

one dyas



2020

Annual Environmental Report

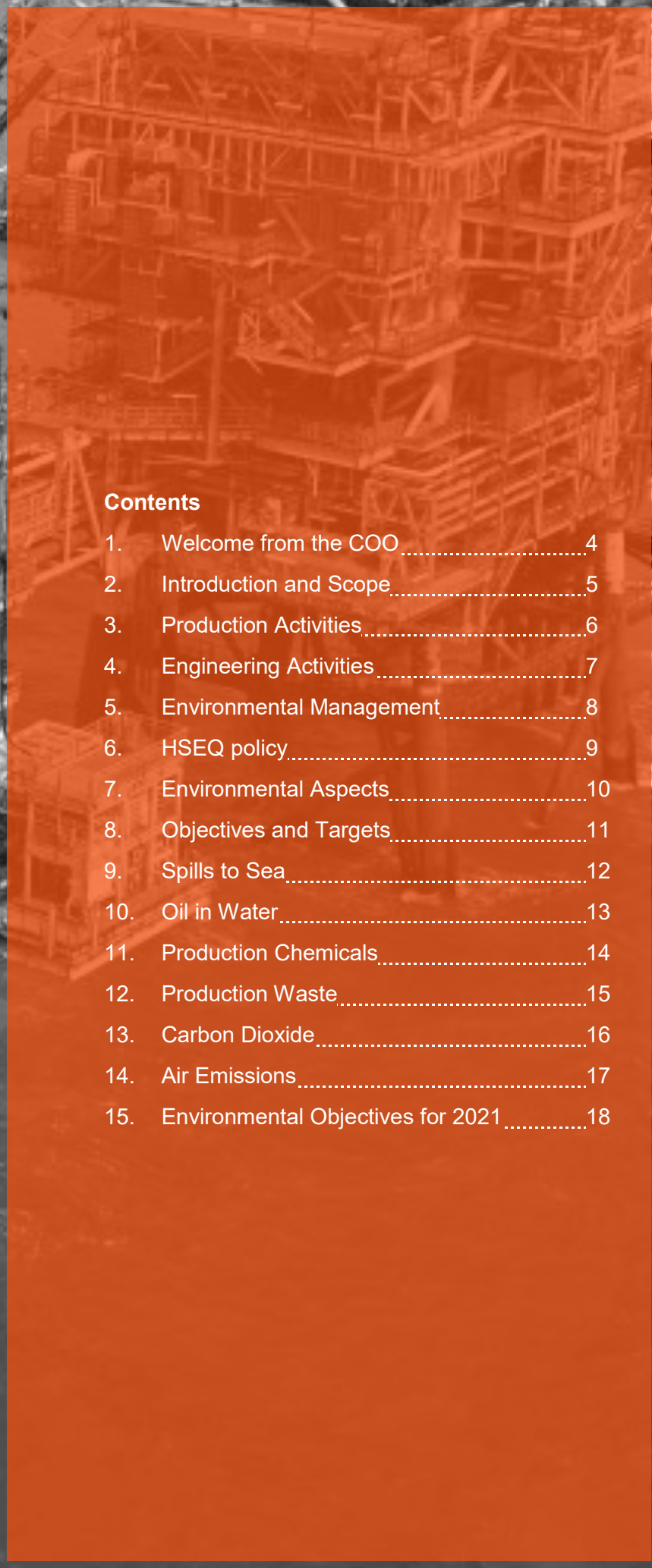




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“During the COVID-19 pandemic our ONE-Dyas quickly adopted measures to keep themselves, their families and the assets we operate safe and well”

2020 has been a turbulent year for most organisations, including Oil and Gas operators. However, during the COVID-19 pandemic our people quickly adopted measures to keep themselves, their families, and the assets we operate, safe and well. To achieve this we restricted travel, invested in our transportation capacity and implemented mandatory testing prior to boarding. Some of our planned projects were also postponed to keep manning levels low and our staff quickly adjusted to working from home.

March also brought the perfect storm of low oil demand due to the pandemic and over supply, resulting in plummeting oil prices. This forced us to look at our short-term strategy. Despite the challenges, we were able to carefully restart activities with a robust COVID-19 protocol. This ensured that our top priority remained the health and safety of everyone involved.

On the Sean Papa, a long term project to install a third stage compressor was still completed successfully during an extended shutdown from August to October. The ISO14001 audit and Emissions Trading Scheme (ETS) verification audit was started in July in Amsterdam, as planned. Some auditees participated virtually and the offshore visit was completed at the end of the year.

During 2020, we achieved one of our targets by monitoring offshore fugitive emissions on the Sean Papa. The project updated our inventory of emissions sources

and then used optical gas imaging to identify any leaks. Quickly rectifying them resulted in the saving of emissions to air.

An upgrade and re-configuration of our Tri-ethylene glycol (TEG) reboiler also dramatically reduced our TEG consumption during 2020 in addition to the energy savings.

Beside the technical and environmental licence to operate, the social licence to operate is becoming more and more paramount in our society. Towards the end of the year ONE-Dyas launched its Environmental, Social and Corporate Governance (ESG) project. A dedicated team is looking holistically at the ESG impact of our activities and the resulting ESG strategy will be implemented into the ONE-Dyas way of doing business and the decision-making processes.

With this challenging year it has again been proven that a strong and dynamic team of people can make the difference. Ultimately, our employees are the backbone of a resilient company that can weather storms. I am very proud of ONE-Dyas and its employees and the achievement they have made over 2020, and I am excited about the opportunities that lie ahead of us.



Peter Nieuwenhuijze

Chief Operating Officer -
ONE-Dyas BV

Peter Nieuwenhuijze

2 Introduction and Scope

This Annual Environmental Report (AER) describes the ONE-Dyas UK Limited 2020 environmental performance. It has been prepared to satisfy the requirements of OSPAR Recommendation 2003/5 and the associated OPRED guidance (OSPAR 2003/5 DECC Guidance: Rev 5 May 2014).

This report provides:

- A description of the UK assets and activities
- An overview of ONE-Dyas Environmental Management
- An overview of the main 2020 activities included in the report
- Details on the key environmental aspects
- A summary of the 2020 performance in relation to legislative requirements and environmental objectives and targets

ONE-Dyas has operated and non-operated assets in the UK, Dutch, Danish and Norwegian sectors in the North Sea and also in Gabon. In the UK it has non-operated shares in Buzzard and Gead assets (with Nexen) and Cladhan (with Taqa) and also the Breagh (with INEOS).

ONE-Dyas continues to be the operating company for the Sean field in partnership with SSE. This report provides an overview of the environmental performance from the Papa and Romeo platforms as operated by ONE-Dyas.

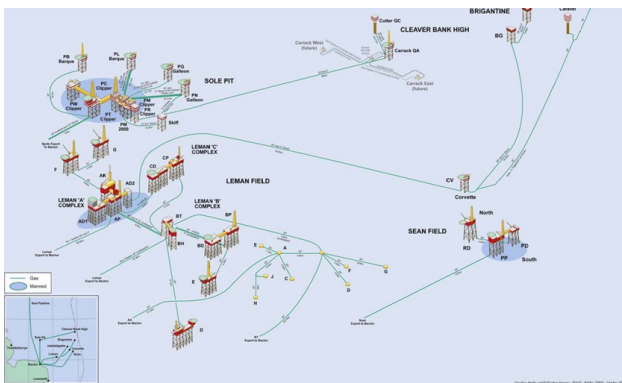


Figure 1:
Location of Sean Assets

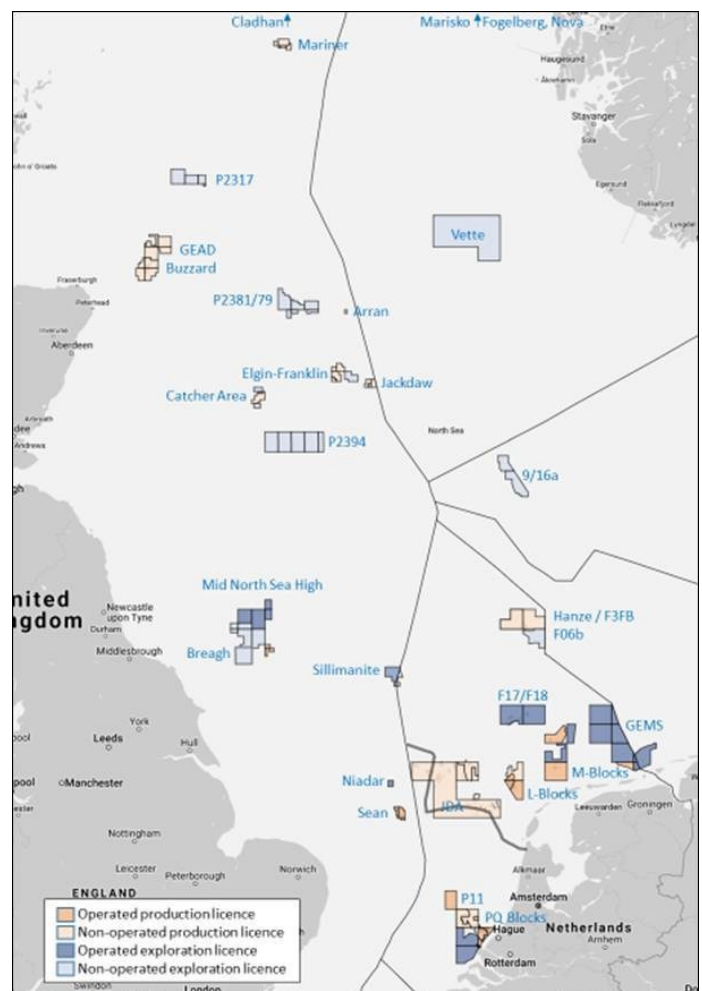


Figure 2:
Over view of ONE-Dyas
assets in the Dutch and
UK North Sea

The **Sean Papa (PP & PD)** installation is located in, the southern part of the UK sector of the North Sea in block 49/25a at approximately 94 km from the nearest point on the Norfolk coast. It is a Normally Manned Installation (NMI) comprising two fixed bridge linked platforms; a wellhead platform (PD) and a production and accommodation platform (PP). During 2019 gas from Sean Papa was exported to the Bacton terminal in Norfolk via a dedicated 30” pipeline.



Figure 3:
Sean Papa (PP & PD)

The **Sean Romeo (RD)** is approximately located at 4.5 km of the Sean PP & PD in block 49/25a and is connected with the Sean PP & PD through a 20” duplex pipeline. The installation stands in approximately 30 metres of water and is situated 94 km from the Norfolk coast. The Sean Romeo has been converted to a Not Normally Manned installation (NNMI). The gas from Sean East wells was transported to Sean Papa for processing before export to Bacton.



Figure 4:
Sean Romeo (RD)

There were no drilling activities for ONE-Dyas in the UK continental Shelf during 2020.



Produced Water Treatment — Skimmer tank

During the 2020 extended shutdown, a new skimmer tank was installed on the Sean Papa PP. The skimmer tank was commissioned in November 2020 and treats the water produced with the gas before reinjection back into well 2002. Monthly sampling during 2021 will be monitored for improvements to the Oil in Water content of the produced water.

Figure 5:
Sean Papa produced water skimmer tank



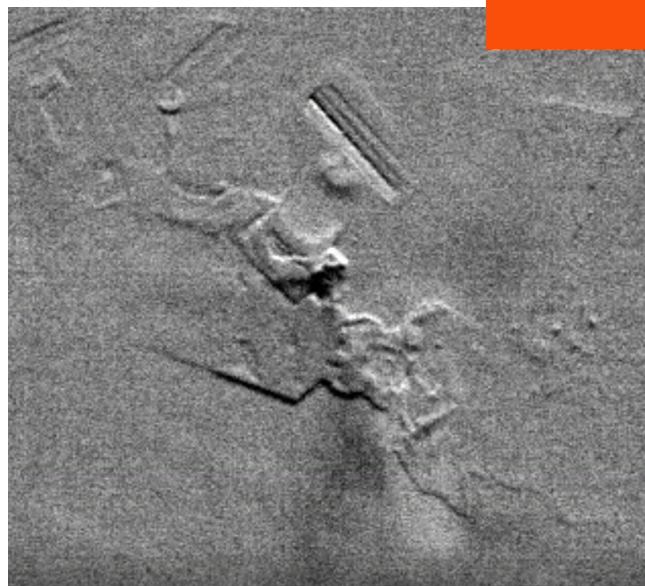
Fugitive Emissions — Leak Detection And Repair (LDAR)

Following the 2020 shutdown, a leak Detection and Repair programme (LDAR) was completed on the Sean Papa. An inventory of sources was compiled by Sniffers remotely onshore from Piping and Instrumentation diagrams. Emissions monitoring on these were completed using optical gas imaging. Of the 12,896 sources, four leaks were found and have since been repaired. This was calculated to have saved 1,946 kg/yr in gas emissions.

Figure 6:
Leak Detection to reduce fugitive emissions



Figure 7:
Leak Detection Image



5 ONE-Dyas Environmental Management

The ONE-Dyas Environmental Management System (EMS) comprises of strategic corporate documents cascading down to UK and Sean specific documents and procedures. In the UK management system was successfully certified to the new ISO14001:2015 standard in December 2017 and despite the restrictions, a surveillance audit was completed in December 2020.

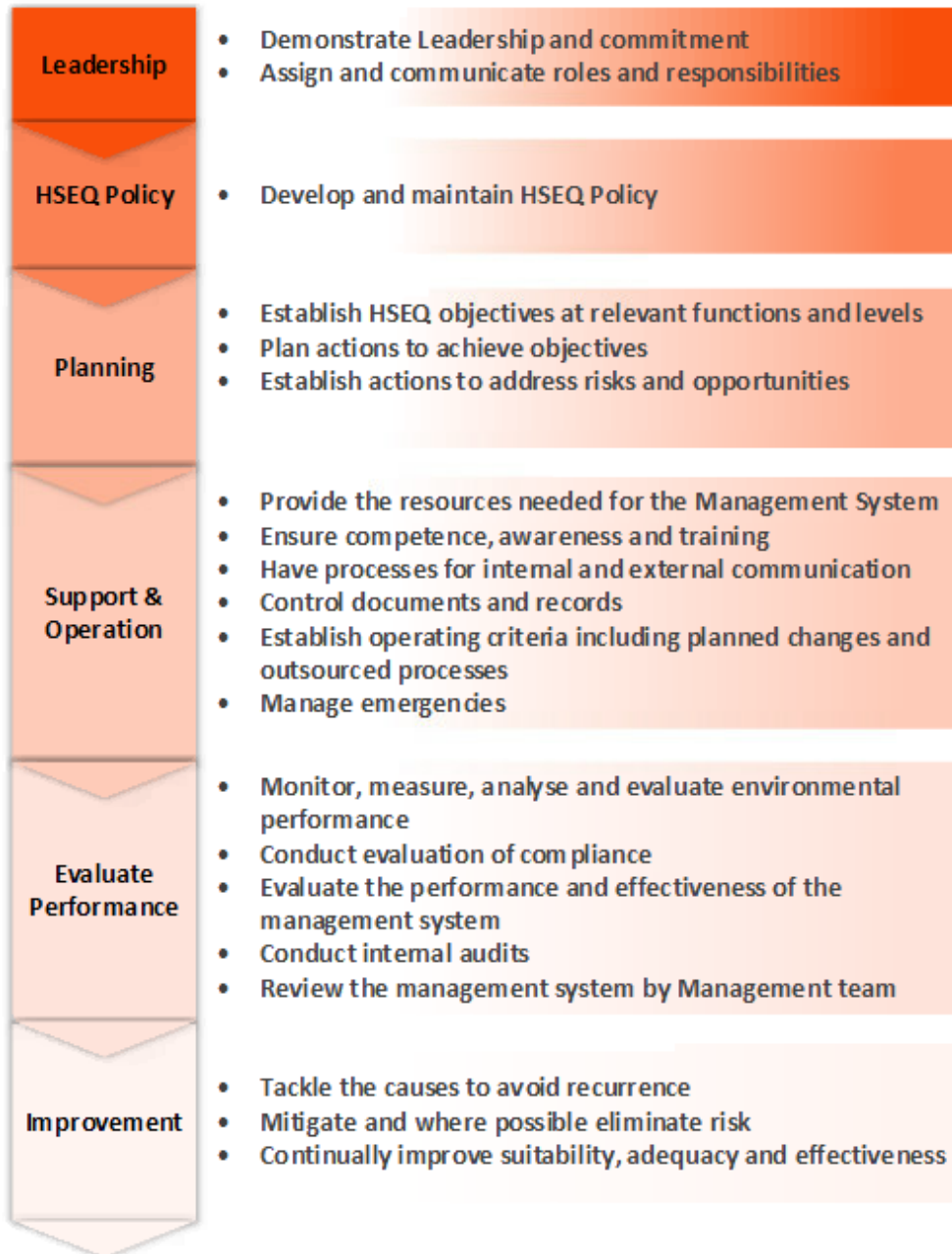


Figure 6:

Structure of ONE-Dyas Environmental Management System

The ONE-Dyas EMS provides a framework to protect the environment and respond to changing environmental conditions in balance with socio-economic needs. It specifies the systematic approach that enables ONE Dyas to operate, explore and develop oil and gas production assets in compliance with all relevant legal and stakeholder requirements.

The Corporate ONE-Dyas HSEQ policy covers all ONE-Dyas activities in the UK the Netherlands and in Norway and reflects the commitment of the owners and the management team to develop and operate oil and gas production in a sustainable way. To protect the health and safety of all persons involved and to prevent pollution and to minimize impact on the environment. ONE-Dyas believe that a responsible and pro-active management is a key factor in ensuring business success.



Commitment

ONE-Dyas B.V. and its subsidiaries are committed to conduct operations in a safe and sustainable way, to minimise the impact on the environment and to protect the health, safety and wellbeing of employees, contractors and the public.

All employees, consultants and/or contractors working for ONE-Dyas are responsible for achieving our HSEQ goals, through compliance with our HSEQ standards, requirements and ambitions.

Personnel is authorised and expected to take action and stop unsafe work and to report incidents, near-misses and sub-standard conditions.

Pro-active HSEQ and risk management is an integrated part of all our activities and is considered a key factor in our licence to operate.

Implementation

To implement our commitments we will:

- Maintain a systematic HSEQ Management System, developed to ensure compliance with applicable laws and regulations;
- Develop an annual HSEQ program, with tangible goals and measurable targets, to assure continuous improvement of our HSEQ performance;
- Conduct twice a year a compliance and effectiveness review of our HSEQ Management System;
- Perform risk assessments for all operated and non-operated assets and ensure effective controls and mitigations are in place, to minimise the risk of harming people, the environment, our assets and company reputation;
- Perform internal and external risk-based audit and verification activities;
- Investigate incidents in order to identify direct and indirect causes. Results of investigations will be shared openly;
- Actively co-operate with the industry and authorities, to further enhance HSEQ standards and performance.



Chris de Ruyter van Steveninck
CEO

The ONE-Dyas logo, with 'one' in orange and 'dyas' in white on an orange background.

Figure 7:

ONE Dyas Health, Safety, Environmental and Quality Policy

As part of the process of establishing, implementing and maintaining the EMS, ONE-Dyas has identified the significant environmental aspects of its onshore and offshore production and drilling activities and the environmental performance associated with these has been reported. Legislation for 2021 has been revised to account for the UK exit from the European Union.

6.1 Spills to sea

Non permitted releases of oil or chemicals to the sea must be reported using a Petroleum Operations Notice 1 (PON1) which is submitted to Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) on an electronic Portal. This notice provides details of the spill and actions taken to prevent a reoccurrence. ONE Dyas reports and investigates all spills to sea and tracks and manages the actions on the Synergi system.

6.2 Oil in Water

Produced water from wells associated with gas production is regulated by OPRED. ONE-Dyas has a permit to re-inject produced water to the A-2002 well on the Sean PD installation. Volumes of water and concentrations of oil are monitored and reported on the Environmental and Emissions Monitoring System (EEMS) system. Drainage water discharged from the skimmer tank is also tested and reported.

6.3 Offshore Chemicals

ONE-Dyas holds a chemical permit for chemicals associated with oil and gas production activities on the Papa and Romeo. This is regulated under the Offshore Chemicals (Amendment) Regulations 2011. The annual use and discharge of these chemicals for production operations and drilling activities is reported to OPRED via EEMS.

6.4 Waste

ONE-Dyas manages waste in line with the waste management plan and waste hierarchy. Waste is segregated on the installations to help minimize the quantity of waste shipped and disposed of to landfill, and to identify reuse and cost saving opportunities. During 2020 ONE Dyas continued to focus on the plastic waste on and offshore.



6.5 Atmospheric Emissions

Sean Papa atmospheric emissions are highly regulated and reported under several pieces of associated legislation. This includes venting, Carbon Dioxide (under European Union-Emissions Trading Scheme legislation) and other combustion gases including Nitrous Oxides, Sulphur Dioxide, Carbon Monoxide, Methane and Volatile Organic Compounds. In addition, refrigeration gases are regulated, monitored and reported annually.

8 Environmental Objectives and Targets

A description of the extent to which the environmental objectives and targets of ONE-Dyas 2020 have been achieved

2020 Environmental Objective	Achievement
Identify fugitive methane emissions reduction opportunities	✓ LDAR program was completed with 4 leaks identified and rectified. This was calculated to have saved 1,946 kg/yr in gas emissions.
Improve methane emissions measurement accuracy	<ul style="list-style-type: none"> ✓ Fugitive emissions were measured for 100% of identified sources on the Sean Papa Platform ✓ Purge venting is calculated using mass balance from Coriolis meters.
Benchmark methane emissions and increase transparency	<ul style="list-style-type: none"> ✓ Gas emissions are now communicated monthly ✓ Methane emissions are measured as an intensity against 0.25% near zero OGCI collective target
Identify and Implement feasible energy savings opportunities	- New additional projects were postponed due to the pandemic, this has been moved to 2021
Reduce spills to sea from 2019	✓ New spills were reduced from two in 2019 to one in 2020



One new spill to sea occurred during 2020 from the Sean Papa platform for which a PON 1 was issued to OPRED. The second incident is ongoing and the quantity of fluid lost is updated on a monthly basis. Actions for the incidents have been instigated and tracked on the Synergi system.

Date	Type	Quantity	Description
16/03/2020	Diesel Release from Sean PP Platform	0.3 Litres	The small loss was due to bunkering hose wear on the Sean Papa caused by rubbing against a bolt from the railing. This caught between the protective wrapping and punctured the hose. The hose was depressurised but not completely product-free. The hose was taken out of commission and replaced.
Ongoing from 17/02/2017	Oceanic subsea hydraulic fluid	675kg during 2020	This minor leak originates from a Sean Papa subsea hydraulic connection on the Bacton export pipeline SSIV. This has been monitored and the PON1 updated on a monthly basis. There has been progress on reducing the leak by almost 50% during 2020. A solution has been identified and planned to be implemented in 2021.

All produced water originating from the Sean Papa and Romeo wells is treated and re-injected. There are no re-injection limits applied to the oil in water content. No produced water was discharged during 2020, volumes of water and oil re-injected during 2020 (as reported monthly on EEMS) are shown in Figure 8. Oil in water content of samples from the recently installed produced water skimmer tank will be monitored during 2021 for improvements.

The skimmer installed to replace the lost caisson from the PD platform, has the facility to sample the drainage water discharged. The results in Figure 9 are all below the 40 mg/L discharge limit, some missing samples were the result of little or no flow.

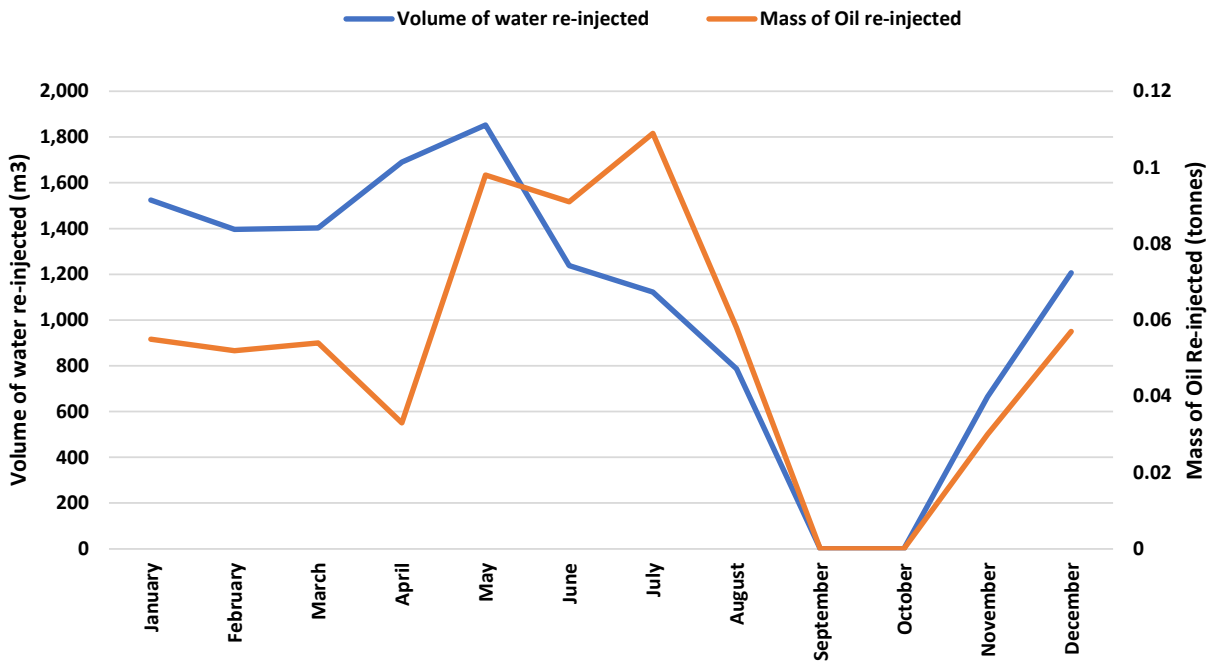


Figure 8:

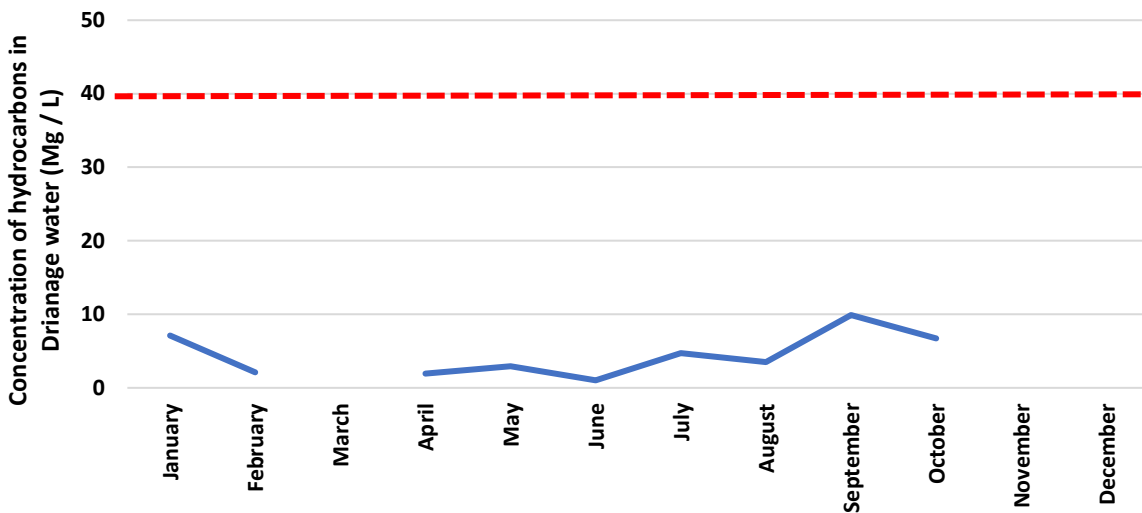


Figure 9:

Oil in water concentration in drainage water

11 Production Chemicals

Total use and discharge of chemicals (as reported in EEMS for 2020) is reported below (Figure 10) according to the label and ranking categories. Overall chemical use increased from 2019 (from 23,700 kg to 47,000 kg) however discharge of chemicals was decreased in 2020 (from 940 kg in 2019 to 750 kg in 2020)

There was some progress in reducing some of the chemicals used in the UK on the Sean platforms in 2020 from 2019 levels. For the E rated chemicals, Tri-Ethylene Glycol (TEG) use in the re-boiler was reduced from over 13 tonnes in 2019 to zero in 2020 and the use of Oceanic added to the Sub Sea Control Valve was also halved in 2020. This was counteracted by the need to use potassium chloride brine mixed solution in the well annulus. There was additional gold chemical use in 2020 associated with the use of demulsifier to improve oil and water separation.

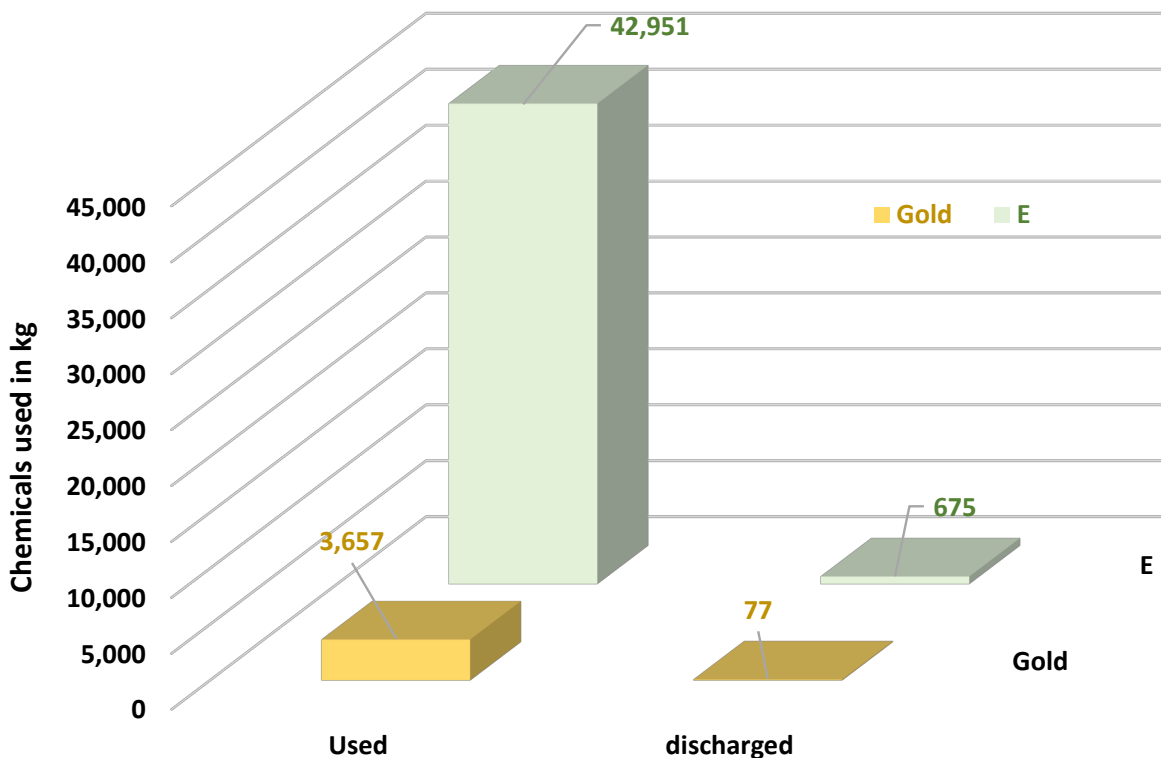
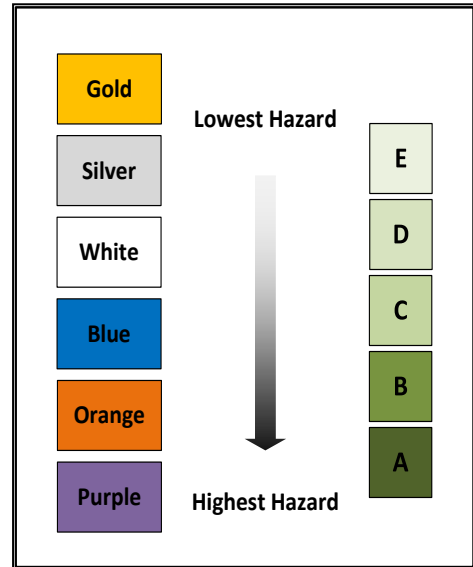


Figure 10:
Production Chemicals used and discharged from the Sean Platform

12 Production Waste

The Sean Papa and Romeo platforms shipped a total 125 tonnes of waste in 2020, which is less than 2019 (142 tonnes). This was shipped to Den Helder in the Netherlands for treatment. Tonnes of waste has been charted according to type and disposal route. The types and quantities of waste remained similar to last year, general waste remained similar to last year but segregated recyclables has increased from 15 to 20 tonnes. Proportion of waste types (Figure 11) are relatively similar to 2019. For waste disposal routes (Figure 12), landfill and incineration have increased slightly and waste to energy has decreased.

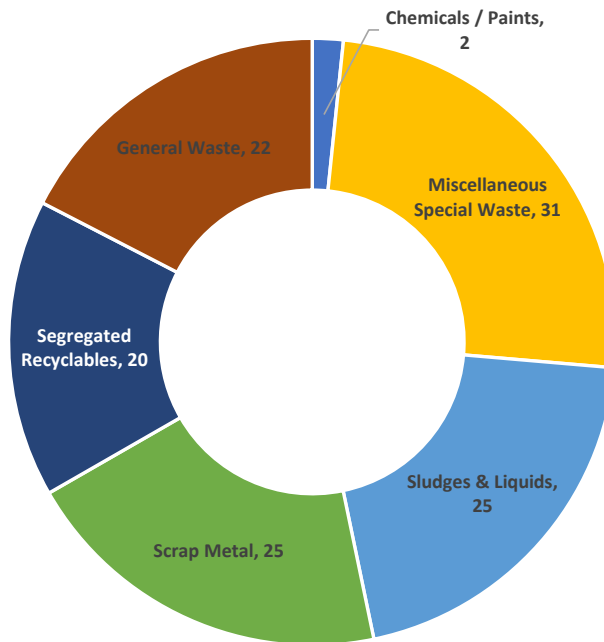


Figure 11:
2019 Sean production waste in tonnes categorised by waste type

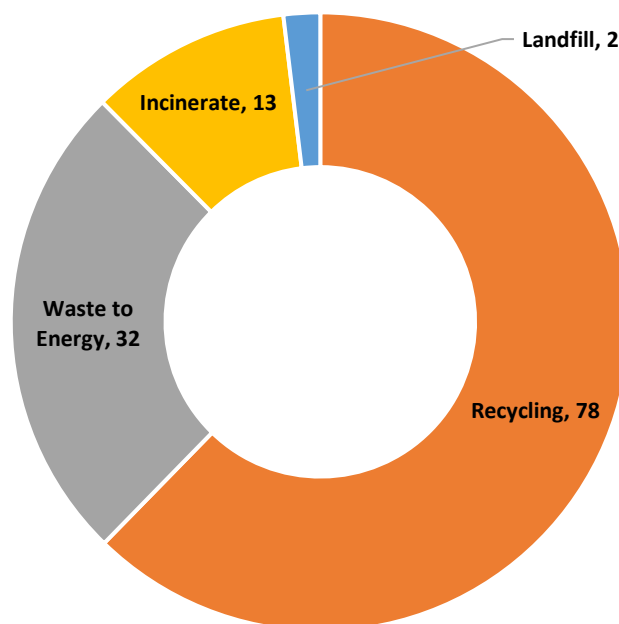
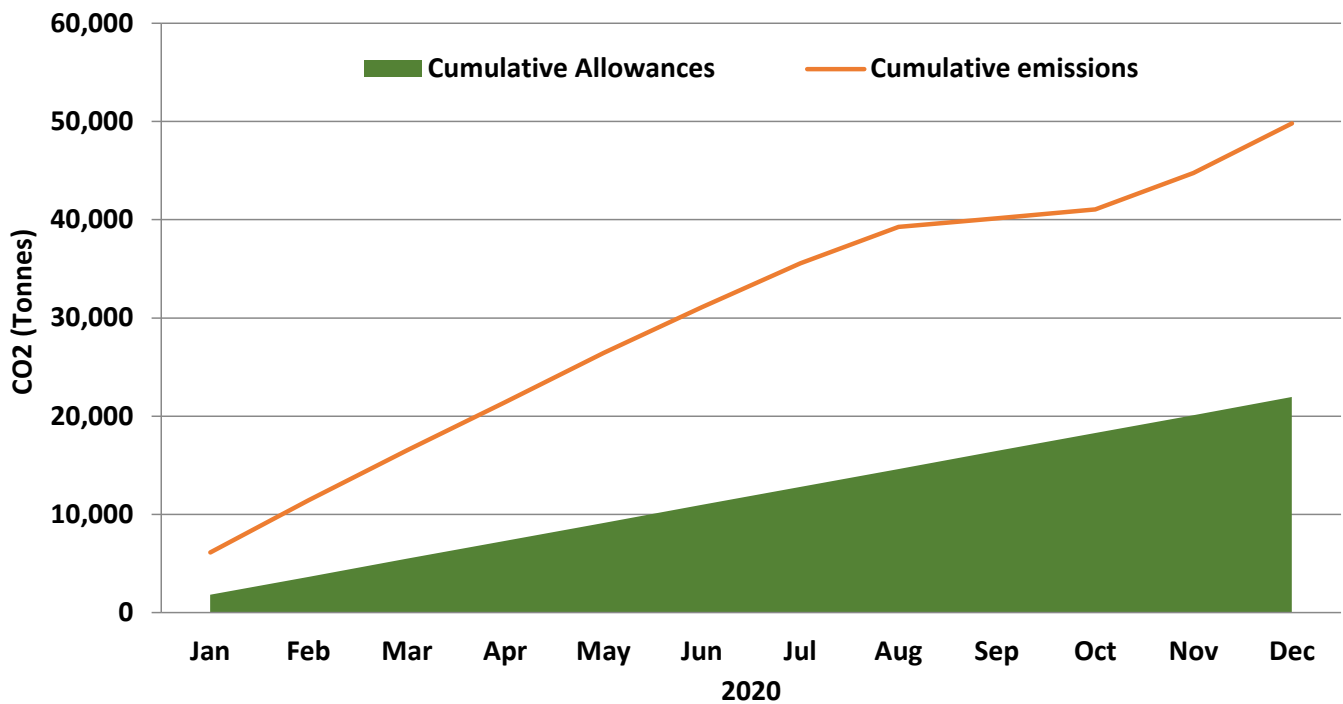


Figure 12:
2019 Sean production waste in tonnes categorised by disposal route

13 Carbon Dioxide

Carbon Dioxide emissions are highly monitored and reported for EU-ETS purposes. On the Sean Papa, 49.7 thousand tonnes of Carbon Dioxide was emitted from fuel gas and diesel use in 2020. This was a decrease from 2019 due to the extended shutdown in 2020 for the addition of third stage compression equipment.

The monthly accumulated Carbon Dioxide emissions from all combustion equipment on the platform are presented in Figure 12 below.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cumulative total CO2 Emissions (tonnes)	6127	11435	16542	21439	26439	31102	35564	39289	40157	41048	44740	49790
Cumulative total CO2 Allowance (tonnes)	1829	3657	5486	7315	9143	10972	12801	14629	16458	18287	20115	21944

Figure 12

2020 Sean Carbon Dioxide emissions and allowances in tonnes

14 Air Emissions

Emissions reported on EEMS under permit issued under the Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013 are displayed in Figure 14 below. These are broken down into emissions from diesel combustion and fuel gas combustion. The largest proportion of emissions are for Nitrous Oxides (NOx) emitted from the combustion of fuel gas and diesel. Emissions have increased from diesel and have decreased from Fuel gas due to the extended shutdown in 2020.

Emissions vented under the Energy Act 1976 are included, which show the highest contribution from Methane (CH4) emissions. 2020 Sean Papa emissions data shows an increase from 2019. This apparent increase in the data is due to improved accuracy in the method of data collection for the continuous purge, which is now calculated through a mass balance using Coriolis meters.

Emissions of refrigeration gases in 2020 (Figure 15) were less than half the levels in 2019 and associated with losses from HVAC systems. New galley equipment was installed that contains low Global Warming Potential (GWP) gas and does not require leak checking.

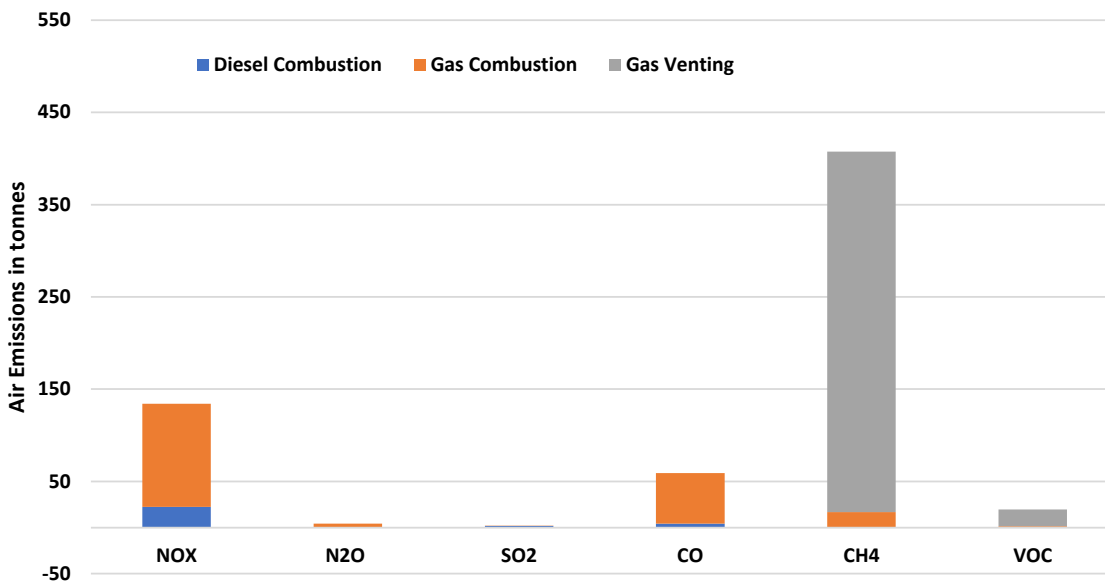


Figure 14

2020 Emissions from Sean combustion and venting

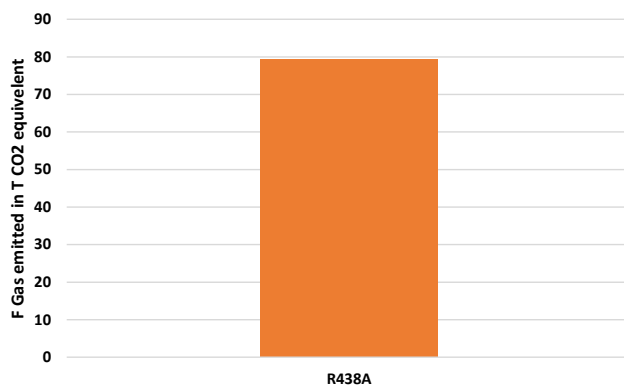


Figure 15

2020 Emissions of refrigeration gas from Sean equipment

ONE-Dyas has developed the environmental objectives below for 2021

- Further reduce chemical use and loss for the Sean SSIV
- Incorporate environmental training into UK offshore personnel competency assurance system.
- Incorporate monitoring of nesting birds into maintenance management system.
- Evaluate the feasibility of reducing the dispersed oil in water content for discharge to sea
- Continue to improve accuracy of monitoring of methane emissions from ONE-Dyas installations
- Identify and Implement feasible energy savings opportunities
- Develop monitoring for freshwater use.



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