly or daily mean value, calculated on the basis of appropriate spot readings, shall exceed the relevant limit value.
- (ii) For nitrogen oxide and carbon monoxide no 60 minute mean value shall exceed twice the emission limit value.
- (iii) For all other parameters, no 60 minute mean value shall exceed the emission limit value.

4.2 The concentration and volume flow limits for emissions to atmosphere specified in this licence shall be achieved without the introduction of dilution air and shall be based on gas volumes under standard conditions of:

##### 4.2.1 In the case of non-combustion gases:

Temperature 273K, Pressure 101.3 kPa (no correction for oxygen or water content).

##### 4.2.2 In the case of combustion gases from gas turbines:

Temperature 273K, Pressure 101.3 kPa, dry gas; 15% oxygen.

##### 4.2.3 In the case of combustion gases from spark ignition engines (power generators):

Temperature 273K, Pressure 101.3 kPa, dry gas; 5% oxygen for gas fuel.

4.3 Emission limit values for emissions to waters in this licence shall be interpreted in the following way:

#### 4.3.1 Continuous Monitoring

- (i) No flow value shall exceed the specific limit.
- (ii) No pH value shall deviate from the specified range.

#### 4.3.2 Composite Sampling

- (i) No pH value shall deviate from the specified range.
- (ii) For parameters other than pH and flow, eight out of ten consecutive composite results, based on flow proportional composite sampling, shall not exceed the emission limit value. No individual results similarly calculated shall exceed 1.2 times the emission limit value.
- (iii) The yearly average concentration for suspended solids discharged from SW2 shall not exceed the specified yearly average concentration emission limit value.

#### 4.3.3 Discrete Sampling

For parameters other than pH and temperature, no grab sample value shall exceed 1.2 times the emission limit value.

4.4 Where the ability to measure a parameter is affected by mixing before emission, then, with agreement from the Agency, the parameter may be assessed before mixing takes place.

#### 4.5 Noise

Noise from the installation, (excluding noise associated with emergency use of the High Pressure flare, the Low Pressure flare and associated flare tips), shall not give rise to sound

pressure levels ( $L_{Aeq, T}$ ) measured at any noise sensitive locations which exceed the limit value(s).

**Reason:** To clarify the interpretation of limit values fixed under the licence.

## Condition 5. Emissions

- 5.1 No specified emission from the installation shall exceed the emission limit values set out in *Schedule B: Emission Limits*, of this licence. There shall be no other emissions of environmental significance.
- 5.2 No emissions, including odours, from the activities carried on at the site shall result in an impairment of, or an interference with amenities or the environment beyond the installation boundary or any other legitimate uses of the environment beyond the installation boundary.
- 5.3 No substance shall be discharged in a manner, or at a concentration, that, following initial dilution, causes tainting of fish or shellfish.
- 5.4 Emissions from emission point reference SW1 shall discharge through a diffuser at a location not less than 500 meters outside the boundary of the Broadhaven Bay cSAC and at least 12.7 km offshore from the landfall location and shall be located within 100 metres of the discharge location as shown on the revised map labelled 'WGS84', Revision D (08.04.2014), Article 10(2)(b)(ii) response (received 17 April 2014) of the licence review application.
- 5.5 Emissions from emission point reference SW3 shall discharge within 500 metres of the discharge location as shown on the revised map labelled 'WGS84', Revision D (08.04.2014), Article 10(2)(b)(ii) response (received 17 April 2014) of the licence review application.

**Reason:** To provide for the protection of the environment by way of control and limitation of emissions.

## Condition 6. Control and Monitoring

- 6.1 The licensee shall carry out such sampling, analyses, measurements, examinations, maintenance and calibrations as set out below and as in accordance with *Schedule C: Control & Monitoring*, of this licence.
  - 6.1.1 Analyses shall be undertaken by competent staff in accordance with documented operating procedures.
  - 6.1.2 Such procedures shall be assessed for their suitability for the test matrix and performance characteristics shall be determined.
  - 6.1.3 Such procedures shall be subject to a programme of Analytical Quality Control using control standards with evaluation of test responses.
  - 6.1.4 Where any analysis is sub-contracted it shall be to a competent laboratory.
- 6.2 The licensee shall ensure that:
  - (i) sampling and analysis for all parameters listed in the Schedules to this licence; and
  - (ii) any reference measurements for the calibration of automated measurement systems;shall be carried out in accordance with CEN-standards. If CEN standards are not available, ISO, national or international standards that will ensure the provision of data of an equivalent scientific quality shall apply.
- 6.3 All automatic monitors and samplers shall be functioning at all times (except during maintenance and calibration) when the activities are being carried on unless alternative

sampling or monitoring has been agreed in writing by the Agency for a limited period. In the event of the malfunction of any continuous monitor, the licensee shall contact the Agency as soon as practicable, and alternative sampling and monitoring facilities shall be put in place. The use of alternative equipment, other than in emergency situations, shall be as agreed by the Agency.

- 6.4 Monitoring and analysis equipment shall be operated and maintained as necessary so that monitoring accurately reflects the emission/discharge (or ambient conditions where that is the monitoring objective).
- 6.5 The licensee shall ensure that groundwater monitoring well sampling equipment is available/installed on-site and is fit for purpose at all times. The sampling equipment shall be to Agency specifications.
- 6.6 All treatment/abatement and emission control equipment shall be calibrated and maintained in accordance with the instructions issued by the manufacturer/supplier or installer.
- 6.7 The frequency, methods and scope of monitoring, sampling and analyses, as set out in this licence, may be amended with the agreement of the Agency following evaluation of test results.
- 6.8 The licensee shall prepare a programme, to the satisfaction of the Agency, for the identification and reduction of diffuse VOC emissions using all of the following techniques:
  - (i) Sniffing methods associated with correlation curves for key equipment;
  - (ii) Optical gas imaging techniques;
  - (iii) Calculations of chronic emissions based on emission factors periodically (once every two years) validated by measurements.

This programme shall be included in the Environmental Management Programme.

- 6.9 The integrity and water tightness of all underground pipes, tanks, bunding structures and containers and their resistance to penetration by water or other materials carried or stored therein shall be tested and demonstrated by the licensee prior to use. This testing shall be carried out by the licensee at least once every four years thereafter and reported to the Agency on each occasion. This testing shall be carried out in accordance with any guidance published by the Agency. A written record of all integrity tests and any maintenance or remedial work arising from them shall be maintained by the licensee.
  - 6.9.1 The licensee shall put in place monitoring systems capable of demonstrating on a continuous basis, the integrity and water tightness of any cores within the services umbilical which are used to convey process effluent.
- 6.10 The storm water drainage systems (e.g., gullies, manholes, any visible drainage conduits and such other aspects as may be agreed) shall be visually inspected weekly and desludged as necessary. Bunds, silt traps and oil separators shall be inspected weekly and desludged as necessary. All sludge and drainage from these operations shall be collected for safe disposal. The drainage systems, bunds, silt traps and oil interceptors shall be properly maintained at all times. The licensee shall maintain a drainage map on site. The drainage map shall be reviewed annually and updated as necessary.
- 6.11 The licensee shall prepare a programme, to the satisfaction of the Agency, for the minimisation of emissions from venting and flaring operations. Measures shall include process changes, sufficient gas recovery system, a valve maintenance programme, balancing the refinery fuel gas system and advanced process control. This programme shall be included in the Environmental Management Programme referred to in Condition 2.2.2.3.
- 6.12 The licensee shall keep a record of flaring events and a report on the flaring events shall be included in the AER.
- 6.13 Process Effluent
  - 6.13.1 The acute toxicity of the undiluted final effluent to at least four aquatic species from different trophic levels shall be determined by standardised and internationally accepted procedures and carried out by a competent laboratory. The name of the laboratory and the scope of testing to be undertaken shall be submitted, in writing, to the Agency, within three months of the date of commencement of the discharge



of process effluent SW3. Once the testing laboratory and the scope of testing have been agreed by the Agency, the Agency shall decide when this testing is to be carried out and copies of the complete reports shall be submitted by the licensee to the Agency within six weeks of completion of the testing.

- 6.13.2 Having identified the most sensitive species outlined in Condition 6.13.1, subsequent compliance toxicity monitoring on the two most sensitive species shall be carried out by the laboratory identified in Condition 6.13.1. The Agency shall decide when this testing is to be carried out and copies of the complete reports shall be submitted by the licensee to the Agency within six weeks of completion of the testing.
- 6.13.3 A representative sample of effluent shall be screened for the presence of organic compounds. Such screening shall be repeated at intervals as requested by the Agency thereafter.
- 6.14 The licensee shall undertake a baseline survey of the environs of the emission discharge locations at sea (SW1 and SW3). The scope of the survey shall be agreed in advance with the Agency and the Marine Institute but as a minimum shall include water and sediment chemistry assessment as well as a benthic community biodiversity assessment. Similar surveys shall be repeated at intervals as requested by the Agency thereafter. A report on the survey shall be included in the first AER.
- 6.15 Storm Water
- 6.15.1 A visual examination of the storm water discharges shall be carried out daily. A log of such inspections, shall be maintained.
- 6.15.2 The licensee shall, within three months of date of grant of this licence, establish suitable trigger levels for TOC and TC in storm water discharges, such that storm waters exceeding these levels will be diverted for retention and suitable disposal. The licensee shall have regard to the Environmental Protection Agency "Guidance on the setting of trigger values for storm water discharges to off-site surface waters at EPA IPPC and Waste licensed facilities" when establishing the suitable trigger levels.
- 6.15.3 The licensee shall, as part of the Annual Environmental Report, provide a report on the annual Suspended Solids mass emission for SW2.
- 6.16 Noise
- The licensee shall carry out a noise survey of the site operations annually. The survey programme shall be undertaken in accordance with the methodology specified in the 'Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)' as published by the Agency.
- 6.17 The licensee shall establish and maintain a permanent noise monitoring station to carry out continuous noise monitoring at a location to be agreed by the Agency, approximately 665 m distant from the HP/LP flare tower.
- 6.18 Pollutant Release and Transfer Register (PRTR)
- The licensee shall prepare and report a PRTR for the site. The substance and/or wastes to be included in the PRTR shall be determined by reference to EC Regulations No. 166/2006 concerning the establishment of the European Pollutant Release and Transfer Register. The PRTR shall be prepared in accordance with any relevant guidelines issued by the Agency and shall be submitted electronically in specified format and as part of the AER.
- 6.19 The licensee shall prepare an annual mass balance for methanol import into, usage in and loss from the process. All loss routes of methanol shall be identified and included in the mass balance. A report on the annual mass balance for methanol shall be included in the AER.
- 6.20 The licensee shall, within six months of the date of grant of this licence, develop and establish a Data Management System for collation, archiving, assessing and graphically presenting the monitoring data generated as a result of this licence.

- 6.21 The licensee shall provide and use adequate lighting during the operation of the installation at night-time. The light from any such lighting system should be directed downwards in order to minimise light pollution outside the boundary of the installation.
- 6.22 The licensee shall keep a record of the quantity of biocide added to the treated produced water emission on a daily and annual basis. A report on the addition of biocide shall be included in the AER.
- 6.23 Soil Monitoring
- The licensee shall carry out soil monitoring at the site of the installation, within five years of date of grant of licence and at least once every five years thereafter. The sampling and monitoring shall be carried out in accordance with any guidance or procedure as may be specified by the Agency.

**Reason:** *To provide for the protection of the environment by way of treatment and monitoring of emissions.*

## **Condition 7. Resource Use and Energy Efficiency**

- 7.1 The licensee shall carry out an audit of the energy efficiency of the site within eighteen months of commencement of the activities. The audit shall be carried out in accordance with the guidance published by the Agency, "Guidance Note on Energy Efficiency Auditing". The energy efficiency audit shall be repeated at intervals as required by the Agency.
- 7.2 The audit shall identify all practicable opportunities for energy use reduction and efficiency and the recommendations of the audit will be incorporated into the Schedule of Environmental Objectives and Targets under Condition 2 above.
- 7.3 The licensee shall identify opportunities for reduction in the quantity of water used and the volume of contaminated water produced on site including recycling and reuse initiatives, wherever possible. Reductions in water usage and volume of contaminated water produced on-site shall be incorporated into Schedule of Environmental Objectives and Targets.
- 7.4 The licensee shall undertake an assessment of the efficiency of use of raw materials in all processes, having particular regard to the reduction in waste generated. The assessment should take account of best international practice for these types of activities. Where improvements are identified, these shall be incorporated into the Schedule of Environmental Objectives and Targets.

**Reason:** *To provide for the efficient use of resources and energy in all site operations.*

## **Condition 8. Materials Handling**

- 8.1 The licensee shall implement a waste management plan to ensure that waste generated in the carrying on of the activities shall be prepared in order of priority for re-use, recycling or recovery or, where that is not technically or economically possible, disposed of in a manner which will prevent or minimise any impact on the environment.
- 8.2 Disposal or recovery of waste on-site shall only take place in accordance with the conditions of this licence and in accordance with the appropriate National and European legislation and protocols.
- 8.3 Waste sent off-site for recovery or disposal shall be transported only by an authorised waste contractor. The waste shall be transported from the site of the activities to the site of recovery/disposal only in a manner that will not adversely affect the environment and in accordance with the appropriate National and European legislation and protocols.

- 8.4 The licensee shall ensure that, in advance of transfer to another person, waste shall be classified, packaged and labelled in accordance with National, European and any other standards which are in force in relation to such labelling.
- 8.5 The loading and unloading of materials shall be carried out in designated areas protected against spillage and leachate run-off.
- 8.6 In accordance with BAT 52 of the BAT conclusions for refining of mineral oil and gas, where annual throughput of volatile liquid hydrocarbon compounds is greater than 5000 m<sup>3</sup>/year due to loading and unloading operations, from the 01 October 2018, the licensee shall achieve a recovery rate of at least 95% using one or a combination of the following vapour recovery techniques:
- (i) Condensation;
  - (ii) Absorption;
  - (iii) Adsorption;
  - (iv) membrane separation;
  - (v) Hybrid systems.
- 8.7 Waste shall be stored in designated areas, protected as may be appropriate against spillage and leachate run-off. The waste shall be clearly labelled and appropriately segregated.
- 8.8 No waste classified as green list waste in accordance with the EU Shipment of Waste Regulations (Council Regulation EEC No. 1013/2006, as may be amended) shall be consigned for recovery without the agreement of the Agency.
- 8.9 The licensee shall remove mercury from the raw natural gas and recover the mercury-containing waste for waste disposal.
- 8.10 Waste for disposal/recovery off-site shall be analysed in accordance with *Schedule C: Control & Monitoring*, of this licence.
- 8.11 Unless approved in writing, in advance, by the Agency the licensee is prohibited from mixing a hazardous waste of one category with a hazardous waste of another category or with any other non-hazardous waste.
- 8.12 The licensee shall neither import waste into the State nor export waste out of the State except in accordance with the relevant provisions of Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14th June 2006 on shipments of waste and associated national regulations.

**Reason:** *To provide for the appropriate handling of material and the protection of the environment.*

## **Condition 9. Accident Prevention and Emergency Response**

- 9.1 The licensee shall ensure that a documented Accident Prevention Procedure is in place that addresses the hazards on-site (gas refinery, onshore pipeline and offshore pipeline), particularly in relation to the prevention of accidents with a possible impact on the environment. This procedure shall also address fire and explosion prevention and shall be reviewed annually and updated as necessary.
- 9.2 The licensee shall install an automatic shut-off valve at the gas refinery for the emission point SW3 within six months from the date of grant of the licence. In the event of a loss of integrity of the core in the umbilical which conveys treated produced water this valve shall automatically shut to prevent the discharge to emission point SW3.
- 9.3 The licensee shall ensure that a documented Emergency Response Procedure is in place that addresses any emergency situation which may originate on-site. This procedure shall include provision for minimising the effects of any emergency on the environment. This procedure shall be reviewed annually and updated as necessary.

#### 9.4 Incidents

##### 9.4.1 In the event of an incident the licensee shall immediately:

- (i) carry out an investigation to identify the nature, source and cause of the incident and any emission arising therefrom;
- (ii) isolate the source of any such emission;
- (iii) evaluate the environmental pollution, if any, caused by the incident;
- (iv) identify and execute measures to minimise the emissions/malfunction and the effects thereof;
- (v) identify the date, time and place of the incident;
- (vi) notify the Agency and other relevant authorities.

##### 9.4.2 The licensee shall provide a proposal to the Agency for its agreement within one month of the incident occurring or as otherwise agreed by the Agency to:

- (i) identify and put in place measures to avoid recurrence of the incident; and
- (ii) identify and put in place any other appropriate remedial actions.

##### 9.4.3 Where an incident or accident that significantly affects the environment occurs, the licensee shall, without delay take measures to limit the environmental consequences of the incident or accident and to prevent further incident or accident.

##### 9.5 In the event of an incident the licensee shall undertake any additional monitoring as required by the Agency.

**Reason:** *To provide for the protection of the environment.*

## Condition 10. Decommissioning & Residuals Management

10.1 Following termination, or planned cessation for a period greater than six months, of use or involvement of all or part of the site in the licensed activities, the licensee shall, to the satisfaction of the Agency, decommission, render safe or remove for disposal/recovery any soil, subsoil, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein or thereon, that may result in environmental pollution.

##### 10.2 Decommissioning Management Plan (DMP)

10.2.1 The licensee shall prepare, to the satisfaction of the Agency, a fully detailed and costed plan for the decommissioning or closure of the site or part thereof. This plan shall be submitted to the Agency for agreement within three months of date of grant of this licence.

10.2.2 The plan shall be reviewed annually and proposed amendments thereto notified to the Agency for agreement as part of the AER. No amendments may be implemented without the agreement of the Agency.

10.2.3 The licensee shall have regard to the Environmental Protection Agency's Guidance on Assessing and Costing Environmental Liabilities (2014) and, as appropriate, Guidance on Environmental Liability Risk Assessment, Residuals Management Plans, and Financial Provision (2006) and the baseline report, when implementing Condition 10.2.1 above.

##### 10.3 The Decommissioning Management Plan shall include, as a minimum, the following:

- (i) a scope statement for the plan;
- (ii) the criteria that define the successful decommissioning of the activities or part thereof, which ensures minimum impact on the environment;
- (iii) a programme to achieve the stated criteria;

- (iv) where relevant, a test programme to demonstrate the successful implementation of the decommissioning plan; and
  - (v) details of the costings for the plan and the financial provisions to underwrite those costs.
- 10.4 A final validation report to include a certificate of completion for the Decommissioning Management Plan, for all or part of the site as necessary, shall be submitted to the Agency within three months of execution of the plan. The licensee shall carry out such tests, investigations or submit certification, as requested by the Agency, to confirm that there is no continuing risk to the environment.

**Reason:** *To make provision for the proper closure of the activities ensuring protection of the environment.*

## Condition 11. Notification, Records and Reports

- 11.1 The licensee shall notify the Agency by both telephone and either email or webform, to the Agency's headquarters in Wexford, or to such other Agency office as may be specified by the Agency, as soon as practicable after the occurrence of any of the following:
- (i) an incident or accident that significantly affects the environment;
  - (ii) any release of environmental significance to atmosphere from any potential emissions point including bypasses;
  - (iii) any breach of one or more of the conditions attached to this licence;
  - (iv) any malfunction or breakdown of key control equipment or monitoring equipment set out in *Schedule C: Control and Monitoring*, of this licence which is likely to lead to loss of control of the abatement system; and
  - (v) any incident with the potential for environmental contamination of surface water or groundwater, or posing an environment threat to air or land, or requiring an emergency response by the Local Authority.
- The licensee shall include as part of the notification, date and time of the incident, summary details of the occurrence, and where available, the steps taken to minimise any emissions.
- 11.2 The following shall be notified, as soon as practicable after the occurrence of any incident which relates to a discharge to water:
- (i) Inland Fisheries Ireland / Department of Agriculture, Food and the Marine in the case of discharges to receiving waters.
  - (ii) Irish Water and Water Services Authority and/or other groups responsible for the downstream abstraction of drinking water, in the case of any incident where the discharge(s) have been identified as upstream of a drinking water abstraction point.
  - (iii) The local authority, in the case of discharges to or in the vicinity of designated bathing waters.
- 11.3 The licensee shall make a record of any notification made under Condition 11.2. This record shall include details of the nature, extent, and impact of, and circumstances giving rise to, the incident or accident. The record shall include all corrective actions taken to manage the incident or accident, minimise wastes generated and the effect on the environment, and avoid recurrence. In the case of a breach of a condition, measures to restore compliance. The licensee shall, as soon as practicable following notification, submit to the Agency the record.
- 11.4 The licensee shall record all complaints of an environmental nature related to the operation of the activities. Each such record shall give details of the date and time of the complaint, the name of the complainant (if provided), and give details of the nature of the complaint. A record shall also be kept of the response made in the case of each complaint.
- 11.5 The licensee shall record all sampling, analyses, measurements, examinations, calibrations and maintenance carried out in accordance with the requirements of this licence and all other such monitoring which relates to the environmental performance of the installation.

- 11.6 The licensee shall as a minimum ensure that the following documents are accessible at the site:
- (i) the licences relating to the installation;
  - (ii) the current EMS for the installation including all associated procedures, reports, records and other documents;
  - (iii) the previous year's AER for the installation;
  - (iv) records of all sampling, analyses, measurements, examinations, calibrations and maintenance carried out in accordance with the requirements of this licence and all other such monitoring which relates to the environmental performance of the installation;
  - (v) relevant correspondence with the Agency;
  - (vi) up-to-date site drawings/plans showing the location of key process and environmental infrastructure, including monitoring locations and emission points;
  - (vii) up-to-date Standard Operational Procedures for all processes, plant and equipment necessary to give effect to this licence or otherwise to ensure that standard operation of such processes, plant or equipment does not result in unauthorised emissions to the environment;
  - (viii) any elements of the licence application or EIS documentation referenced in this licence.
- This documentation shall be available to the Agency for inspection at all reasonable times.
- 11.7 The licensee shall submit to the Agency, by the 31<sup>st</sup> March of each year, an AER covering the previous calendar year. This report, which shall be to the satisfaction of the Agency, shall include as a minimum the information specified in *Schedule D: Annual Environmental Report*, of this licence and shall be prepared in accordance with any relevant guidelines issued by the Agency.
- 11.8 A full record, which shall be open to inspection by authorised persons of the Agency at all times, shall be kept by the licensee on matters relating to the waste management operations and practices at this site. This record shall be maintained on a monthly basis and shall as a minimum contain details of the following:
- (i) the tonnages and EWC Code for the waste materials imported and/or sent off-site for disposal/recovery;
  - (ii) the names of the agent and carrier of the waste, and their waste collection permit details, if required (to include issuing authority and vehicle registration number);
  - (iii) details of the ultimate disposal/recovery destination facility for the waste and its appropriateness to accept the consigned waste stream, to include its permit/licence details and issuing authority, if required;
  - (iv) written confirmation of the acceptance and disposal/recovery of any hazardous waste consignments sent off-site;
  - (v) details of all waste consigned abroad for Recovery and classified as 'Green' in accordance with the EU Shipment of Waste Regulations (Council Regulation EEC No. 1013/2006, as may be amended). The rationale for the classification must form part of the record;
  - (vi) details of any rejected consignments;
  - (vii) details of any approved waste mixing;
  - (viii) the results of any waste analyses required under *Schedule C: Control & Monitoring*, of this licence; and
  - (ix) the tonnage and EWC Code for the waste materials recovered/disposed on-site.
  - (x) the tonnage of mercury waste stored on-site.
- 11.9 The licensee shall submit report(s) as required by the conditions of this licence to the Agency's Headquarters in Wexford, or to such other Agency office as may be specified by the Agency.
- 11.10 All reports shall be certified accurate and representative by the installation manager or a nominated, suitably qualified and experienced deputy.

**Reason:** To provide for the collection and reporting of adequate information on the activities.

## Condition 12: Financial Charges and Provisions

### 12.1 Agency Charges

12.1.1 The licensee shall pay to the Agency an annual contribution of €41,482.92 or such sum as the Agency from time to time determines, having regard to variations in the extent of reporting, auditing, inspection, sampling and analysis or other functions carried out by the Agency, towards the cost of monitoring the activities as the Agency considers necessary for the performance of its functions under the Environmental Protection Agency Act 1992 as amended. The first payment shall be a pro-rata amount for the period from the date of grant of this licence date of commencement of enforcement to the 31<sup>st</sup> day of December, and shall be paid to the Agency within one month from the date of grant of the licence. In subsequent years the licensee shall pay to the Agency such revised annual contribution as the Agency shall from time to time consider necessary to enable performance by the Agency of its relevant functions under the Environmental Protection Agency Act 1992 as amended and all such payments shall be made within one month of the date upon which demanded by the Agency.

12.1.2 In the event that the frequency or extent of monitoring or other functions carried out by the Agency needs to be increased, the licensee shall contribute such sums as determined by the Agency to defray its costs in regard to items not covered by the said annual contribution.

### 12.2 Environmental Liabilities

12.2.1 The licensee shall as part of the AER, provide an annual statement as to the measures taken or adopted at the site in relation to the prevention of environmental damage, and the financial provisions in place in relation to the underwriting of costs for remedial actions following anticipated events or accidents/incidents, as may be associated with the carrying on of the activities.

12.2.2 The licensee shall arrange for the completion, by an independent and appropriately qualified consultant, of a comprehensive and fully costed Environmental Liabilities Risk Assessment (ELRA) which addresses the liabilities from past and present activities. The assessment shall include those liabilities and costs identified in Condition 10 for execution of the DMP. A report on this assessment shall be submitted to the Agency for agreement within one month of date of grant of this licence. The ELRA shall be reviewed as necessary to reflect any significant change on site, and in any case every three years following initial agreement. Review results are to be notified as part of the AER.

12.2.3 Within six months of date of grant of this licence, the licensee shall, to the satisfaction of the Agency, make financial provision to cover any liabilities associated with the operation (including closure). The amount of indemnity held shall be reviewed and revised as necessary, but at least annually. Proof of renewal or revision of such financial indemnity shall be included in the annual 'Statement of Measures' report identified in Condition 12.2.1.

12.2.4 The licensee shall revise the cost of closure annually and any adjustments shall be reflected in the financial provision made under Condition 12.2.3.

12.2.5 The licensee shall have regard to the Environmental Protection Agency's Guidance on Assessing and Costing Environmental Liabilities (2014) and, as appropriate, Guidance on Environmental Liability Risk Assessment, Residuals Management Plans, and Financial Provision (2006) when implementing Conditions 12.2.2 and 12.2.3 above.

**Reason:** *To provide for adequate financing for monitoring and financial provisions for measures to protect the environment.*



### SCHEDULE A: Limitations

The following limitation on the installation applies:

The use of the biocide, containing 2, 2-Dibromo-3-nitrilopropionamide (DBNPA) (Dow antimicrobial 7287), is limited to 1.56 kg per day.

### SCHEDULE B: Emission Limits

#### B.1 Emissions to Air

**Emission Point Reference No:** A2-1, A2-2  
**Location:** Gas turbines – Sales Gas Compressor Building  
**Volume to be emitted:** Maximum in any one day, A2-1: 1,976,452 m<sup>3</sup>  
 A2-2: 1,870,244 m<sup>3</sup>  
 Maximum rate per hour, A2-1: 82,352 m<sup>3</sup>  
 A2-2: 77,927 m<sup>3</sup>  
**Minimum discharges height:** 21.2 m above ground

Parameter	Emission Limit Value
Nitrogen oxides (as NO <sub>2</sub> )	50 mg/m <sup>3</sup>
Carbon Monoxide	100 mg/m <sup>3</sup>

**Emission Point Reference No:** A2-4, A2-5, A2-6 <sup>Note 1</sup>  
**Location:** Power generators (spark ignition engines) – Utilities area  
**Volume to be emitted:** Maximum in any one day: 255,824 m<sup>3</sup> (each)  
 Maximum rate per hour: 10,659 m<sup>3</sup> (each)  
**Minimum discharges height:** 15 m above ground

Parameter	Emission Limit Value
Nitrogen oxides (as NO <sub>2</sub> )	250 mg/m <sup>3</sup>
Carbon Monoxide	300 mg/m <sup>3</sup>
Ammonia	10 mg/m <sup>3</sup>

**Note 1:** Only two generators shall operate at any one time.

**Location:** Loading and unloading operations of volatile liquid hydrocarbon compounds <sup>Note 1, Note 2</sup>

Parameter	Emission Limit Value (hourly average) <sup>Note 3</sup>
NM VOC	10 g/m <sup>3</sup> <sup>Note 3, 4</sup>
Benzene	<1 mg/m <sup>3</sup> <sup>Note 3, 4</sup>

**Note 1:** Applicable to loading/unloading operations where the annual throughput is > 5,000 m<sup>3</sup>/year.

**Note 2:** Location(s) to be agreed by the Agency.

**Note 3:** Hourly values in continuous operation expressed and measured according to European Parliament and Council Directive 94/63/EC (OJ L 365, 31.12.1994, p. 24).

**Note 4:** Emission limit values applicable from 01 October 2018.

**B.2 Emissions to Water**

**Emission Point Reference No:** SW3 – Treated Produced Water  
**Name of Receiving Waters:** Atlantic Ocean  
**Monitoring Location:** 086441E, 333045N (SW3-S)  
**Location of discharge:** Corrib Manifold approximately  
65 km off-shore  
Longitude:-11°03.51'  
Latitude: 54° 20.34'

**Volume to be emitted:** Maximum in any one day: 80 m<sup>3</sup>  
Maximum in any one hour: 3.33 m<sup>3</sup>

Parameter	Emission Limit Value
pH	6-9
Toxicity	5 TU
	<b>mg/l</b>
COD - concentration limit	400
COD - yearly average limit	125 <sup>Note 1</sup>
Suspended Solids	5
Total Nitrogen	10
Hydrocarbons (PAH, BTEX, TPH)	0.5
Benzene – yearly average limit	0.05 <sup>Note 1</sup>
Phenol	0.001
Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn)	0.5
Copper	0.05
Cadmium	0.005
Arsenic	0.05
Mercury	0.0001
Lead	0.005
Chromium	0.1
Nickel – yearly average limit	0.005 <sup>Note 1</sup>

Note 1: Emission limit values applicable from 01 October 2018.

**Emission Point Reference No:** SW1 – Treated drainage water from areas at risk of contamination  
**Name of Receiving Waters:** Atlantic Ocean  
**Monitoring Location:** 086441E, 333045N (SW1-S)  
**Location of discharge:** Longitude: -09° 59.46'  
 Latitude: 54° 19.72'  
**Volume to be emitted:** Maximum in any one day: 720 m<sup>3</sup>  
 Maximum in any one hour: 30 m<sup>3</sup>

Parameter	Emission Limit Value
pH	6-9
	mg/l
Suspended Solids	5
Hydrocarbons (PAH, BTEX, TPH)	0.3

**Emission Point Reference No.:** SW2  
**Source of Emission:** Storm Water Settlement Ponds  
**Name of Receiving Waters:** Road Drainage Ditch (Road R314), Carrowmore Lake Catchment  
**Monitoring Location:** 086409E, 332853N  
**Location of discharge:** 085982 E, 332363 N

Parameter	Emission Limit Value
pH	6 - 9
	mg/l
Suspended Solids -concentration limit	30
Suspended Solids - yearly average limit	10
Hydrocarbons (PAH, BTEX, TPH)	0.3
Molybdate Reactive Phosphorus (as P)	1.0
Total aluminium	0.2

**B.3 Emissions to Sewer**

There shall be no process effluent emissions to sewer.

**B.4 Noise Emissions**

Daytime dB L <sub>Ar,T</sub> (30 minutes)	Evening time dB L <sub>Ar,T</sub> (30 minutes)	Night-time dB L <sub>Aeq,T</sub> (15-30 minutes)
45	40	35 <sup>Note 1</sup>

**Note 1:** There shall be no clearly audible tonal component or impulsive component in the noise emission from the activities at any noise-sensitive location.

## SCHEDULE C: Control & Monitoring

### C.1.1. Control of Emissions to Air

**Emission Point Reference No:** A2-1, A2-2  
**Description of Treatment:** Dry Low NO<sub>x</sub> Burner

Control Parameter	Monitoring	Key Equipment <sup>Note 1</sup>
NO <sub>x</sub>	Continuous	NO <sub>x</sub> analyser Dry low NO <sub>x</sub> burner
Oxygen	Continuous	Oxygen probe
Carbon monoxide	Continuous	CO analyser
Temperature, pressure, water vapour <sup>Note 2</sup>	Continuous	Temperature probe, waste heat recovery

**Note 1:** The licensee shall maintain appropriate access to standby and/or spares to ensure the operation of the abatement system.

**Note 2:** Continuous measurement of water vapour content is not required where the sampled gas is dried before analysis.



**Emission Point Reference No.'s:** A2-4, A2-5, A2-6  
**Description of Treatment:** Lean Burn Technique & Selective Catalytic Reduction

Control Parameter	Monitoring	Key Equipment <sup>Note 1</sup>
NO <sub>x</sub>	Lean burn strategy – Fuel/air ratio  Continuous	Lean burn technique equipment to be agreed by the Agency. Catalyst, Urea dosing system NO <sub>x</sub> analyser
Urea solution injection curve	Engine load – continuous	urea dosing system
Carbon monoxide	Quarterly	Oxidation catalyst
Temperature	To be agreed by the Agency	Temperature probe
Pressure drop	To be agreed by the Agency	Pressure cells, catalyst

**Note 1:** The licensee shall maintain appropriate access to standby and/or spares to ensure the operation of the abatement system.

**C.1.2. Monitoring of Emissions to Air**

Emission Point Reference No: A2-1, A2-2

Parameter	Monitoring Frequency	Analysis Method/Technique
NO <sub>x</sub> (as NO <sub>2</sub> )	Continuous	Infra-red Analyser
CO	Continuous	Infra-red Analyser
O <sub>2</sub>	Continuous	Oxygen analyser
Temperature	Continuous	Temperature probe
Exhaust Velocity	Continuous or calculation	Air flow meter or from continuous measurement of fuel gas flowrate, fuel gas composition and exhaust gas O <sub>2</sub> or as agreed by the Agency.



Emission Point Reference No.'s: A2-4, A2-5, A2-6

Parameter	Monitoring Frequency	Analysis Method/Technique
NO <sub>x</sub> (as NO <sub>2</sub> )	Quarterly	To be agreed by the Agency
CO	Quarterly	To be agreed by the Agency
NH <sub>3</sub>	Quarterly	To be agreed by the Agency



**C.1.3. Monitoring of Emissions to Air**

Location: Loading and unloading operations of volatile liquid hydrocarbon compounds <sup>Note 1, Note 2, Note 3</sup>

Parameter	Monitoring Frequency	Analysis Method/Technique
NM VOC	Annually	To be agreed by the Agency
Benzene	Annually	To be agreed by the Agency

Note 1: Applicable to loading/unloading operations where the annual throughput is > 5,000 m<sup>3</sup>/year.

Note 2: Location(s) to be agreed by the Agency.

Note 3: Applicable from 01 October 2018.



**C.2.1. Control of Emissions to Water**

**Emission Point Reference No:** SW3, SW1  
**Description of Treatment:** SW3 - Produced water treatment – corrugated plate interceptor, ultrafiltration, nanofiltration, activated carbon filter, ion exchange, pH adjustment.  
 SW1 – Treated drainage water from areas at risk of contamination – oil skimmer, corrugated plate interceptor, multimedia filter, ultrafiltration, Sludge treatment.

Control Parameter	Monitoring	Key Equipment <sup>Note 1</sup>
Flow	Continuous	Transfer pumps On-line meter
pH control	Continuous	On-line analyser Dosing pumps <sup>Note 2</sup>
Conductivity	Continuous	On-line analyser
Methanol concentration (produced water from still) <sup>Note 2</sup>	Methanol or COD – Daily	Distillation still Pressure /temperature controls
Oil Removal	--	TPS Oil Pump
Solids removal	--	Solids Pumps
Filterable solids	Pressure drop – continuous <sup>Note 3</sup> Changes in appearance – daily	Pressure cells Filters
Oil, solids, heavy metals and hydrocarbons	Pressure drop – continuous <sup>Note 3</sup> Changes in appearance – daily	Ultra –filtration unit Recirculation pumps
Oil, solids, heavy metals and hydrocarbons <sup>Note 2</sup>	Pressure drop – continuous <sup>Note 3</sup> Changes in appearance – daily	Nano-filtration units Recirculation pumps Dosing pumps
Media Saturation/ resin ages <sup>Note 2</sup>	Indicator parameters	Granular activated carbon unit Selective Ion Exchange unit Dosing pumps Carbon bed
Membrane clean in place (CIP)	Optimisation monitoring	CIP package
Sludge pre treatment (dewatering filter press)	--	Pumps Dosing pumps Filter press

**Note 1:** The licensee shall maintain appropriate access to standby and/or spares to ensure the operation of the abatement system.

**Note 2:** Applies to the produced water treatment system only.

**Note 3:** Loss of pressure drop across filtration units shall activate an alarm.

**C.2.2. Monitoring of Emissions to Water**

Emission Point Reference No: SW3

Control Parameter	Monitoring Frequency	Key Equipment/Technique
Flow	Continuous	On-line flow meter with recorder
pH	Continuous	pH electrode/meter and recorder
Conductivity	Continuous	On-line conductivity meter with recorder
Temperature	Daily	Temperature probe
Chemical Oxygen Demand	Daily <sup>Note 1</sup>	Standard Method
Biochemical Oxygen Demand	Weekly <sup>Note 1</sup>	Standard Method
Suspended Solids	Daily <sup>Note 1</sup>	Gravimetric
Total Nitrogen (as N)	Daily <sup>Note 1</sup>	Standard Method
Hydrocarbons (PAH, BTEX, TPH)	Fortnightly	Standard Method
Benzene	Fortnightly	Standard Method
Phenol	Fortnightly	Standard Method
Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn)	Fortnightly <sup>Note 1</sup>	Standard Method
Nickel	Fortnightly <sup>Note 1</sup>	Standard Method
Toxicity <sup>Note 2</sup>	As may be required	To be agreed by the Agency

**Note 1:** All samples shall be collected on a 24 hour flow proportional composite sampling basis.

**Note 2:** The number of toxic units (Tu) = 100/x hour EC/LC<sub>50</sub> in percentage vol/vol so that higher Tu values reflect greater levels of toxicity. For test regimes where species death is not easily detected, immobilisation is considered equivalent to death.

Emission Point Reference No.: SW1

Parameter	Monitoring Frequency	Analysis Method/Technique
Flow	Continuous	On-line flow meter with recorder
pH	Continuous	pH electrode/meter and recorder
Conductivity	Continuous	On-line conductivity meter with recorder
Chemical Oxygen Demand	Daily <sup>Note 1</sup>	Standard Method
Suspended Solids	Daily <sup>Note 1</sup>	Gravimetric
Hydrocarbons (PAH, BTEX, TPH)	Fortnightly	Standard Method

**Note 1:** All samples shall be collected on a 24 hour flow proportional composite sampling basis.

**C.2.3. Monitoring of Storm Water Emissions**

Emission Point Reference No: SW2 <sup>Note 1</sup>

Parameter	Monitoring Frequency	Analysis Method/Technique
Flow	Continuous	On-line flow meter with recorder
TOC (as C) <sup>Note 1</sup>	Continuous	TOC meter and recorder
TC (as C) <sup>Note 1</sup>	Continuous	TC meter and recorder
pH	Weekly	pH electrode/meter
COD	Weekly <sup>Note 2</sup>	Standard Method
Suspended solids	Weekly <sup>Note 2</sup>	Standard Method
Hydrocarbons (PAH, BTEX, TPH)	Weekly	Standard Method
Conductivity	Weekly	Standard Method
Visual Inspection	Daily	Sample and examine for colour, presence of oil and odour
Manganese	Quarterly <sup>Note 2</sup>	Standard Method
Total aluminium	Weekly <sup>Note 2</sup>	Standard Method
Molybdate Reactive Phosphorus	Weekly <sup>Note 2</sup>	Standard Method

Note 1: The TOC and TC meters and recorders shall be located at the emergency holding tank.

Note 2: All samples shall be collected on a 24 hour flow proportional composite sampling basis.

**C.3.1. Control of Emissions to Sewer**

There shall be no process effluent emissions to sewer.

**C.3.2. Monitoring of Emissions to Sewer**

There shall be no process effluent emissions to Sewer.

**C.4 Waste Monitoring**

Waste Class	Frequency	Parameter	Method
Sludge Filter cake	Per consignment	To be agreed by the Agency	To be agreed by the Agency
Mercury absorption bed	Per consignment	To be agreed by the Agency	To be agreed by the Agency
Hydrocarbon condensate	Per consignment	To be agreed by the Agency	To be agreed by the Agency
Other <sup>Note 1</sup>			

Note 1: Analytical requirements to be determined on a case by case basis.



**C.5 Noise Monitoring**

Location	Measurement	Frequency
AN 5, AN 6, AN 8, AN 9, AN 10 and other locations as maybe required	L <sub>Aeq, T</sub> L <sub>A90</sub> L <sub>A10</sub> 1/3 Octave Band Analysis	Quarterly <sup>Note 2</sup>
Permanent Noise Monitoring Station (~665 m from the flare tower)	Sound Pressure Level (Instantaneous) L <sub>Aeq, T</sub> L <sub>A90</sub> L <sub>A10</sub> 1/3 Octave Band Analysis	Continuous
<b>Period</b>	<b>Minimum Survey Duration</b>	
Daytime (07:00 to 19:00hrs)	A minimum of 3 sampling periods at each noise monitoring Location <sup>Note 2</sup> .	
Evening-time (19:00 to 23:00hrs)	A minimum of 1 sampling period at each noise monitoring location.	
Night-time <sup>Note 1</sup> (23:00 to 07:00hrs)	A minimum of 2 sampling periods at each noise monitoring location.	

**Note 1:** Night-time measurements should be made between 2300hrs and 0400hrs, Sunday to Thursday, with 2300hrs being the preferred start time.

**Note 2:** Sampling period is to be the time period T stated as per *Schedule B.4 Noise Emissions*, of this licence. This applies to day, evening and night time periods.

**C.6 Ambient Monitoring**

**C.6.1 Groundwater Monitoring**

**Location:** AGW-101, AGW-102, AGW-103, AGW-104, AGW-105, AGW-106

Parameter	Monitoring Frequency	Analysis Method/Techniques
Water level	Biannually	Dip meter
pH	Biannually	pH electrode/meter
Conductivity	Biannually	Conductivity meter
COD	Biannually	Standard Method
Major Anions <sup>Note 1</sup>	Biannually	Standard Method
Major Cations <sup>Note 1</sup>	Biannually	Standard Method
Hydrocarbons (PAH, BTEX, TPH)	Biannually	Standard Method
Heavy metals	Biannually	Atomic Absorption /ICP
Trace Organics <sup>Note 2</sup>	Biannually	GC-MS
Relevant Hazardous Substances <sup>Note 3</sup>	Biannually	Standard Method
Other <sup>Note 4</sup>	--	To be agreed by the Agency

- Note 1:** An ionic balance shall be presented with explanation of any significant error.
- Note 2:** Screening for priority pollutant list substances (such as US EPA volatile and/or semi-volatile compounds).
- Note 3:** The relevant hazardous substances for monitoring in groundwater shall be identified by the licensee by undertaking a risk based assessment. The Licensee shall have regard to the 'Classification of Hazardous and Non-hazardous Substances in Groundwater' issued by the Agency.
- Note 4:** Other parameters as may be agreed by the Agency.

**C.6.2 Receiving Water Monitoring**

**Location:** R314 Road drainage ditch (D16) along southern boundary – three monitoring locations to be agreed by the Agency meeting the following criteria: upstream of percolation area, downstream of percolation area and downstream of SW2.

Parameter	Monitoring Frequency <sup>Note 1</sup>	Analysis Method/Techniques
Small Stream Risk Score <sup>Note 2</sup>	Biannually	To be agreed by the Agency

- Note 1:** Monitoring period - October to April. Samples should be taken within the same calendar month as the initial sample for each subsequent year.
- Note 2:** Small Streams Risk Score must be undertaken by an appropriately qualified person, i.e., a person who has undertaken an EPA-approved SSRS course and follow-up QC scheme.

**C.6.3 Soil Monitoring**

**Monitoring Location:** As per the 'Baseline report' <sup>Note 1</sup>

Parameter	Monitoring Frequency	Analysis Method/Techniques
Relevant hazardous substances <small>Note 1</small>	Every five years	Standard Method

**Note 1:** As per the 'Baseline Report', Regulation 10 response (received on 13 June 2014) of the licence review application P0738-03.

**SCHEDULE D: Annual Environmental Report**

Annual Environmental Report Content <sup>Note 1</sup>
Emissions from the installation.
Waste management record.
Resource consumption summary.
Complaints summary.
Schedule of Environmental Objectives and Targets.
Environmental management programme – report for previous year.
Environmental management programme – proposal for current year.
Pollutant Release and Transfer Register – report for previous year.
Pollutant Release and transfer Register – proposal for current year.
Records on amount of mercury gained from the cleaning of natural gas and the amount of mercury sent to individual temporary or permanent storage facilities, as well as location and contact details of these facilities.
Noise monitoring report summary.
Ambient monitoring summary.
Tank and pipeline testing and inspection report.
Wastewater treatment system for sanitary effluent effectiveness and efficiency report.
Reported incidents summary.
Energy efficiency audit report summary.
Report on the assessment of the efficiency of use of raw materials in processes and the reduction in waste generated.
Report on progress made and proposals being developed to minimise water demand and the volume of trade effluent discharges.
Report on annual Suspended Solids mass emission for SW2.
Review of decommissioning management plan
Statement of measures in relation to prevention of environmental damage and remedial actions (Environmental Liabilities).
Environmental Liabilities Risk Assessment Review (every three years or more frequently as dictated by relevant on-site change including financial provisions.
Any other items specified by the Agency.

**Note 1:** Content may be revised subject to the agreement of the Agency.

**Sealed by the seal of the Agency on this the 8<sup>th</sup> day of October 2015.**

**PRESENT when the seal of the Agency  
Was affixed hereto:**

**Mary Turner, Authorised Person**

