OSPAR Public Statement 2020

Environmental Performance

Issue Date: 24/05/2021
Revised: 04/05/2022

Contents

1. INTRODUCTION

Under Recommendation 2003/5 of the Oslo Paris Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) requires that all companies operating in the United Kingdom Continental Shelf (UKCS) have systems and procedures in place to identify, monitor and control the environmental aspects associated with offshore activities.

This document details the 2020 OSPAR Public Statement for Bluewater Services UK Limited (BSUK), Bluewater Energy Services B.V. and their affiliates' (together referred to as Bluewater) UK operations and reports the environmental performance of a) the Pierce Field operations and activities during 2020, and b) the Lancaster Field operations and activities during 2020. The scope focuses on the two offshore assets, the Hæwene Brim Floating Production Storage and Offloading (FPSO) and the Aoka Mizu FPSO for the period 1st January to the 31st December 2020.

Due to an error in the calculation of volume of gas flared on the Haewene Brim, this document has been subsequently updated in May 2022.

2. OVERVIEW OF OPERATIONS

Pierce Field Offshore Activities

The Pierce development is located in Blocks 23/22a and 23/27a of the Central North Sea (CNS). The development is served by a FPSO facility, the Hæwene Brim (Figure 2-1).

The Hæwene Brim FPSO is located at 57° 09' 38.834" N, 02° 17' 35.130" E which is 247.5 km from the United Kingdom (UK) coastline, 2.6 km from the UK/Norwegian median line and in a water depth of approximately 85 m. On behalf of Shell UK Ltd, Enterprise Oil plc is the field operator in conjunction with joint venture partner Ithaca Energy UK Limited. Pierce Production Company Limited (PPCL) is the operator of the Hæwene Brim FPSO. PPCL is a wholly owned subsidiary of BSUK.

Figure 2-1 The Hæwene Brim FPSO

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;
- 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 2020 included normal production operations, maintenance and well optimisation work.

Lancaster Field Offshore Activities

The Lancaster field is located in Blocks 205/21a of the CNS to the west of the Shetland Islands. The development is served by the Aoka Mizu FPSO (Figure 2-2).

The Aoka Mizu FPSO is located at 60° 10’ 49.82” N, 03° 52’ 5.16” W which is 98 km from the UK coastline, 54 km from the UK/Faeroes median line and in a water depth of approximately 158 m. Hurricane Energy PLC (Hurricane) is the licence operator for the Lancaster field. Bluewater Lancaster Production (UK) Ltd (BLP) are the formally approved Installation Operator of the Aoka Mizu FPSO. BLP is a wholly owned subsidiary of BSUK.

Figure 2-2 The Aoka Mizu FPSO

The Aoka Mizu 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;
- 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 2020 included normal production operations, maintenance and well optimisation work.

3. SAFETY AND ENVIRONMENTAL (SEMS) MANAGEMENT SYSTEM

Bluewater Health, Safety, Environmental and Quality (HSEQ) Policy

BSUK adopts the Bluewater HSEQ policy, which sets out the principles to which all the affiliates and their Hæwene Brim and Aoka Mizu FPSO activities comply with. These include:

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

The requirements of the policy are implemented through management systems, interface arrangements and operational management controls. The Bluewater HSEQ policy is provided in Figure 3-1.

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

bluewater

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

A print of this CMS document is uncontrolled; the latest version is available on the Bluewater CMS intranet site.
 https://corporate.bluewater.corp/sites/cms/active/hseq policy.docx
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15/02/2019

Figure 3-1 Bluewater HSEQ Policy

Environmental Management

Bluewater is certified to ISO 14001:2015 standard (a copy of the certificate is presented**Error! Reference source not found.** below). Bluewater's Environmental Management System (EMS)] sets out guiding principles and mechanisms for managing HSE risk, impact and compliance in accordance with the Bluewater HSEQ Policy.

Lloyd's Register

Current issue date: 17 November 2020
Expiry date: 6 November 2023
Certificate identity number: 10308516

Original approval(s):
ISO 14001 - 7 November 2008

Certificate of Approval

This is to certify that the Management System of:

Bluewater Energy Services B.V.

Taurusavenue 46, 2132 LS Hoofddorp, The Netherlands

has been approved by Lloyd's Register to the following standards:

ISO 14001:2015

Approval number(s): ISO 14001 – 0024489

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.

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.

Paul Graaf

Area Operations Manager North Europe

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

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

UKAS

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Issued by: Lloyd's Register Nederland B.V., K.P. van der Mandelelaan 41a, 3062 MB Rotterdam, The Netherlands for and on behalf of: Lloyd's Register Quality Assurance Limited, 1 Trinity Park, Bickenhill Lane, Birmingham B37 7ES, United Kingdom

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Figure 3-2 Copy of ISO14001:2015 Certificate

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 CMS is applicable to all employees and activities on all locations (onshore and installation and operational sites - offshore) 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 3-3.

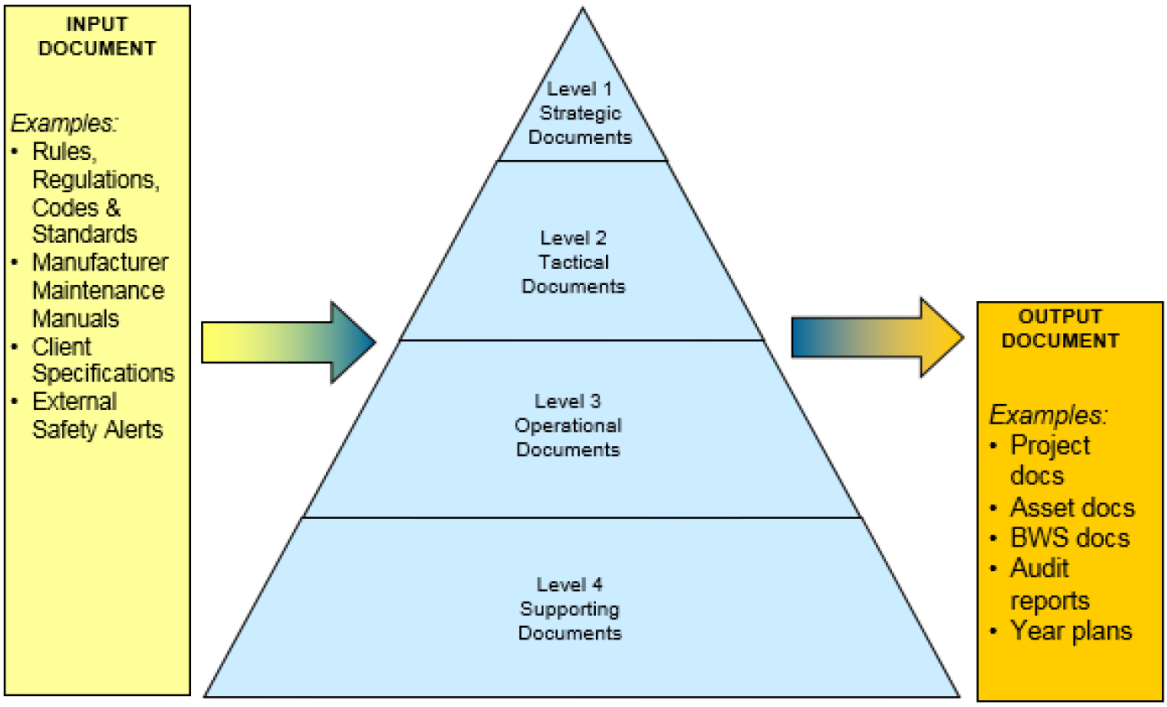

Figure 3-3 High Level Structure of the CMS

Key Environmental Management Activities in 2020

Bluewater's key environment related objectives and activities for 2020 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:

- Offshore Environmental Compliance and Permit audits and inspections;
- Onshore Emergency Response exercises and Offshore Drills;
- Monitoring of asset performance and Environmental Key Performance Indicators (KPI) covering resource use and emissions to the environment;
- Maintenance of the assets' Environmental Aspects Registers.

4. ENVIRONMENTAL PERFORMANCE

Hæwene Brim FPSO Environmental Performance

Atmospheric Emissions

Atmospheric emissions arise from power generation, flaring and fugitive emissions. The Hæwene Brim FPSO holds a Combustion Permit under the Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013 (PPC) for the combustion equipment onboard. Shell UK Ltd is the holder of the greenhouse gas emissions trading scheme (EUETS) permit, therefore certain emissions may be duplicated within their 2020 annual environmental statement.

Table 4-1 provides the Production related fuel combustion and flaring emissions as reported into the Environmental Emissions Monitoring System [EEMS] through the UK Energy Portal. This covers the period from the 1st January 2020 to 31st December 2020.

Table 4-1 Hæwene Brim Atmospheric Emissions (1st January 2020 to 31st December 2020)

Atmospheric Emissions	Unit	Fuel Gas	Diesel	Flaring	Totals
Fuel Use	Tonnes	33,468.81	9,080.14	4146.86	**N/A**
CO_2	Tonnes	91,554.91	28,982.00	11116.98	**131653.89**
NO_X	Tonnes	216.94	446.77	4.98	**668.69**
SO_2	Tonnes	0.43	18.16	0.05	**18.64**
CO	Tonnes	180.66	118.04	27.78	**326.48**
CH_4	Tonnes	27.69	1.35	41.47	**70.51**
VOC	Tonnes	1.11	14.93	41.47	**57.51**

* Due to an error in the calculation of volume of gas flared on the Haewene Brim, the flaring figures in this table have subsequently been updated in May 2022.

Water and Oil in 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) Regulations (OPPC). All produced water from the installation was discharged overboard. This amounted to 107,782.8 cubic metres for the period 1st January 2020 to 31st December 2020. 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 FPSO slops tanks. Liquids are processed through a centrifuge system before being discharged to sea.

Table 4-2 provides the salient details for the produced water discharges as reported into the EEMS through the UK Energy Portal. This again covers the period from the 1st January 2020 to 31st December 2020.

Table 4-2 Hæwene Brim Produced Water Discharge Data (1st January 2020 to 31st December 2020)

Month	Sample Point (Source)	Produced Water Volume (m^3)	Monthly Average Oil in Water (mg/l)	Calculated Weight of Oil (tonnes)
January	Produced Water Treatment System	9,318.5	15.50	0.144
	Slops Centrifuge	2,852.0	22.89	0.065
February	Produced Water Treatment System	6,723.0	12.52	0.084
	Slops Centrifuge	1,252.0	25.01	0.031
March	Produced Water Treatment System	5,715.5	12.38	0.071
	Slops Centrifuge	1,715.0	27.96	0.048
April	Produced Water Treatment System	2,758.0	15.60	0.043
	Slops Centrifuge	1,137.0	13.62	0.015
May	Produced Water Treatment System	9,066.0	12.17	0.110
	Slops Centrifuge	4,574.0	11.16	0.051
June	Produced Water Treatment System	6,739.0	14.63	0.099
	Slops Centrifuge	3,183.0	13.40	0.043
July	Produced Water Treatment System	5,206.0	19.41	0.101
	Slops Centrifuge	4,451.0	8.61	0.038
August	Produced Water Treatment System	8,498.0	14.14	0.120
	Slops Centrifuge	3,756.0	11.87	0.045
September	Produced Water Treatment System	7,194.0	20.03	0.144
	Slops Centrifuge	3,442.0	15.72	0.054
October	Produced Water Treatment System	3,942.0	23.87	0.094
	Slops Centrifuge	872.0	21.32	0.019
November	Produced Water Treatment System	2,957.8	18.85	0.056
	Slops Centrifuge	1,404.0	10.49	0.015
December	Produced Water Treatment System	8,199.0	24.34	0.200
	Slops Centrifuge	2,828.0	17.55	0.050
Totals	Both Sources	107,782.8	-	1.740

From Table 4-2 it can be seen that the total mass of oil discharged with the produced water during 2020 was 1.740 tonnes. Figure 4-1 and Figure 4-2 presents the oil in water average concentration from the primary and secondary route, respectively.

No breaches of the 30 mg/l limit were observed for the period for either the primary or the secondary disposal route (Figure 4-1 & Figure 4-2) and monthly averages remained below the 25 mg/l target, with the exception of February and March for the slops discharge route.

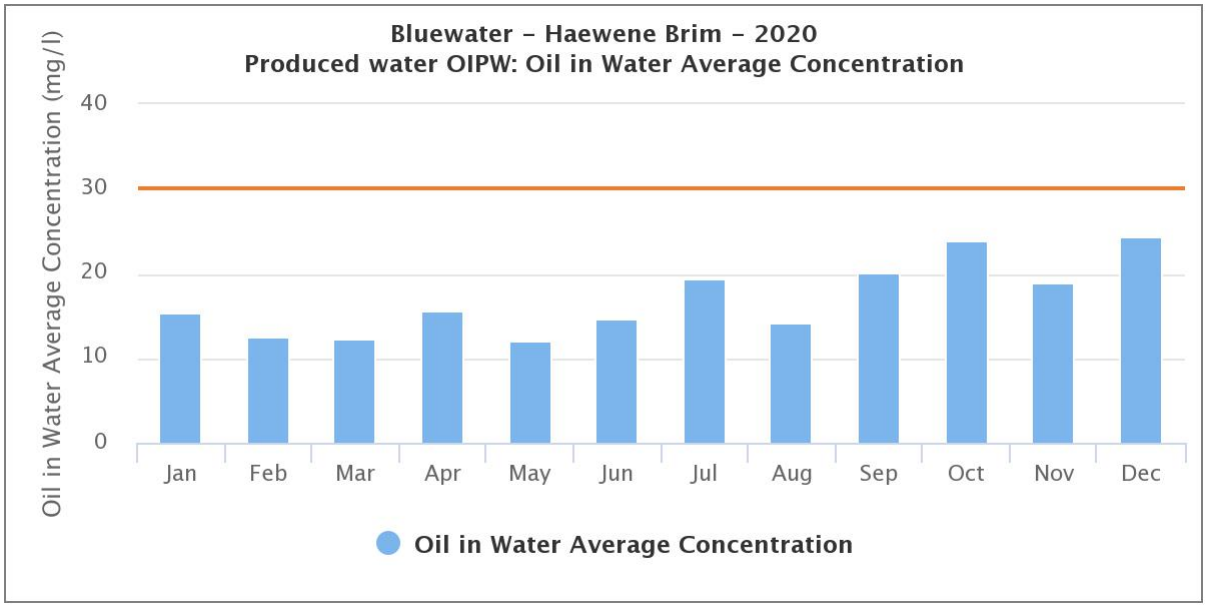

Figure 4-1 Produced Water Treatment System OIW monthly average concentration

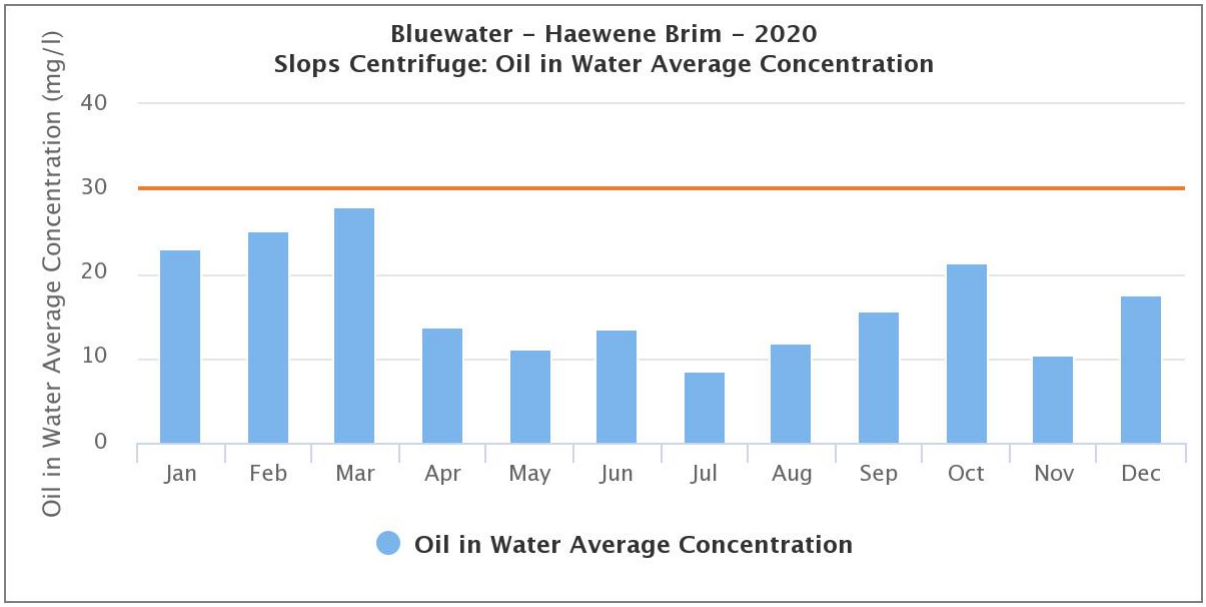

Figure 4-2 Slops Centrifuge OIW monthly average concentration

Chemical Use and Discharge

Under the Offshore Chemical Regulations 2002 (OCR) 2002, the Hæwene Brim FPSO holds a permit for the use and discharge of chemicals. During 2020, a total of 395.7 tonnes of production chemicals were used and approximately 91% of the 395.7 tonnes of chemicals used where discharged to sea.

The Regulator has highlighted certain chemicals to be phased out by mean of substitution warning (SUB chemical warning). However, no SUB chemicals were used during 2020. A detailed breakdown of each chemical's tracked usage and discharge against the permitted quantities is presented in Figure 4-3 and Figure 4-4 respectively.

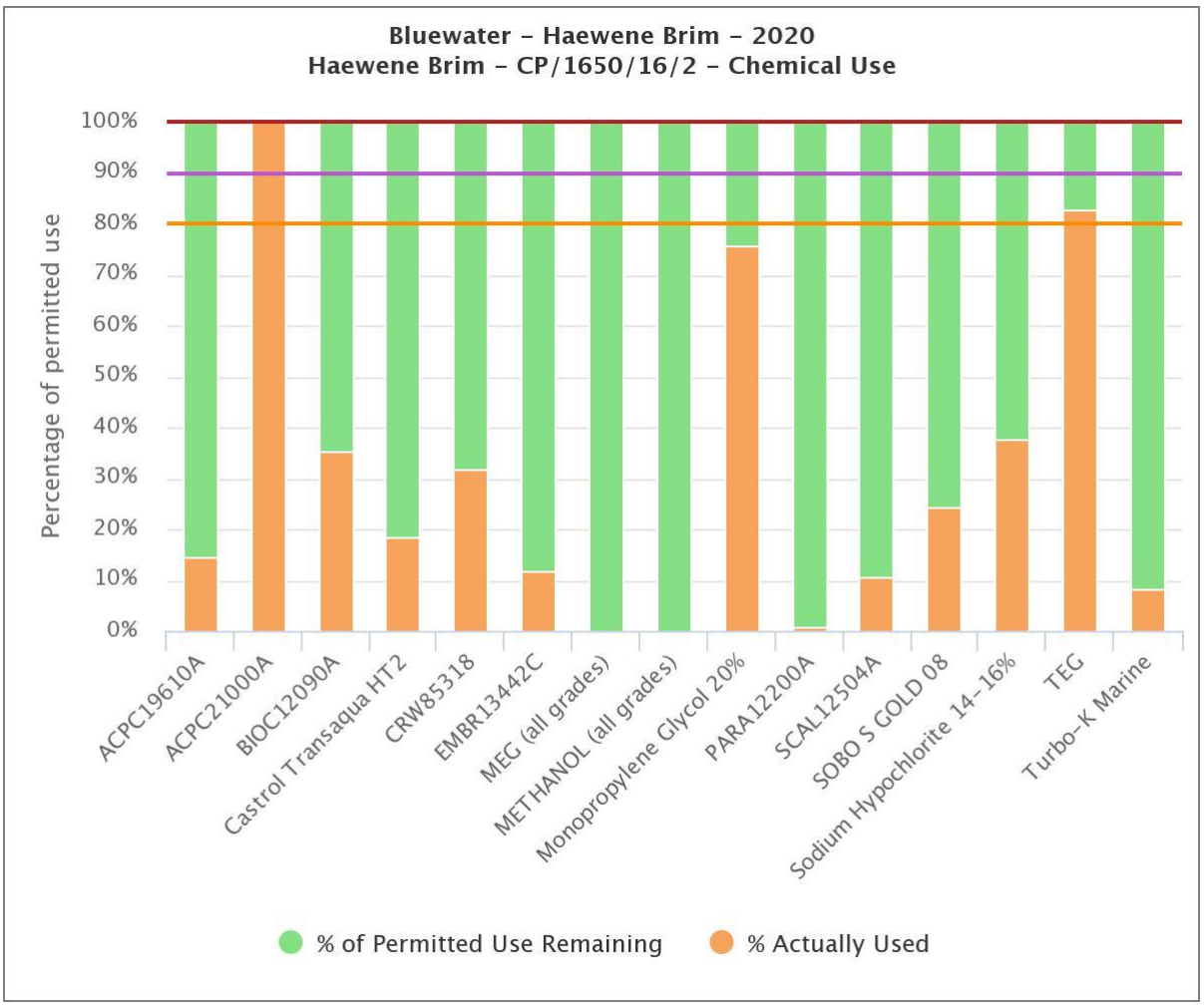

Figure 4-3 Hæwene Brim 2020 Chemical Use vs Permitted Quantities

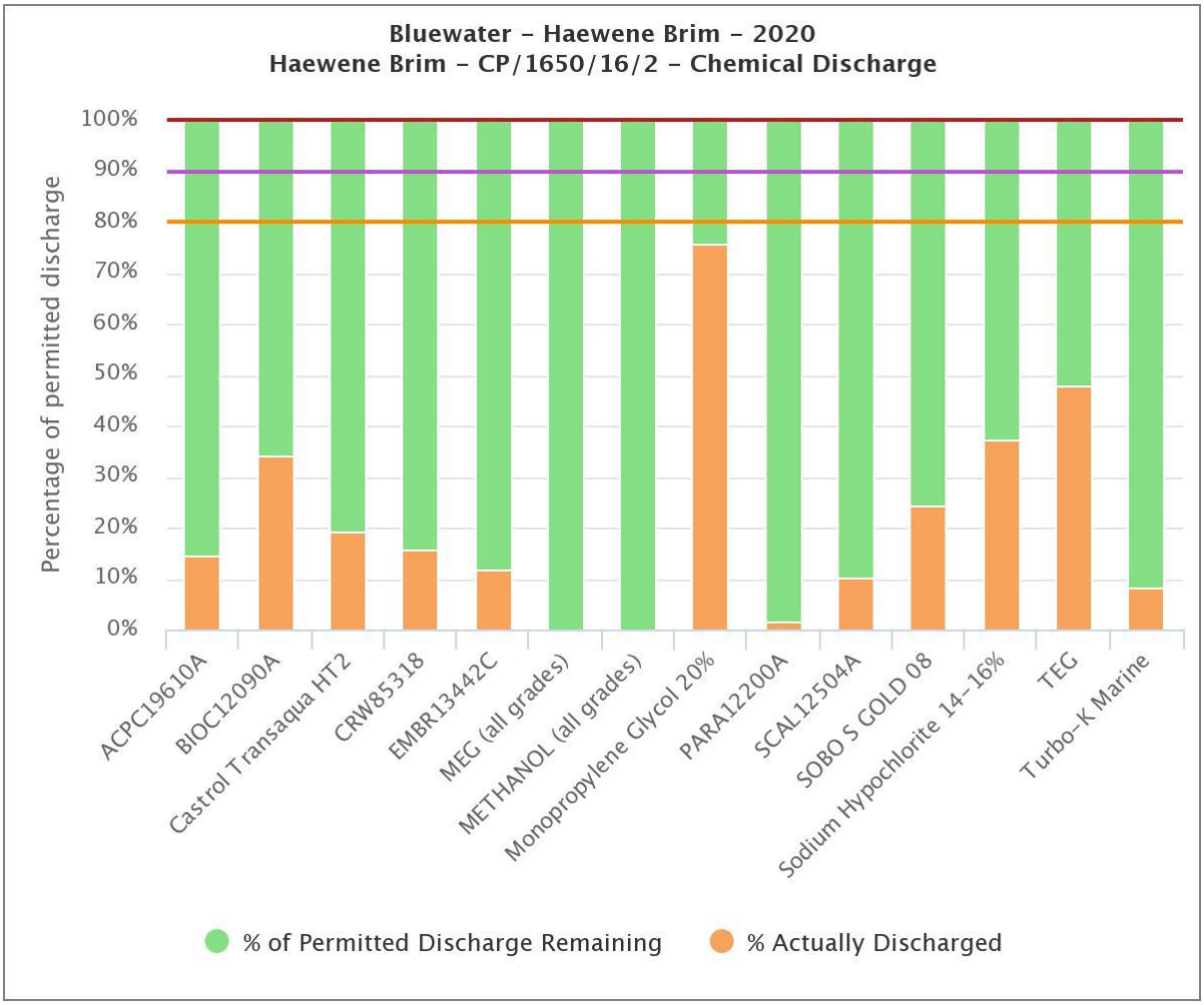

Figure 4-4 Hæwene Brim 2020 Chemical Discharge vs Permitted Quantities

The chemicals used, comprised water based hydraulic fluids, biocides, wax inhibitors, 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.

Chemicals are subject to continual review and Bluewater will continue to seek suitable alternatives, where appropriate to minimise impact on the marine environment.

Waste Management

Management and segregation of waste takes place on the installation prior to transfer to onshore facilities for recycling or disposal. Total waste arising during 2020 from the Hæwene Brim FPSO and the disposal routes is provided in Table 4-3

Table 4-3 Hæwene Brim Waste Arising and Disposal Routes during 2020

Category	Reuse	Re-cycling	Waste to Energy	Incinerate	Landfill	Other	Total
	(t)	(t)	(t)	(t)	(t)	(t)	(t)
Group I – Special							
Chemicals/ Paints	-	0.035	5.556	1.106	-	5.493	12.190
Drums/ Containers	-	5.184	-	-	-	-	5.184
Oils	-	1.270	-	-	-	-	1.270
Miscellaneous Special Waste	-	3.025	11.800	-	1.475	28.360	44.660
Sludge's / Liquids / Washings	-	-	-	-	-	-	-
Sub-Total	-	9.514	17.356	1.106	1.475	33.853	63.304
Group II - General							
Chemicals/ Paints	-	0.170	-	3.895	-	7.066	11.131
Drums/ Containers	0.080	0.050	-	-	-	-	0.130
Scrap metal	-	27.562	-	-	-	-	27.562
Segregated Recyclables	-	52.745	-	-	2.610	-	55.355
General Waste	-	36.086	-	-	42.644	-	78.730
Sludge's / Liquids / Washings	-	-	-	-	-	-	-
Sub-Total	0.080	116.613	-	3.895	45.254	7.066	172.908
Group III - Other							
Asbestos	-	-	-	-	-	-	-
Radioactive Materials (exc NORM)	-	-	-	-	-	-	-
Clinical	-	-	-	0.090	-	-	0.090
Explosives	-	-	-	-	-	-	-
Sub-Total	-	-	-	0.090	-	-	0.090
Grand Total	**0.080**	**126.127**	**17.356**	**5.091**	**46.729**	**40.919**	**236.302**

Figure 4-5 overleaf shows that the Hæwene Brim FPSO recycled ~54% of the total waste produced. Waste disposed to landfill amounted to 20% of the total waste produced. There was also ~41 tonnes of "other" waste, mostly miscellaneous special waste, equating to 17% of total waste. With the exception of 90 kg of clinical waste, no Group III or Group IV waste were produced in 2020.

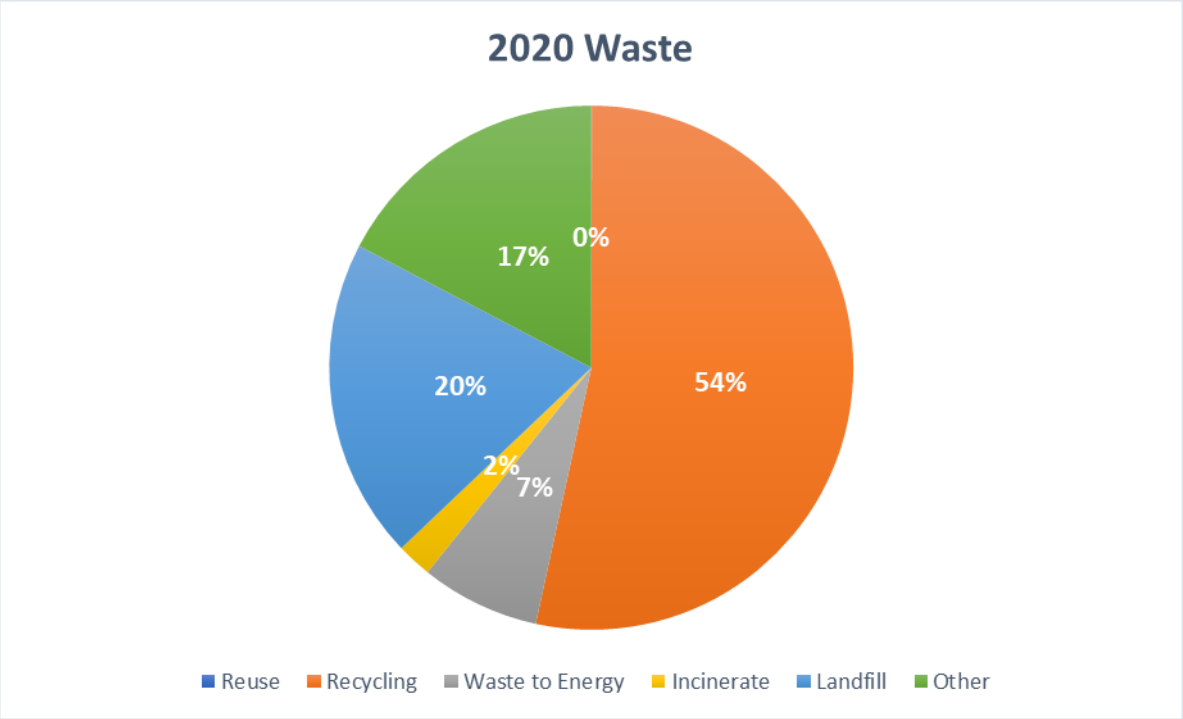

Figure 4-5 Hæwene Brim 2020 breakdown of generated waste

2021 Key Activities

The main offshore aims and objectives for the Hæwene Brim FPSO during 2021 are:

- ✓ Ongoing maintenance and implementation of the EMS, including
  - Maintenance of 14001:2015 Standard;
  - Environmental data monitoring & reporting schedules;
  - Environmental 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;
- ✓ Environmental support in preparation for the Haewene Brim FPSO undergoing a refit, during which the gas injection systems will be removed and gas export equipment will be installed as part of the Pierce Depressurisation Project .
- ✓ Continued management of asset integrity and process safety to minimise the risk of spills;
- ✓ Duty of Care audit of waste management processes and contractor.

Aoka Mizu FPSO Environmental Performance

Atmospheric Emissions

Atmospheric emissions arise from power generation, flaring and fugitive emissions. The Aoka Mizu FPSO holds a Combustion Permit under the Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013 (PPC) for the combustion equipment onboard. Hurricane holds the greenhouse gas emissions trading scheme (EUETS) permit although Hurricane does not prepare an Environmental Statement under OSPAR 2003/5.

Table 4-4 provides the Production related fuel combustion and flaring emissions as reported into EEMS through the OGA UK Energy Portal. This covers the period from the 1st January 2020 to 31st December 2020.

Table 4-4 Aoka Mizu Atmospheric Emissions (1st January 2020 to 31st December 2020)

Atmospheric Emission	Unit	Fuel Gas	Diesel	Flaring	Totals
Fuel Use	Tonnes	8,749.29	5,880.37	52,674.78	**N/A**
CO_2	Tonnes	23,968.13	18,758.39	142,189.10	**184915.6**
NO_X	Tonnes	99.14	230.83	63.21	**393.18**
SO_2	Tonnes	0.11	11.76	0.67	**12.54**
CO	Tonnes	52.50	60.62	352.92	**466.04**
CH_4	Tonnes	8.05	0.69	526.75	**535.49**
VOC	Tonnes	0.31	7.61	526.75	**534.67**

Water and Oil in Water Discharges

Liquid associated with the oil produced by the Lancaster Field (oil and produced water) is processed through oil and water separation systems offshore with the cleaned produced water being discharged to sea. The Aoka Mizu FPSO holds a permit for produced water discharge under the OPPC Regulations.

In April 2020 20,669 tonnes of dirty slops water was backloaded to shore for disposal, as discharge concentrations could not be achieved. This was due to chemical incompatibilities which have now been rectified. This was made up of produced water and installation drainage water, collected in 2019 and early 2020.

All other produced water from the installation was discharged overboard. This amounted to 222,889.3 cubic metres for 2020. The Aoka Mizu FPSO has two discharge routes, as follows:

- The FPSO's hydrocyclone units; and
- The FPSO's slops tanks.

Table 4-5 provides the salient details for the produced water discharges as reported into the EEMS through the UK Energy Portal (only months with reported discharges are shown). This covers the period from the 1st January 2020 to 31st December 2020.

Table 4-5 Aoka Mizu Produced Water Discharge Data (1st January 2020 to 31st December 2020)

Month	Sample Point (Source	Produced Water Volume (m3)	Monthly Average Oil in Water (mg/l)	Calculated Weight of Oil (tonnes)
February	Hydrocyclones	15,433.0	16.51	0.255
	Slops Tanks	-	-	-
March	Hydrocyclones	24,558.6	14.46	0.355
	Slops Tanks	-	-	-
April	Hydrocyclones	29,998.2	12.74	0.382
	Slops Tanks	-	-	-
May	Hydrocyclones	18,911.8	12.69	0.240
	Slops Tanks	-	-	-
June	Hydrocyclones	7,325.3	11.21	0.082
	Slops Tanks	-	-	-
July	Hydrocyclones	43,724.3	8.07	0.353
	Slops Tanks	-	-	-
August	Hydrocyclones	11,956.7	8.69	0.104
	Slops Tanks	393.0	5.98	0.002
September	Hydrocyclones	9,283.4	6.67	0.062
	Slops Tanks	1,515.0	11.39	0.017
October	Hydrocyclones	1,9717.0	5.00	0.099
	Slops Tanks	-	-	-
November	Hydrocyclones	20,250.5	10.51	0.213
	Slops Tanks	1,077.0	9.60	0.010
December	Hydrocyclones	18,285.5	7.93	0.145
	Slops Tanks	460.0	8.70	0.004
Totals	All sources	222,889.3	-	2.323

The total mass of oil discharged with the produced water during 2020 was 2.323 tonnes.

Figure 4-6 and Figure 4-7 present the oil in water average concentration from the primary and secondary route, respectively. No breaches of the 30 mg/l limit were observed for the period for either the primary or the secondary disposal route (Figure 4-6 & Figure 4-7) and monthly averages remained below the 25 mg/l target.

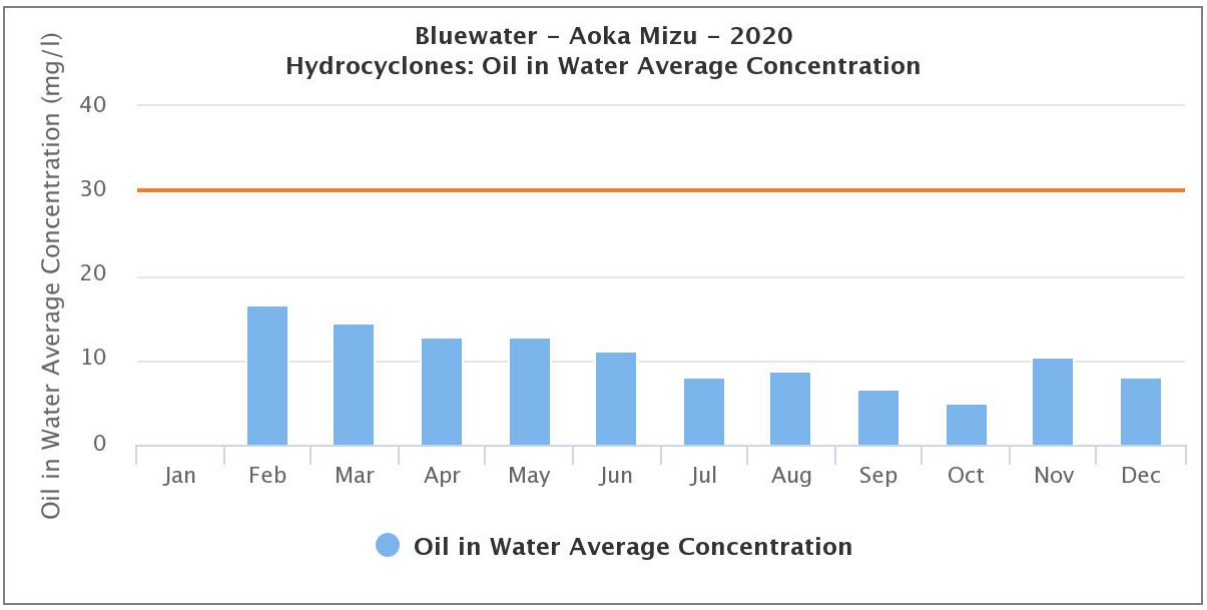

Figure 4-6 Hydrocyclones: Oil in Water Average Concentration

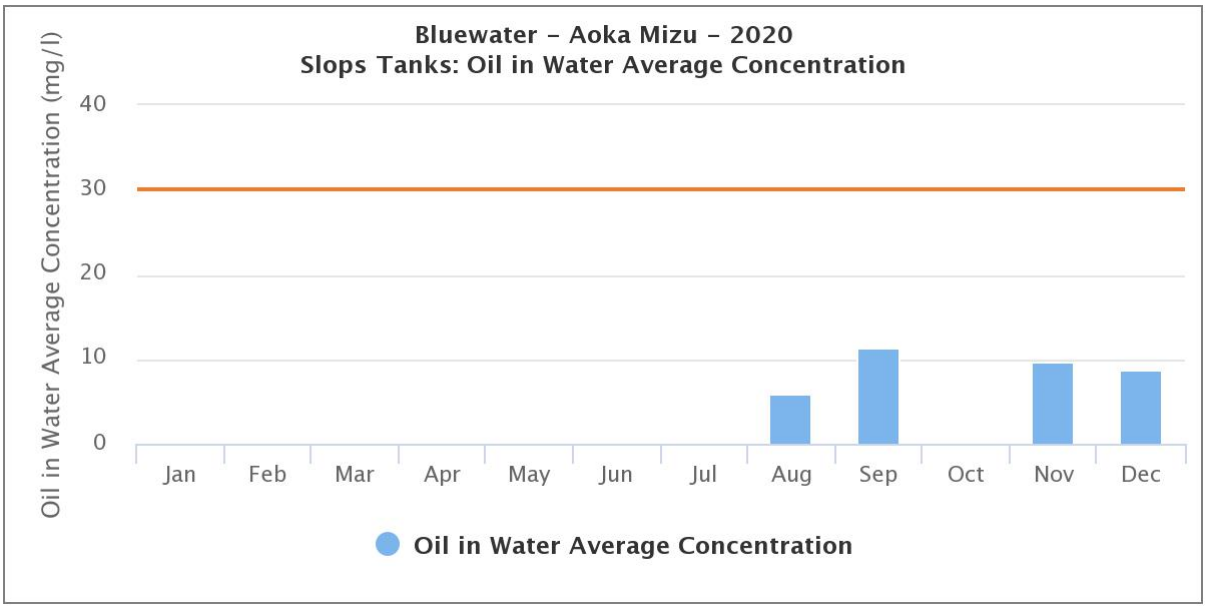

Figure 4-7 Slops Tanks: Oil in Water Average Concentration

Chemical Use and Discharge

Under the Offshore Chemicals Regulations 2002, the Aoka Mizu FPSO holds a permit for the use and discharge of chemicals. During the 2020 a total of 239.9 tonnes of production chemical were used. In total approximately 23% of the 239.9 tonnes of chemicals used were discharged to sea.

The Regulator has highlighted certain chemicals to be phased out by mean of substitution warning (SUB chemical warning). One SUB (RX-7025) was used during 2020 with a total use of 135.7 tonnes. A detailed breakdown of each chemical's tracked usage and discharge against the permitted quantities is presented in Figure 4-8 and Figure 4-9. Chemicals permitted, but not used are not included in the Figure 4-8 and Figure 4-9.

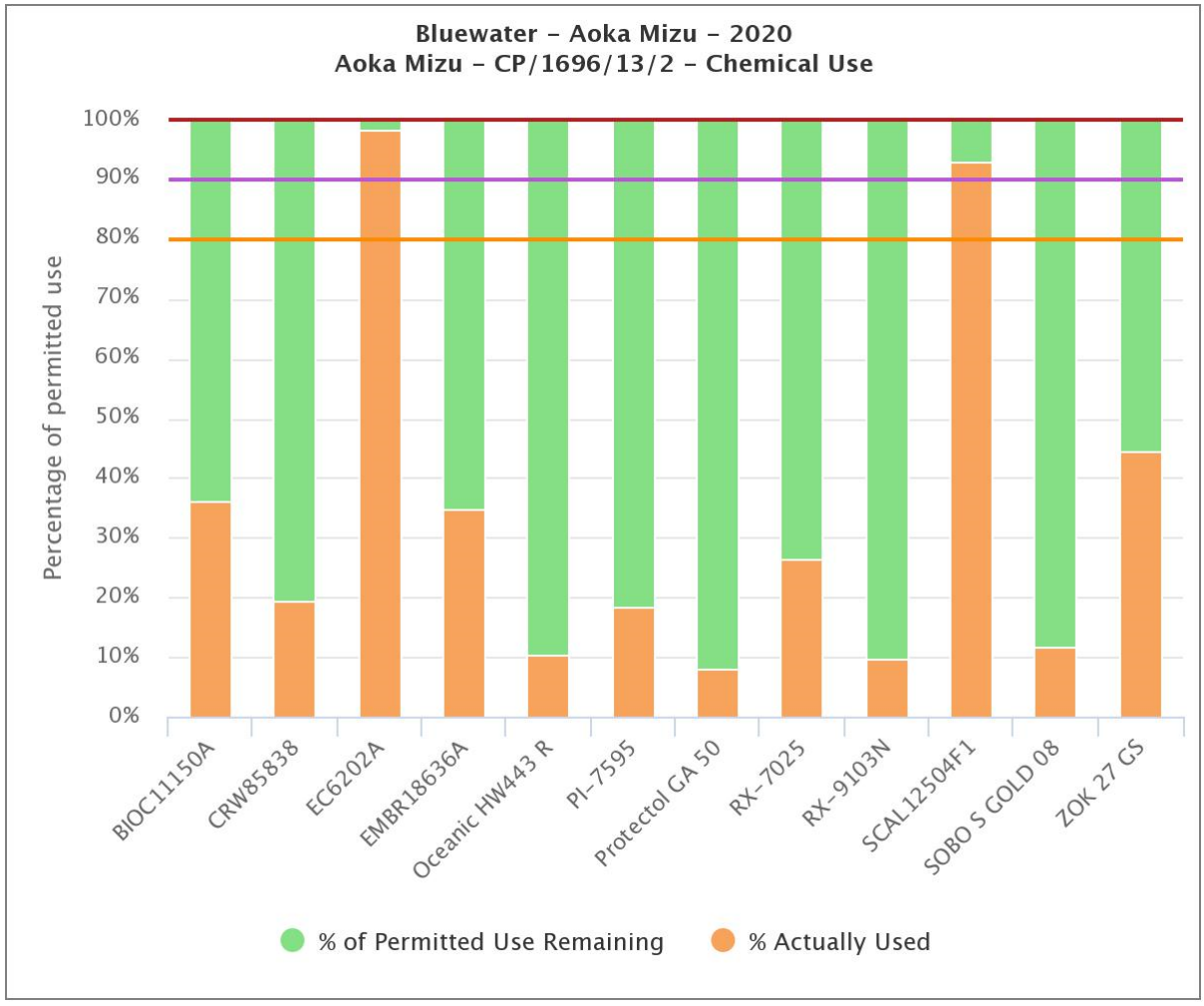

Figure 4-8 Aoka Mizu 2020 Chemical Use vs Permitted Quantities

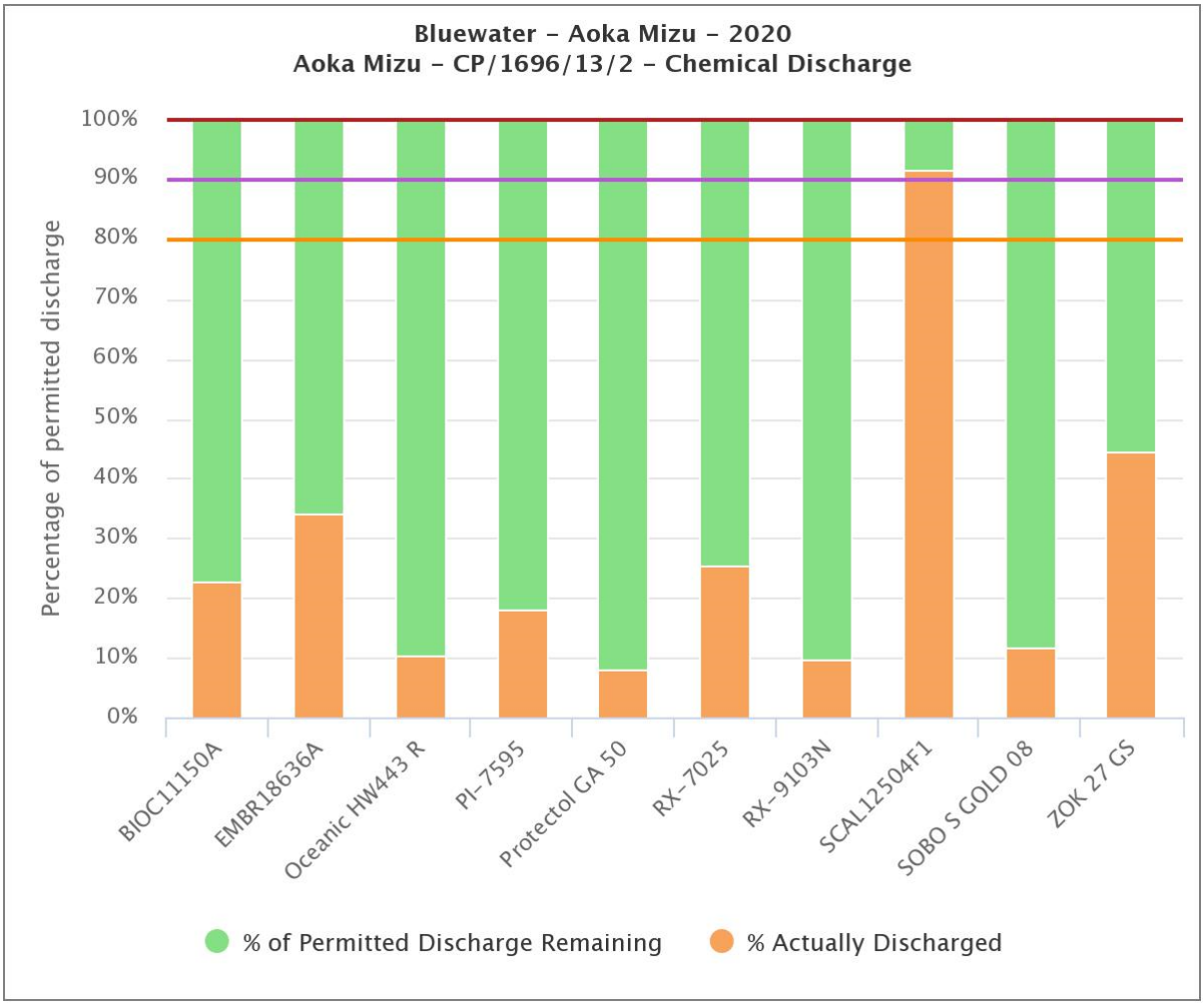

Figure 4-9 Aoka Mizu 2020 Chemical Discharge vs Permitted Quantities

The chemicals used, comprised biocides, demulsifiers, water based hydraulic fluids, asphaltene inhibitors, wax inhibitors, corrosion inhibitors, scale inhibitors and cleaning fluids utilised during routine production operations. The majority of these chemicals were 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.

Chemicals are subject to continual review and Bluewater will continue to seek suitable alternatives, where appropriate to minimise impact on the marine environment.

Waste Management

Management and segregation of wastes takes place on the installation prior to transfer to onshore facilities for recycling or disposal. Total waste arising during 2020 from the Aoka Mizu FPSO and the disposal routes are provided in Table 4-6.

Table 4-6 Aoka Mizu Waste Arising and Disposal Routes during 2020

Category	Reuse	Re-cycling	Waste to Energy	Incinerate	Landfill	Other	Total
	(t)	(t)	(t)	(t)	(t)	(t)	(t)
Group I – Special							
Chemicals/ Paints	-	0.303	-	-	-	6.025	6.328
Drums/ Containers	-	1.324	-	-	-	-	1.324
Oils	-	1.845	152.000	-	-	-	153.845
Miscellaneous Special Waste	-	11.137	2.540	-	0.270	3.030	16.977
Sludge's / Liquids / Washings	-	-	-	-	-	20,580.750	20,580.750
Sub-Total	-	14.609	154.540	-	0.270	20,589.805	20,759.224
Group II – General							
Chemicals/ Paints	-	-	-	-	-	-	-
Drums/ Containers	-	-	-	-	-	-	-
Scrap metal	-	-	-	-	-	-	-
Segregated Recyclables	-	31.540	14.190	-	-	-	45.730
General Waste	-	14.624		-	22.856	-	37.480
Sludge's / Liquids / Washings	-	-	-	-	-	-	-
Sub-Total	-	46.164	14.190	-	22.856	-	83.210
Group III – Other							
Asbestos	-	-	-	-	-	-	-
Radioactive Materials (exc NORM)	-	-	-	-	-	-	-
Clinical	-	-	-	0.460	-	-	0.460
Explosives	-	-	-	-	-	-	-
Sub-Total	-	-	-	0.460	-	-	0.460
Grand Total	-	**60.773**	**168.730****	**0.460**	**23.126**	**20,589.805***	**20,842.894**

*The grand total figure for "Other" (20,589.805 tonnes) includes a "dirty slops" water offload of 20,517 tonnes, which was recovered from the 20,669 tonnes of combined water and oil "dirty slops" offload..

** The grand total figure for "Waste to Energy" (168.730 tonnes) includes 152 tonnes of oil which was recovered from the 20,669 tonnes of combined water and oil "dirty slops" offload.

Excluding a "dirty slops" offload quantity of 20,669 tonnes, which was sent onshore, partially for special processing (20,517 tonnes), and partially converted to energy (152 tonnes), Figure 4-10 overleaf shows that the Offshore Installation recycled 35 % of the total waste produced. Waste

disposed to landfill amounted to 13 % of the waste produced, while Waste to Energy accounted to 10%. There was also approximately 73 tonnes of "Other" waste, mostly comprising of waste bilge liquids, equating to 42% of total waste (Table 4-6). With the exception of 460 Kg of clinical waste no other Group III (Other Wastes) or Group IV (Back-loaded Cuttings) wastes were produced in 2020.

Since early 2020 waste bilge liquids are processed through the slops system and no longer returned to shore for processing.

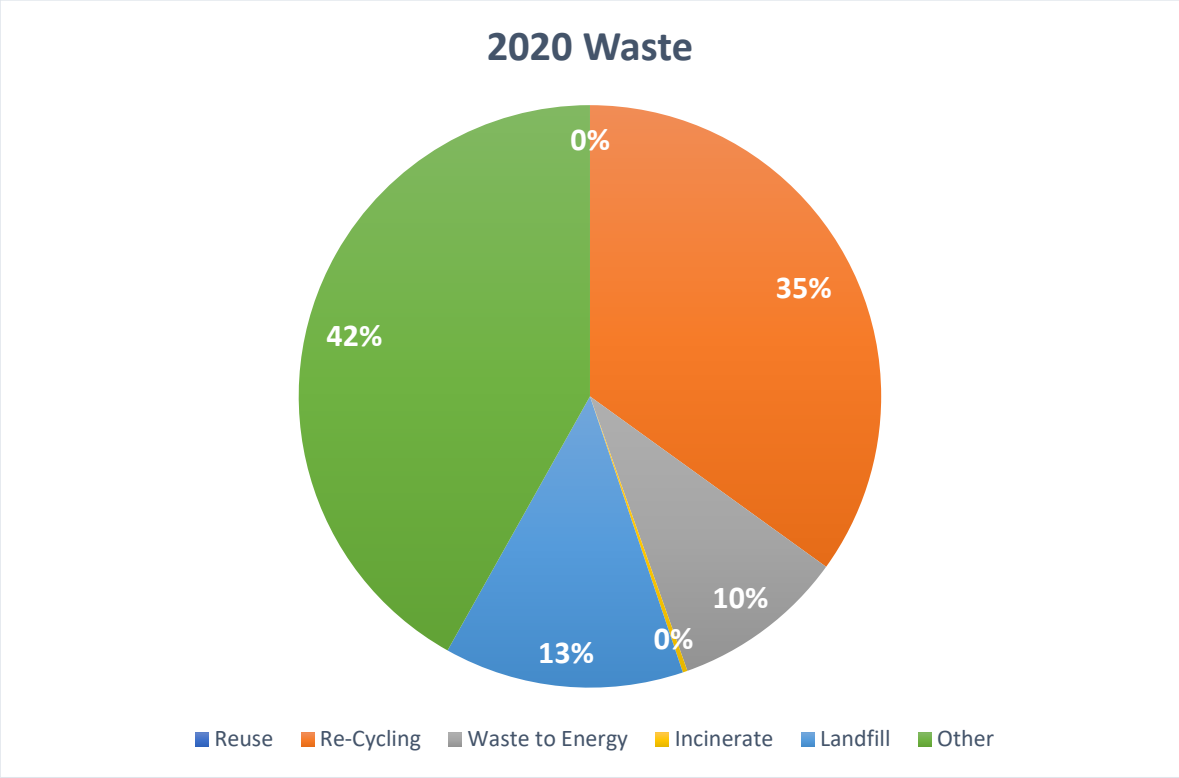

*Figure 4-10 Aoka Mizu 2020 breakdown of generated waste****

***excluding dirty slops offload waste quantities.

2021 Key Activities

The main offshore aims and objectives for the Aoka Mizu FPSO during 2020 are:

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

5. INCIDENTS

Under UK legislation any unplanned / unpermitted releases of oil and chemicals released to the marine environment are required to be reported to OPRED via the Petroleum Operations Notice No.1 (PON 1) reporting system. These, as well as other reportable incidents / operations notices that occurred during 2020 for the assets are detailed in Table 5-1 (7 in total).

Table 5-1 2020 reportable incidents

Date	Asset	Non-Conformance Type	Description
29 February 2020	Hæwene Brim	OPPC Non-Compliance	Discharge exceeded 100 mg/l oil in water concentration from the slops tank discharge point. Total oil discharge during non-compliance was 0.0096 tonnes
23 March 2020	Aoka Mizu	PPC Non-Compliance	FPSO had exceeded permitted emissions of SOx and VOCs for 2019 and 2020. In total 15.9 tonnes of SOx were emitted against permitted amounts of 7 tonnes and14 tonnes of VOCs were emitted against permitted amounts of 4 tonnes.
1 April 2020	Aoka Mizu	PON 1	A maximum oil release of 0.01 tonnes was reported after a sheen observed following unstable start-up process plant conditions leading to slug of oil/water into the produced water degasser.
17 July 2020	Aoka Mizu	OPPC Non-Compliance	Failure of produced water meter to accurately measure produced water discharge.
27 July 2020	Hæwene Brim	PON 1	A release of 5.284 tonnes of TEG and 0.132 tonnes of CRW85318 was reported from the cooling medium header leak due to corrosion in the system.
1 August 2020	Aoka Mizu	OPPC Non-Compliance	A maximum oil discharge of 0.0161 tonnes was reported following a process upset in the produced water degasser vessel.
31 August 2020	Aoka Mizu	PON 1	A maximum oil release of 0.0507 tonnes was reported following a water deluge system activation which overloaded the drains system.

6. APPENDICES

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Abbreviations

BEIS	Department for Business, Energy and Industrial Strategy
Bluewater	Bluewater Services UK Limited, Bluewater Energy Services B.V. and affiliates
BSUK	Bluewater Services UK Limited
CH_4	Methane
CMS	Corporate Management System
CNS	Central North Sea
CO	Carbon Monoxide
CO_2	Carbon Dioxide
EEMS	Environmental Emissions Monitoring System
EMS	Environmental Management System
EUETS	European Union Greenhouse Gas Emissions Trading Scheme
FPSO	Floating Production Storage and Offloading
HQ	Hazard Quotient
HSE	Health Safety & Environmental
HSEQ	Health, Safety, Environmental and Quality
KPI	Key Performance Indicators
mg/l	Milligrams per Litre
NORM	Normally Occurring Radioactive Material
NO_x	Nitrous Oxides
OCR	Offshore Chemical Regulations
OGA	The Oil and Gas Authority
OIW	Oil in Water
OPPC	Petroleum Operations (Oil Pollution Prevention and Control) Regulations
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OSPAR	Oslo Paris Convention for the Protection of the Marine Environment of the North-East Atlantic
PON1	Petroleum Operations Notice No.1
PPC	Production Prevention and Control
PPCL	Pierce Production Company Limited
SEMS	Safety and Environmental Management System
SO_x	Sulphur Oxides
SUB	Chemicals Rated for Substitution
UK	United Kingdom
UKCS	United Kingdom Continental Shelf
VOCs	Volatile Organic Compounds