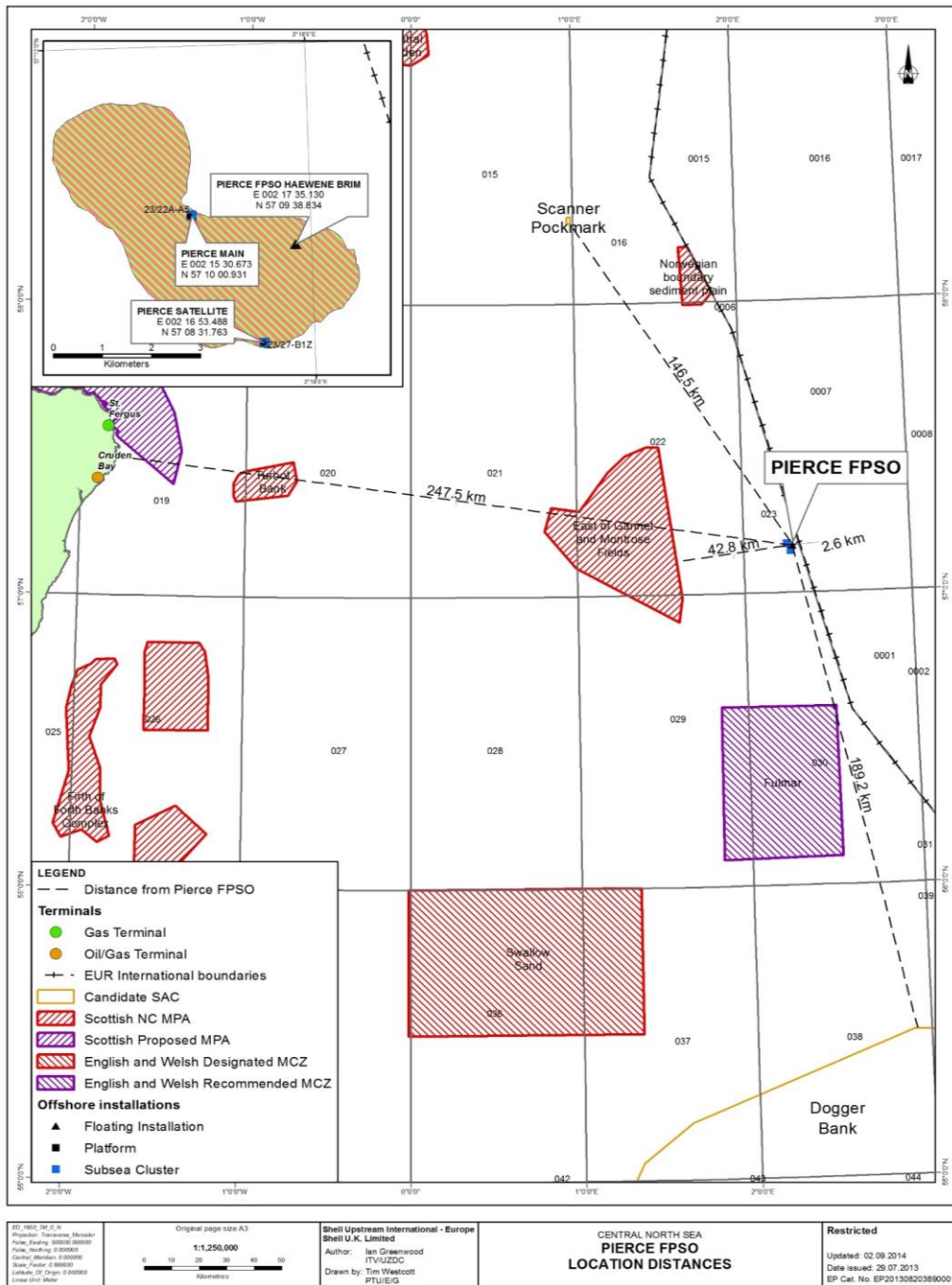


Pierce Production Company Limited OSPAR Public Statement 2018 Environmental Per



Issue Date: 27th May 2019

Introduction

This is the 2018 OSPAR Public Statement for the Pierce Production Company Limited, which is a wholly owned subsidiary of Bluewater Services (UK) Limited (hereinafter refer to as Bluewater). The statement reports the environmental performance of the Pierce Field operations and activities in the Field during 2018, in line with the requirements of OSPAR Recommendation 2003/5. The scope focuses on our offshore asset the Hæwene Brim as described below. This asset does not produce through any third party offshore assets (e.g. offshore pipeline) or operations.

On the first of July 2018 Bluewater became the Installation Operator of the Hæwene Brim Floating Production Storage and Offloading (FPSO) Vessel under the Offshore Installations (Offshore Safety Directive) (Safety Case etc.) Regulations 2015 (SCR 2015). Hence this first Bluewater Environmental Statement covers the environmental performance for the period 1st July to the 31st December 2018. Shell U.K. Limited remain the operator for the wells associated with the Pierce Field under the same legislation.

Pierce Field Offshore Activities

The Pierce development is located in Blocks 23/22a and 23/27a of the central North Sea. The Hæwene Brim FPSO (refer to Figure 1 below) is located at 57° 09' 39" N, 02° 17' 35" E, with this being 247 kilometres from the UK coastline, 3 kilometres from the UK/Norwegian median line and in a water depth of approximately 85 metres. The Hæwene Brim FPSO's main functions are:

- Receipt of fluids from subsea wells;
- Control of the subsea wells;
- Processing of the incoming fluids for separation into crude, water and gas;
- Storage of the stabilised crude oil and maintaining it at the required temperature;
- Treatment of effluent for discharge of water to the sea;
- Chemical injection;
- Produced gas re-injection;
- Seawater injection;
- Offloading of crude into tandem moored shuttle tankers;
- Power generation for process, gas compression, offloading, utilities and ship systems; and
- Provide accommodation for operating and maintenance personnel.

Operational activities during 2018 included normal production operations, maintenance and well optimisation work.



Figure 1: The Hæwene Brim FPSO

Bluewater HSEQ Policy

Bluewater Services (U.K.) Limited adopts the Bluewater Energy Services BV HSEQ policy which sets out the principles to which Hæwene Brim FPSO activities aim to comply. These include:

- ✓ Promoting Health, Safety and Environmental Protection;
- ✓ Seeking and achieving continual improvement;
- ✓ Compliance with all regulatory requirements.

The requirements of the policy are implemented through management systems, interface arrangements and operational management controls. The Bluewater policy is provided overleaf in Figure 2.

Document title	HSEQ Policy	
Document number	BW1-Q-100-PH-0001-001	
Accountable person	President and CEO	
Date published	08/12/2017	

HSEQ Policy

Bluewater is committed to delivering quality and continuous improvement throughout all its activities, while satisfying all applicable requirements.

To this end company goals are formulated by top management, taking into account our compliance obligations and other requirements from interested parties.

At Bluewater a pro-active and responsible approach to safety and environmental care is an essential part of doing our work. We require the participation of all our staff and contractors to implement this approach.

We aim to:

- actively minimise and control any health and safety risks,
- prevent or minimise the adverse impacts of our activities on the environment and
- continuously improve our work processes as part of our Corporate Management System.

As such, we will drive the development and implementation of industry best practices.

With all our personnel collectively and individually taking responsibility and accepting accountability for Bluewater's HSEQ performance, we create and maintain a healthy, safe and environmentally friendly place to work.

Hugo J. Heerema
 President & CEO
 December 2017

Figure 2: Bluewater HSEQ Policy

HSE Management System

Bluewater Energy Services BV, is certified to ISO 14001:2015 (a copy of the certificate is presented in Figure 4 on the following page). Bluewater adopts the Bluewater Energy Services BV’s Safety and Environmental Management System, which sets out guiding principles and mechanisms for managing HSE risk, impact and compliance in accordance with the Bluewater Energy Services BV Health, Safety, Environmental and Quality Policy.

The Corporate Management System (CMS) describes how HSE performance is managed, taking into account all relevant elements, such as: legal requirements, stakeholders, risks / opportunities and company goals. The management system is applicable to all employees and activities on all locations and is based on the requirements of ISO 9001:2015 and ISO 14001:2015. Within the overall CMS, the Safety and Environmental Management System (SEMS) is the framework of policies, processes standards and procedures that ensures that the health, safety and environmental objectives can be achieved. The SEMS acts as the link between the policies and standards and local processes and procedures. The high level structure of the CMS is shown in Figure 3 below.

A formalised and documented HSE Management System Interface is in place between Bluewater and Shell UK Limited to provide the mechanism for implementing Shell UK Limited requirements through Bluewater’s HSE and Operational management systems, to manage and control operational activities. Routine health, safety and environmental communications between Shell UK Limited and Bluewater are planned and maintained to review management arrangements, plans and performance to ensure requirements are being complied with and reported in line with Regulatory and Company requirements.

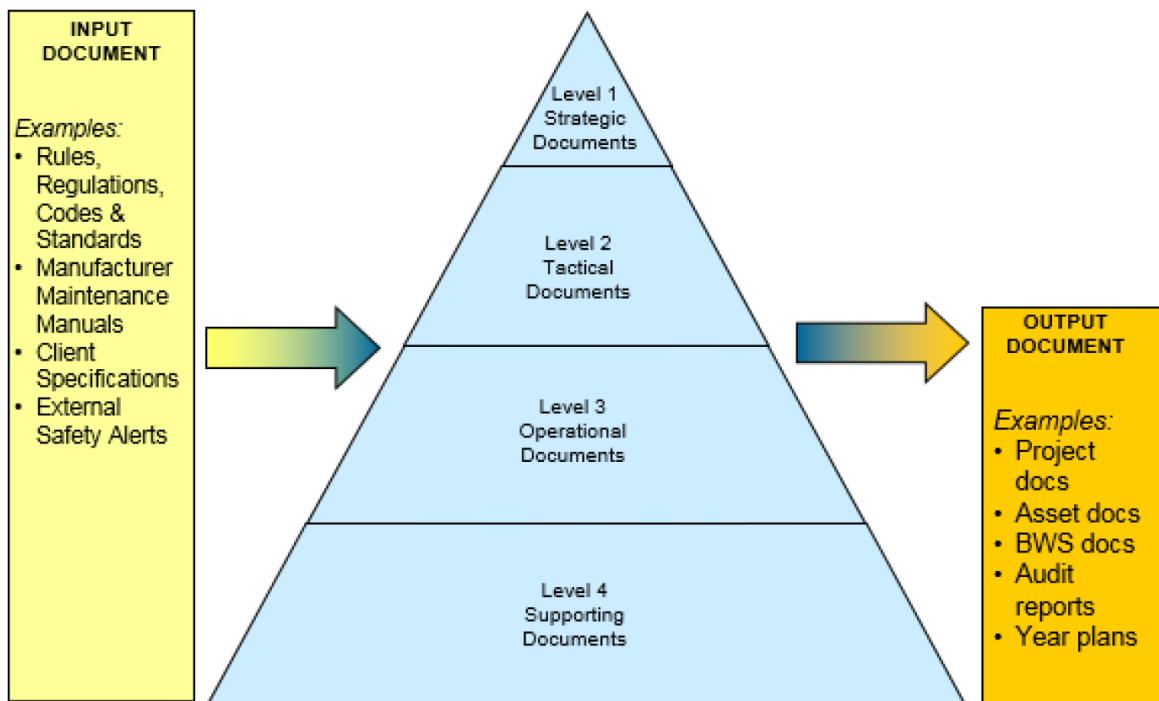


Figure 3: High Level Structure of the Corporate Management System



Certificate of Approval

This is to certify that the Management System of:
Bluewater Energy Services B.V.

Taurusavenue 46, 2132 LS Hoofddorp, Netherlands

has been approved by LRQA to the following standards:

ISO 14001:2015

P.G. Cornelissen - Area Manager North Europe

Issued By: Lloyd's Register Nederland B.V.

for and on behalf of: Lloyd's Register Quality Assurance Limited

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

Current Issue Date: 25 April 2018
Expiry Date: 6 November 2020
Certificate Identity Number: 10076992

Original Approvals:
ISO 14001 – 7 November 2008

Approval Number(s): ISO 14001 – 0024489

The scope of this approval is applicable to:
Design, engineering, procurement, management of subcontracted fabrication, installation, commissioning and aftersales of Single Point Mooring Systems (SPM) and Floating Production Storage Offloading (FPSO) systems.
Operation and management of FPSOs.



Lloyd's Register Group Limited, its affiliates and subsidiaries, including Lloyd's Register Quality Assurance Limited (LRQA), and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.
Issued By: Lloyd's Register Nederland B.V., K.P. van der Mandelwaan 41a 3003MB Rotterdam Netherlands for and on behalf of: Lloyd's Register Quality Assurance Limited, 1 Trinity Park, Solaire Hill Lane, Birmingham B37 7DS, United Kingdom

Figure 4: Copy of ISO14001:2015 Certificate.

Key Environmental Management Activities in 2018

Bluewater's key environment related objectives and activities for 2018 were to ensure compliance with all environmental permits and relevant regulations and to progress a number of programmes to support continued improvement in performance, including:

- Successful maintenance of the ISO 14001 EMS certification;
- Offshore Environmental Compliance and Permit audits and inspections;
- Onshore Emergency Response exercises and Offshore Drills;
- Monitoring of asset performance and Environmental KPIs covering resource use and emissions to the environment;
- Maintenance of the asset's Environmental Aspects Registers;

Environmental Performance (July 2018 to December 2018)

Atmospheric Emissions

Atmospheric emissions arise from power generation, flaring and fugitive emissions. Table 1 below provides the Production related fuel combustion and flaring emissions as reported into the Environmental Emissions Monitoring System (EEMS) through the Department of Business Energy and Industrial Strategy [BEIS] UK Oil Portal. This covers the period from the 1st July 2018 to 31st December 2018.

Atmospheric Emission	Unit	Gas Consumption	Diesel	Flaring	Totals
Fuel Use	Tonnes	11,817.76	5,780.00	5,453.88	N/A
CO ₂	Tonnes	32,366.5	18,452.3	14,859.5	65,648.3
NO _x	Tonnes	80.0	263.3	6.5	349.8
SO ₂	Tonnes	0.2	11.6	0.1	11.9
CO	Tonnes	64.6	69.6	36.5	170.7
CH ₄	Tonnes	9.9	0.8	98.2	108.9
VOC	Tonnes	0.4	8.8	10.9	20.1

Table 1: Atmospheric Emissions (1st July 2018 to 31st December 2018)

Water Discharges

Liquid associated with the oil produced by the Pierce Field (oil and produced water) is processed through oil and water separation systems offshore with the cleaned produced water being discharged to sea. The Hæwene Brim FPSO holds a permit for produced water discharge under the Petroleum Operations (Oil Pollution Prevention and Control [OPPC]) Regulations. All produced water from the installation was discharged overboard. This amounted to 26,955 cubic metres for the period 1st July 2018 to 31st December 2018.

The Hæwene Brim FPSO has two discharge routes for produced water and the installations drainage systems, as follows:

- The primary route is via the Produced Water treatment system. All produced water from the separators is routed to designated hydrocyclones via inline coalescers. The in-line coalescers help improve the performance of the downstream hydrocyclones by increasing the oil droplet size in the feed stream.
- The secondary route is from the FPSOs' slops tanks. Liquids are processed through a centrifuge system before being discharged to sea.

Table two below provides the salient details for the produced water discharges as reported into the Environmental Emissions Monitoring System (EEMS) through the Department of Business Energy and Industrial Strategy [BEIS] UK Oil Portal. This again covers the period from the 1st July 2018 to 31st December 2018.

Month (2018)	Sample Point (Source)	Produced Water Volume (m ³)	Monthly Average Oil in Water (mg/l)	Calculated Weight of Oil (tonnes)
July	Produced Water Treatment System	0	0	0
	Slops Centrifuge	2,284	20.23	0.046
August	Produced Water Treatment System	0	0	0
	Slops Centrifuge	444	21.11	0.009
September	Produced Water Treatment System	4089	7.943	0.032
	Slops Centrifuge	0	0	0
October	Produced Water Treatment System	1,448	11.68	0.017
	Slops Centrifuge	319	20.409	0.007
November	Produced Water Treatment System	3,527	16.396	0.058
	Slops Centrifuge	2,184	35.340	0.077
December	Produced Water Treatment System	5,793	12.617	0.073
	Slops Centrifuge	6,867	31.493	0.216
Totals	Both Sources	26,955	19.85	0.535

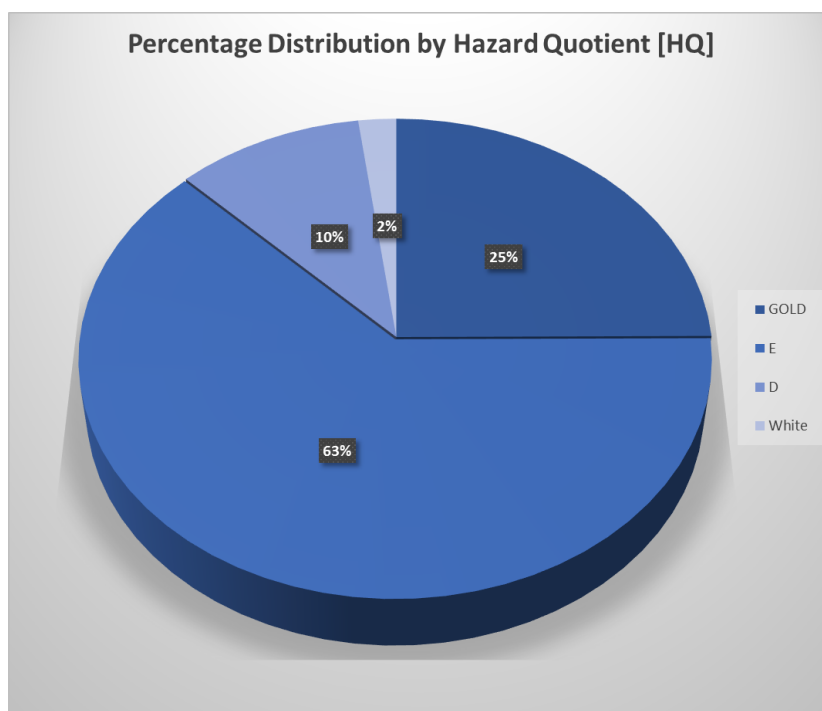
Table 2: Produced Water Discharge Figures (1st July 2018 to 31st December 2018.)

From the above it can be seen that the total mass of oil discharged with the produced water, during the second half of 2018, was 0.535 tonnes. During November and December 2018 the discharge from the Slops Centrifuge system exceeded the 30mg/l limit required under the Offshore Petroleum Activities (OPPC) Regulations 2005 (as amended). Permit non-compliance notifications were submitted to the regulators as required by the permit conditions. It can also be seen from the above the exceedances were only marginally in excess of the 30 mg/l limit, at 35.340 mg/l and 31.493 mg/l for November and December 2018 respectively.

Chemical Use and Discharge (Production)

Under the Offshore Chemical Regulations (OCR) 2002 (as amended), the Hæwene Brim FPSO holds a permit for the use and discharge of chemicals. During the second half of 2018 a total of 113 tonnes of production chemical were used. Of this 113 tonnes approximately 48% of the chemicals used are classified as PLONOR, that is, they Pose Little Or NO Risk to the Environment. The Regulator has highlighted certain chemicals to be phased out by mean of substitution warning (SUB chemical warning). Only one sub chemical was used during the second half of 2018 with a total use of just over 2 tonnes. In total approximately 88% of the 113 tonnes of chemicals used where discharged to sea.

The chemicals used, comprised water based hydraulic fluids, corrosion inhibitors, gas hydrate inhibitors, scale inhibitors and cleaning fluids utilised during routine production operations. The majority of these chemicals were Hazard Quotient (HQ) Gold or Category ‘E’ or ‘D’ chemicals (the ratio of Predicted Effect Concentration against No Effect Concentration), thus have the least potential impact on the marine environment. The graph below shows the percentage distribution of the chemicals used based on the Hazard Quotient assessment process as part of the OSPAR Harmonised Mandatory Control Scheme (HMCS).



Chemicals are subject to continual review and Bluewater will continue to seek suitable alternatives, where appropriate.

Waste Management (Production)

Management and segregation of wastes takes place on the Installation prior to transfer to onshore facilities for recycling or disposal. Total waste arising during the second half of 2018 from the Hæwene Brim FPSO and the disposal routes are provided in Table 3 below.

Category	Reuse (t)	Re-cycling (t)	Waste to Energy (t)	Incinerate (t)	Landfill (t)	Other (t)	Total (t)
Group 1 – Special							
Chemicals/ Paints	-	-	7.410	0.101	-	1.417	8.928
Drums/ Containers	-	3.111	-	-	-	-	3.111
Oils	-	-	0.130	-	-	-	0.130
Miscellaneous Special Waste	-	0.16	5.325	-	-	198.955	204.440
Sludge's / Liquids / Washings	-	-	-	-	-	4.970	4.970
Sub-Total	-	3.271	12.865	0.101	-	205.342	221.579
Group II – General							
Chemicals/ Paints	-	0.007	-	-	-	0.002	0.009
Drums/ Containers	-	-	-	-	-	-	-
Scrap metal	-	25.607	-	-	-	-	25.607
Segregated Recyclables	-	24.512	-	-	0.900	-	25.412
General Waste	-	-	-	-	33.096	-	33.096
Sludge's / Liquids / Washings	-	-	-	-	-	-	-
Sub-Total	-	50.126	-	-	33.996	0.002	84.124
Grand Total	-	53.397	12.865	0.101	33.996	205.344	305.703

Table 3: Waste Arising and Disposal Routes during the second half 2018.

From the above it can be seen that the Offshore Installation recycled 17.5% of the total waste produced. Waste disposed to Landfill amounted to 11% of the total waste produced. Further as shown in the table above there was approximately 199 tonnes of miscellaneous special waste, equating to 65% of total waste returned onshore, this was essentially oily water from the Machinery Space Drainage system. Following the introduction of the Merchant Shipping (Prevention of Oil Pollution) Regulations 2019 it is expected that this waste stream will no longer arise.

Group III and Group IV Wastes

No Group III [Other Wastes] or Group IV [Back-loaded Cuttings] wastes were produced in 2018.

Unplanned Releases

Under UK legislation any unplanned / unpermitted releases of oil and chemicals discharged to the marine environment are required to be reported to the offshore Environmental Regulator [OPRED] via the PON 1 reporting system. No reportable spills occurred during the second half of 2018 from the Hæwene Brim FPSO.

2019 Key Activities

The main offshore aims and objectives for the Hæwene Brim FPSO during 2019 are:

- ✓ Ongoing maintenance and implementation of the Environmental Management System, including:
 - Maintenance of 14001:2015 Standard;
 - Environmental data monitoring & reporting schedules;
 - Environmental Key Performance Indicators [KPIs];
 - Environmental Aspects Registers and Controls;
 - HSE Management System Interface documentation.
- ✓ Audit and review of Permits and Consents management and compliance associated with Environmental Management Systems and Processes;
- ✓ Continued management of asset integrity and process safety to minimise the risk of spills;
- ✓ Duty of Care audit of waste management processes and contractor.