

# Perenco UK Limited SNS(N) Assets

## OSPAR Public Statement 2014



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## Abbreviations

BMS	Business Management System
CO <sub>2</sub>	Carbon Dioxide
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
DECC	Department of Energy and Climate Change
EMS	Environmental Management System
ETS	Emissions Trading Scheme
GWP	Greenhouse Warming Potential
HQ	Hazard Quotient
kg	Kilogram
m <sup>3</sup>	Cubic Metres
NO <sub>x</sub>	Nitrogen oxide
NUIs	Normally Unattended Installations
OCNS	Offshore Chemical Notification Scheme
OIPW	Oil in Produced Water
Perenco	Perenco UK Limited
PLONOR	Poses Little or No Risk to the environment
ppm	Parts Per Million
SNS(N)	SNS North
t	Tonnes
UKCS	United Kingdom Continental Shelf

## 1. INTRODUCTION

Under OSPAR Recommendation 2003/5, DECC require that all existing UKCS oil and gas operators undertaking offshore operations during 2014 must prepare an annual statement of their environmental performance, covering the calendar year, and make that statement available to the public.

The SNS(N) hub assets include:

- Cleeton;
- Ravenspurn North;
- Amethyst;
- West Sole (Alpha, Bravo and Charlie).

Therefore, this document represents the 2014 public statement for Perenco's SNS(N) assets.

The document consists of:

- A description of the company's activities;
- A summary of the ISO 14001-certified environmental management system (EMS) that provides the framework for the control of the environmental aspects of these activities;
- A description of our environmental policy, including our environmental objectives and targets that we have set for significant environmental aspects and impacts; and
- A summary of our performance in relation to the environmental policy, objectives and targets, and any relevant legislative requirements.

## 2. PERENCO UK LIMITED'S SNS(N) ACTIVITIES

Perenco has operated the SNS(N) assets since November 2012. Perenco are responsible for three installations that are classified as "manned" (Cleeton, Ravenspurn North and West Sole Alpha) and a total of 15 normally unattended installations (NUIs) producing gas and liquids that are tied back through pipelines to the Dimlington onshore terminal (Figure 2.1).



### 3. THE ENVIRONMENTAL MANAGEMENT SYSTEM

Perenco’s EMS is designed to identify and assess the risks associated with the environmental impacts of our activities, and to apply and monitor the effectiveness of the controls required to minimise these risks. The EMS forms an integral part of Perenco’s Business Management System (BMS) and is certified by ERM CVS as meeting the requirements of ISO 14001.

### 4. The Environmental Policy

Perenco’s Environmental Policy is reproduced below. It informs the definition of our significant environmental aspects that are the focus of our environmental management activities.

Figure 4.1: The Perenco Environmental Policy

**Environmental Policy**  
No Damage To The Environment

*“Throughout our operations it is essential that we minimise our impact on the environment”*  
Enzo Perenco

**OUR GOALS ARE**  
No damage to the environment  
To minimise our emissions

**Perenco personnel must be committed to achieving these goals.**

- Managers are responsible and accountable for environmental matters.
- All Perenco and contractor personnel remain responsible for their impact on the environment. They must intervene in environmentally unsound and non-compliant conditions.

**To ensure compliance with our Environmental Policy we must:**

- Have in place an Environmental Management System in compliance with all relevant regulatory requirements and with E & P industry standards.
- Ensure that our Environmental Management System is understood and applied at all levels within the company.
- Ensure that all employees and contractor’s personnel are competent to undertake their work in an environmentally sound manner.
- Emphasise environmental concerns both on and off the work site.
- Assess the consequences of all our activities on the environment and put in place appropriate control measures.
- Maintain the physical integrity of our facilities to prevent accidental discharges of polluting substances.
- Adopt the best available and economically viable technologies to minimize our impacts and improve our energy efficiency.
- Set annual performance targets, with support plans.
- Maintain current environmental emergency response plans.
- Undertake regular emergency drills and exercises to test our capability to respond quickly and effectively to any environmental emergency.
- Report and investigate all incidents, taking appropriate measures in order to prevent their recurrence.
- Perform regular audits of all our activities, using the results to drive performance improvements.

**PERENCO**

## 5. ASPECTS AND OBJECTIVES

Offshore, our significant routine environmental aspects and associated objectives for 2014 were:

Aspect	Objective
Emissions of CO <sub>2</sub>	Retain CO <sub>2</sub> emissions within allocations set for permitted installations
Discharge of Oil in Produced water	Ensure the monthly average concentration of oil discharged in produced water does not exceed the platform allowance
Discharge of Production Chemicals	Reduce the use and/or discharge of production chemicals that carry substitution warnings
Emissions of hydrocarbon gases	Identify opportunities for the reduction in HC venting
Emissions of other combustion products	Monitor and where reasonably practicable reduce NO <sub>x</sub> emissions from relevant combustion equipment
Hydrocarbon and chemical spills to sea	<6 reportable spills (NB. Any spill to sea, irrespective of size, is reported to the regulator, DECC).

## 6. PERFORMANCE AND PROGRAMMES

### 6.1 Emissions of CO<sub>2</sub>

CO<sub>2</sub> emissions from our major offshore installations are subject to control under the Greenhouse Gases Emissions Trading Scheme (ETS) Regulations 2005. Only the Cleeton and Ravenspurn North installations have an allocation of CO<sub>2</sub> and Perenco seek to ensure that our emissions stay within these totals. The table shows our verified emissions for 2014 together with the corresponding allowances for the two installations.

Installation	Emissions (tonnes)	Allocations (tonnes) <sup>note 1</sup>
Cleeton	58,134	38,831
Ravenspurn North	52,662	40,469
West Sole Alpha	6,189	-
Hyde	115	-
Neptune	109	-
<b>Total</b>	<b>117,209</b>	<b>79,300</b>

Note 1: Only Cleeton and Ravenspurn North come in under the ETS

### 6.2 Discharge of Oil in Produced Water (OIPW)

Discharge of OIPW is subject to control under the Oil Pollution Prevention and Control Regulations.

After treatment, OIPW is currently discharged from Ravenspurn North, Hyde and West Sole Alpha. A negligible amount of OIPW was discharged from the Cleeton installation during 2014, however 99.5% of OIPW was injected back into the reservoir.

Installation	Annual mean monthly concentration in produced water (mg/l)	Total Hydrocarbons discharged (kg)	Volume of produced water discharged (m <sup>3</sup> )
Cleeton	114.34	19	164
Ravenspurn North	161.3	10,038	62,225
Hyde	15.14	204	13,476
West Sole Alpha	75.33	157	2088
<b>Total</b>	<b>134 (average)</b>	<b>10,418</b>	<b>77953</b>



Ravenspurn North accounts for almost 51% of all of Perenco's SNS(N) produced water discharges and almost 91.5% of the hydrocarbons discharged.

### 6.3 Discharge of Production Chemicals

The use and discharge of production chemicals is subject to control under the Offshore Chemicals Regulations. This requires regulatory approval following an assessment of the predicted environmental impacts of any proposed discharges. In addition, only chemicals that have been registered by the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) may be used.

Gas production requires only a limited range of production chemicals, mainly for the purposes of hydrate inhibition, corrosion control and separation of liquid hydrocarbons. Production chemical usage is limited to Amethyst, Cleeton, Ravenspurn North and West Sole (Alpha, Bravo and Charlie), together with their associated tie-backs. Such chemicals are generally used in closed systems that provide for their recovery and re-use, so minimising discharges to the marine environment.

Chemical Consumption		
HQ or OCNS Colour Band	Use (kg)	Discharge (kg)
Gold	171601	12755
Silver	99801	20574
A	31631	46660
B	0	0
C	0	0
D	0	0
E	2086576	59038
<b>Total</b>	<b>2389609</b>	<b>139027</b>
Of total chemicals used above with a Substitution warning	136686	35786

Chemical use for gas production is dominated by the need for hydrate inhibition. Methanol is routinely used for this purpose. It is a PLONOR chemical (i.e. it Poses Little or No Risk to the environment, OCNS category "E") and it is usually recovered, recycled and reused unless its salinity precludes this in which case it is discharged offshore with the associated corrosion inhibitor with which it is dosed. Modelling indicates that this discharge presents a negligible risk to the environment.

The use and discharge of chemicals that carry a CEFAS imposed substitution warning is 136686 kg for use and 35786 for discharge. The number of chemicals with sub warnings at the end of 2014 have been reduced to 6. Perenco are continuing to reduce chemical use at the SNS(N) assets, focusing on chemicals with a substitution warning.

## 6.4 Emissions of hydrocarbon gases

The venting of hydrocarbon gases is subject to regulatory control as part of our production licences issued under the Energy Act 1976.

The loss of gas to the atmosphere results from routine and upset conditions. Perenco monitor and report the amounts released and this is summarised for 2014 in the table below. Very little gas is lost as a result of upset conditions. Most is due to the requirement to purge and start and stop compressors.

Installation	Cleeton	Amethyst	Ravenspurn North	West Sole	Hyde	Total
Hydrocarbon Gas emitted (tonnes)	1,083	61	388	43.5	10	1,585.5

The Greenhouse Warming Potential (GWP) of the methane in the vented gas amounts to about 28% of the GWP of the CO<sub>2</sub> emitted from our combustion processes. As part of our continuous improvement program Perenco are currently planning to introduce improvements to controls which are designed to reduce the number of plant upsets that contribute to unplanned emissions of hydrocarbon gases.

## 6.5 Emissions of other combustion products

Onshore, the environmental impacts of concern attributable to combustion processes include the emissions to atmosphere of oxides of nitrogen (NO<sub>x</sub>). These have the potential to cause health impacts, and also contribute to acid rain. Offshore receptors are broadly insensitive to the amounts of NO<sub>x</sub> that are emitted from combustion of gas. Nonetheless, combustion processes with an installed capacity >50 MW(th) are subject to regulatory control under the Offshore Combustion Regulations.

Total NO<sub>x</sub> emissions from the Perenco SNS(N) assets during 2014 are shown in the table below.

Installation	Amethyst	Cleeton	Hyde	Ravenspurn North	West Sole	Neptune	Total
NO <sub>x</sub> (tonnes)	0.15	140.38	2.1	126.5	23.75	2.0	294.88

The remote location of the installations and the small proportion to total loading from the offshore industry means that the environmental effects of the NO<sub>x</sub> emissions are minimal and the cost of retrofitting low NO<sub>x</sub> emission combustion equipment is prohibitive in the circumstances of old fields and declining assets.



## 6.7 Hydrocarbon and chemical spills to sea

The Oil Pollution Prevention and Control Regulations apply to hydrocarbon and chemical spills to sea and these have to be reported and are subject to detailed investigation to ascertain the cause and prevent recurrence. A total of 5 events were reported during 2014, down from 16 in 2013.

Brief details of the spills are given in the table below.

Location	Date	Description	Loss (litres)
Amethyst B1D	09/11/14	Leak of hydraulic oil from a level control valve	60
Cleeton	02/10/14	Small loss of hydraulic fluid for small bore fitting	2
Minerva	29/05/14	Small loss of hydraulic oil due to loose pipe connection	2
Neptune	26/07/14	Loss of hydraulic fluid sub-sea	5
West Sole Alpha	09/04/14	Hydraulic oil leak from well control panel valve	<1

## ENVIRONMENTAL IMPROVEMENTS FOR 2015

Perenco's major environmental improvements for 2015 continue to be on the Ravenspurn North Platform produced water discharge quality. After extended field trials, a technology was identified that gave promising results in improving the quality of the produced water. Whilst the results gave an improved performance, compliance has still not been met. This trial skid will remain in use whilst further options are considered. New filter cartridge packages are currently being considered.

The new automated sand handling package has been commissioned. One of the benefits of this will be to reduce solid contamination of the produced water treatment system, which will also help improve the quality of the produced water discharged to sea.