Annual Environmental Report 2023

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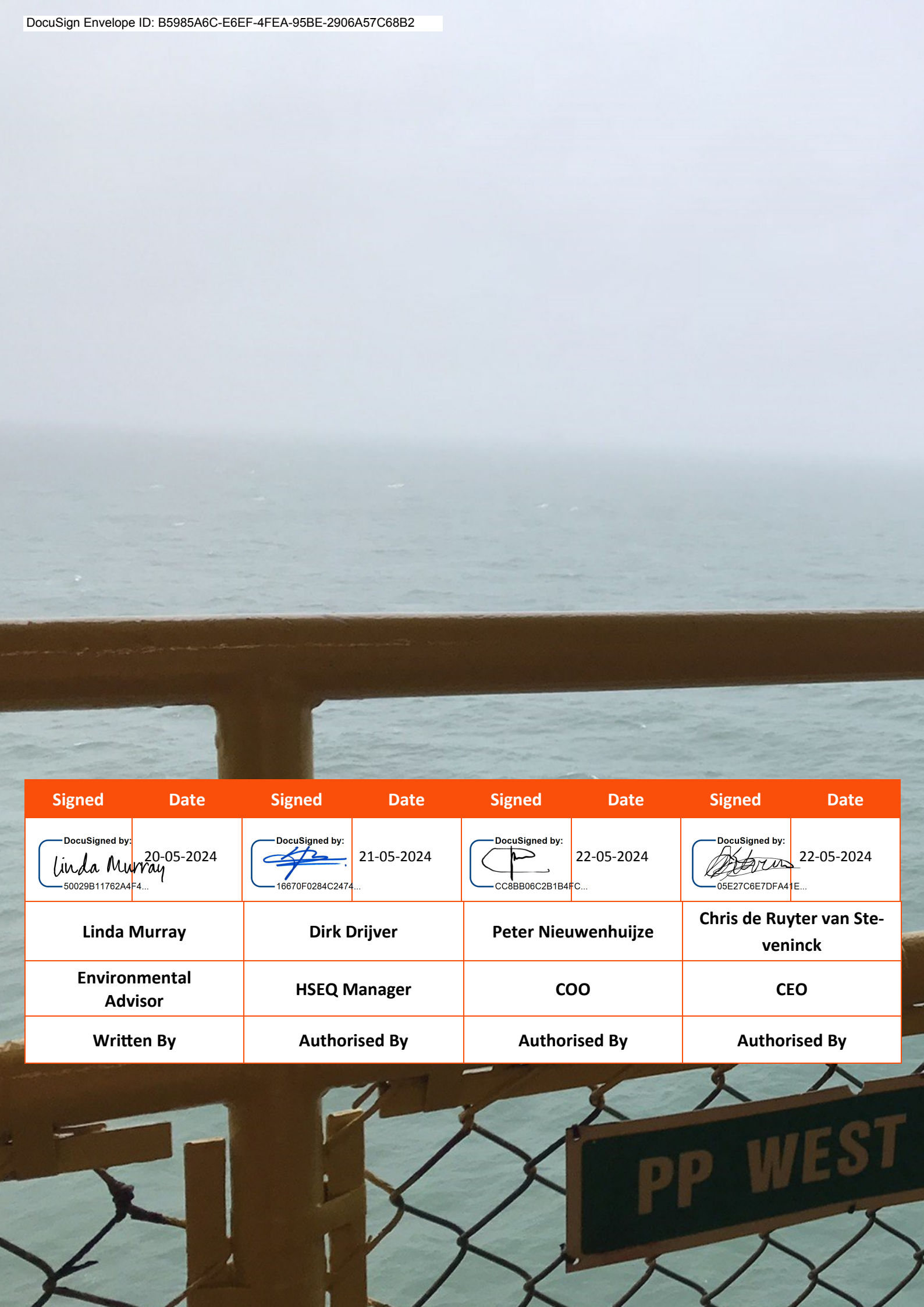

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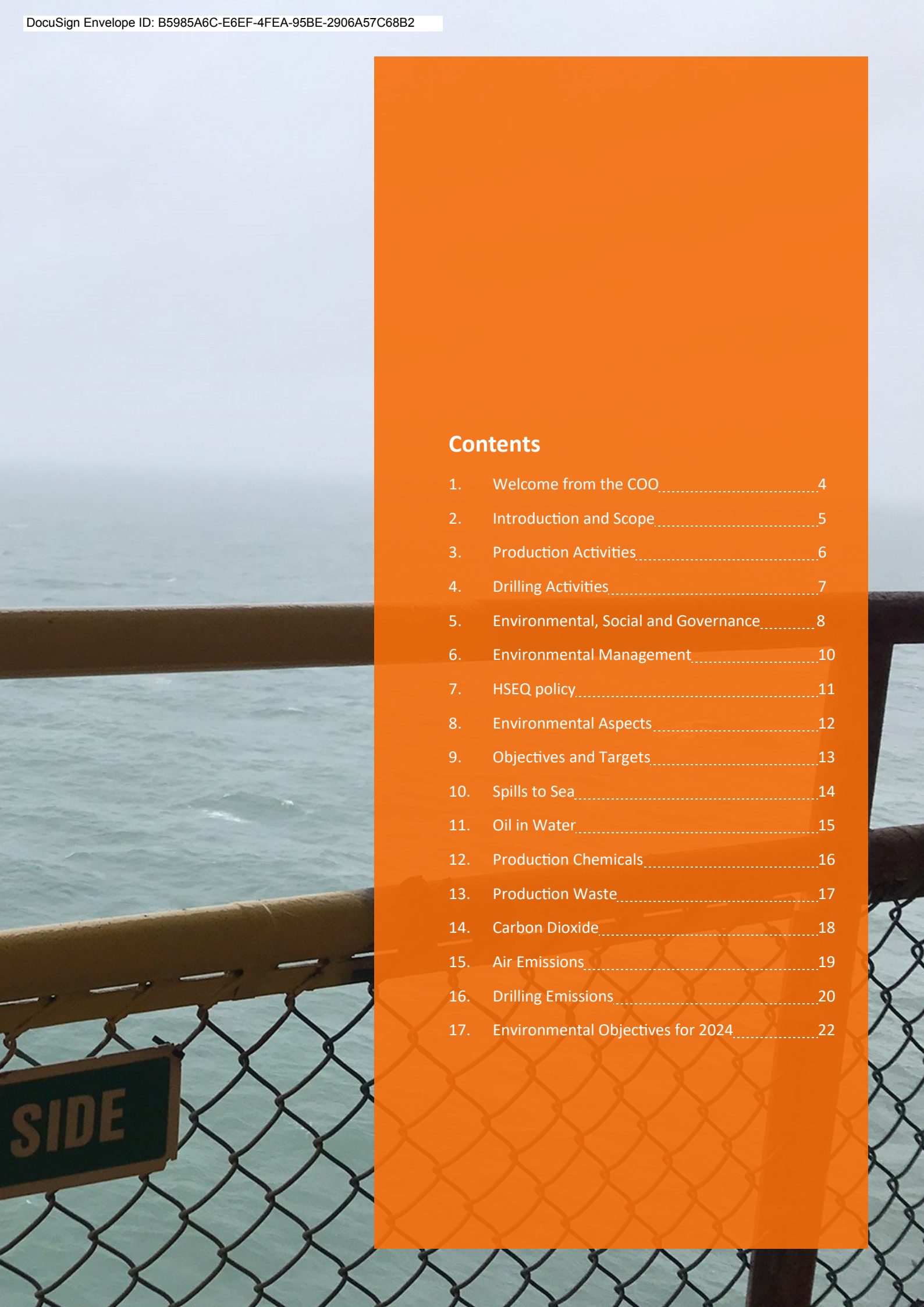


Contents

1 Welcome from the COO

At the beginning of 2023 the North Sea Transition Authority (NSTA) were calling for UK North Sea operators for all energy sectors to work together to realise the vision of the North as an integrated energy basin.

The NSTA reported that the UK imported 63% of natural gas supply in 2022 and that domestically produced gas is on average almost four times cleaner than importing gas in LNG form. During 2023 ONE-Dyas has been working to optimise the gas produced from the depleting Sean field while improving emissions measurement. This was in parallel with completing a successful exploration well in the Crosgan area with the potential to assist with delivering future UK energy security during the energy transition.

With this as background 2023 has been another year focusing on methane emissions. In addition to the annual fugitive emissions monitoring, we completed the first successful offshore use of the Aeromon rotary drone for measuring vented and combustion emissions. This included methane from several sources that had been previously difficult to estimate due to the position of the legacy infrastructure. The results have been incorporated into our reporting. Over the summer, ONE-Dyas also voluntarily signed up for the Oil & Gas Methane Partnership (OGMP 2.0). The OGMP 2.0 is a United Nations Environment Programme (UNEP) designed to help operators identify and mitigate methane emissions through improved measurement, reporting, verification, and peer learning.

During the second part of the year we started work on the suspended wells in preparation to plug and abandon some wells in early 2024 on the Romeo NNMI. This starts the long process of decommissioning of the Sean fields. Linked to decommissioning strategy is the repurposing and reuse of existing infrastructure for low-carbon projects, including potentially carbon storage. The strategy aligns with the drive to integrate the UK's offshore energy systems and accelerate the transition to net zero. We have shared our project information and details of upcoming tenders using Supply Chain Action Plans (SCAPs) to collaborate openly with suppliers at all stages in the decommissioning project lifecycle.

The Kittiwake monitoring continued in 2023, and we successfully installed and used our camera to establish the key dates in their breeding season. Our 2023 survey confirmed that we had 13 nests on the Romeo platform both on the North side as previously, and now also on the East side. From these nests it was estimated that ten more red listed Kittiwake chicks were successfully raised and fledged in this season.

On the back of the successful results from the Crosgan exploration well completed in June, ONE-Dyas applied for additional licences in the 33rd round. The award of the Southern North Sea licences has been delayed, but planning has started for the next appraisal wells in the area. A number of development options are being considered in line with Net Zero and energy transition expectations.

Peter Nieuwenhuijze

Peter Nieuwenhuijze

Chief Operating Officer - ONE-Dyas BV

2 Introduction and Scope

The annual statement is issued in line with the objectives of OSPAR Recommendation 2003/5 to promote the use and implementation of environmental management systems by the offshore industry, as implemented by the UK Department for Energy Security and Net Zero (DESNZ). In accordance with OPRED guidance on Environmental Management Systems (EMS), operators on the UK continental shelf (UKCS) must maintain a certified EMS, including the requirement to produce an annual public statement covering all offshore operations undertaken in 2023.

This report provides:

- A description of the UK assets and activities
- An overview of the ONE-Dyas Environmental Management system
- An overview of the main 2023 operations included in the report
- Details on the key environmental aspects related to ONE-Dyas operations
- A summary of the 2023 performance in relation to legislative requirements and environmental objectives and targets

ONE-Dyas has operated and non-operated assets in the UK, Dutch and German sectors in the North Sea. In the UK, ONE-Dyas has non-operated shares in Buzzard and Gead assets (operated by Nexen), Cladhan (operated by Taqa), Breagh (operated by INEOS), Mariner (operated by Equinor) and also Elgin-Frankln (operated by Total Energies).

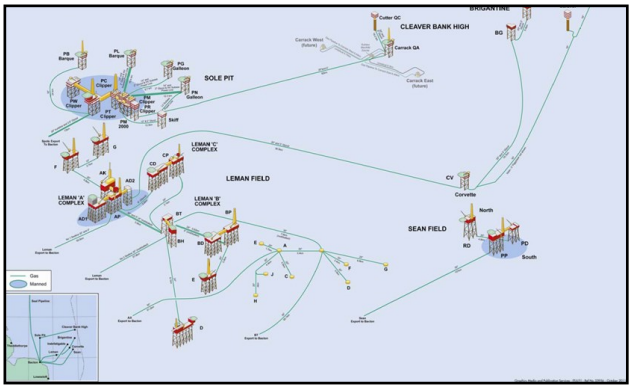


Figure 1:
Location of Sean Assets

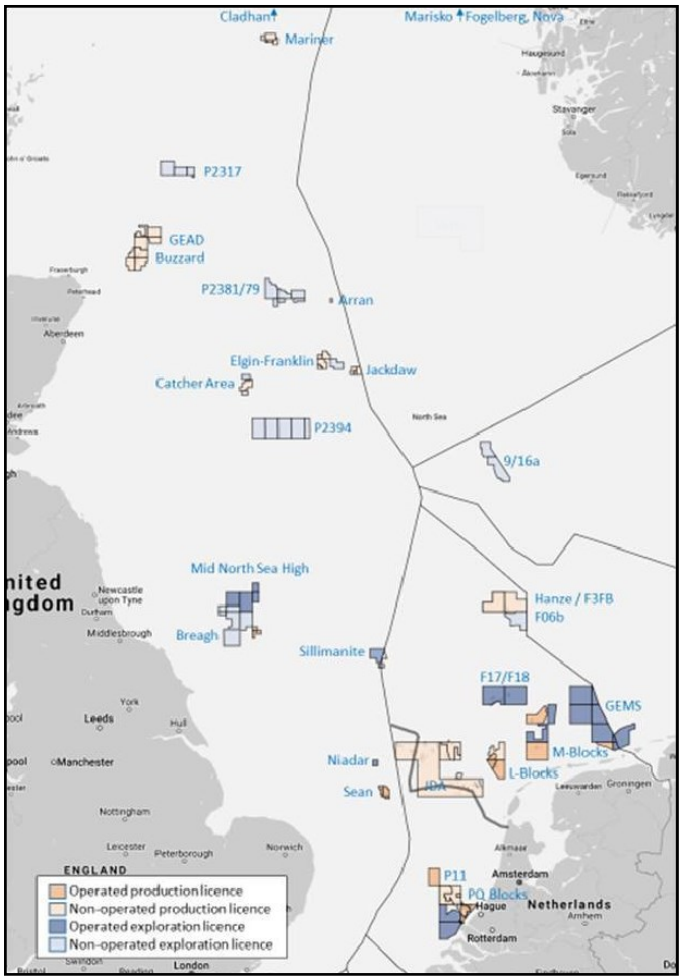


Figure 2:
Over view of ONE-Dyas assets in the Dutch, UK and German North Sea

3 ONE-Dyas UK 2023 Production

The **Sean Papa** installation is located in the southern part of the UK sector in the North Sea, in block 49/25a 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). Gas from Sean Papa is exported to the Bacton terminal in Norfolk via a dedicated 30" pipeline.

Figure 3:
Sean Papa

The **Sean Romeo** is approximately located at 4.5 km from 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 Romeo wells is piped to Sean Papa for processing before export to Bacton.

Figure 4:
Sean Romeo

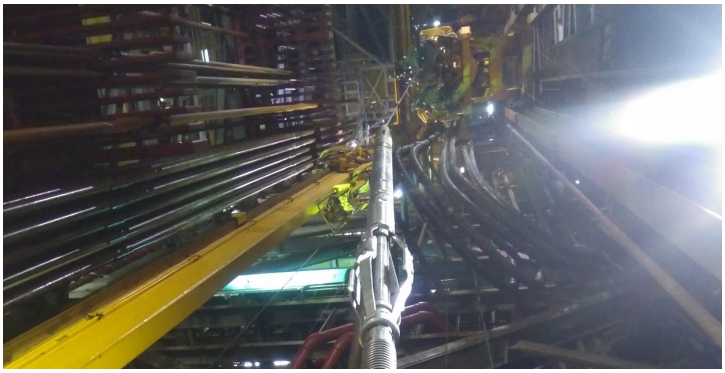
4 ONE-Dyas UK 2023 Drilling Activities

Figure 5:
Valaris 123 Mobile Offshore Drilling

ONE-Dyas Drilling Activities

In March 2023 ONE-Dyas successfully drilled an appraisal well in block 42/15a using the Valaris 123 jack-up rig (Figure 5). The location was in the Crosgan prospect, 82 km Northeast of Flamborough Head on the English coastline. The well took 85 days to drill to a depth of 2775 meters to the lower carboniferous. The well was drilled using water based mud system, and the wellbore was cleaned up and a successful well test was performed. Following the completion of drilling operations the well was cemented and permanently abandoned. The Valaris 123 moved away from Crosgan location in June 2023. The environmental reporting from the Crosgan drilling activities is detailed in section 16.

Figure 6:
Drilling operations on the Valaris 123



5 ONE-Dyas Environmental, Social and Governance— Methane focus

Over the summer in 2023 ONE-Dyas became a signatory to the Oil & Gas Methane Partnership (OGMP 2.0). This is an United Nations Environment Programme (UNEP) initiative designed to help gas and oil companies identify and mitigate methane emissions through improved measurement, reporting, verification and peer learning. ONE-Dyas collaborated with Xodus to establish a comprehensible pathway to enable methane emissions reductions. Xodus assisted in the inventory development and by creating methane source inventory spreadsheets for all of the UK and Dutch assets.

This is a step towards driving a cut in methane emissions across the portfolio, in line with North Sea UKCS and EU legislation to demonstrate a commitment internally, to stakeholders, to the industry and to demonstrate progress towards near-zero emission targets.

Figure 7: Drone air emissions monitoring

In June, a short weather window allowed the measuring of Sean Papa known methane emissions sources using measurements taken by a drone carrying a BH-12 emission measurement instrument and Aeromon cloud service. The instrument measured Methane (CH_4) primarily, but also Nitrous Oxides (NOx) and Volatile Organic Compounds (VOCs). The instrument used laser spectroscopy, electrochemical and photo-ionisation detector sensors to take the measurements. Detected source area plumes were investigated individually. The concentration results were subjected to reverse dispersion modelling to estimate a concentration at the source.

This method has been used previously for onshore landfills but it was the first time it had been used offshore. The results proved to be consistent with source level data and highlighted sources that had not previously been identified.

Figure 8: Drone fitted with BH-12 emission measurement device

5 ONE-Dyas Environmental , Social and Governance— Seabird Management

2023 was a successful breeding season for the Kittiwake colony on the Sean Romeo unmanned platform. In April 2023, we installed a camera on the North face of the platform to monitor the Kittiwake nesting sites on the main L-beam of the cellar deck. Due to the bandwidth available we were limited to three pictures a day. However, this was sufficient to enable us to obtain an accurate timeline of nesting, from the nest building and pair bonding in May to fledging and then nest abandonment in September. The annual survey in September confirmed that we had 13 nests on the platform both on the North side, and now also on the East side. From these nests it was estimated that 10 Kittiwake chicks were successfully raised and fledged. At the end of October a topsides assessment was completed for the likelihood and locations for future nests and to define the most appropriate strategy to prevent the birds being disturbed during the well interventions planned for 2024.

The knowledge from this approach was shared at a workshop hosted by OEUK. The workshop aimed to help shape a framework for management and protection of nesting birds in the UKCS for both offshore gas and oil and for wind operations.

Figure 9: Sean Romeo Kittiwakes

6 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. The UK management system was first successfully certified to the ISO14001:2015 standard in December 2017. Surveillance audits have been completed annually since then with the last one in June 2023 also combined with ISO45001 Occupational Health and Safety.

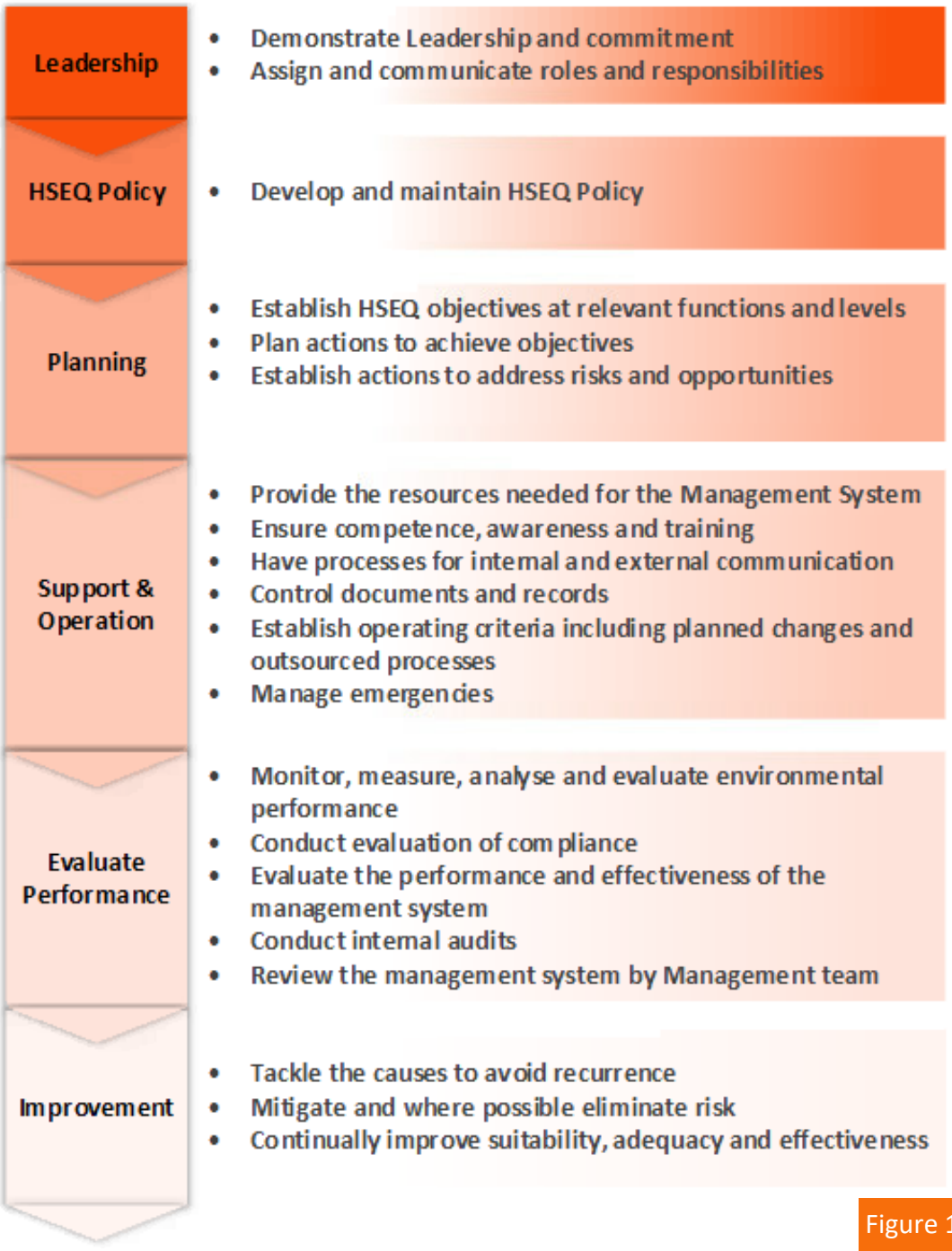


Figure 10:

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 gas and oil production assets in compliance with all relevant legal and stakeholder requirements.

7 Health, Safety, Environmental and Quality Policy

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

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HEALTH, SAFETY, ENVIRONMENTAL & QUALITY (HSEQ) POLICY

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

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Figure 11:

ONE-Dyas Health, Safety, Environmental and Quality Policy

8 Environmental Aspects

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 reported on the associated the environmental performance associated with these.

7.1 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 the IRS electronic Portal. This notice provides details of the spill and actions taken to prevent a reoccurrence. ONE-Dyas reports and investigates all potential spills to sea and tracks and manages the actions on the Synergi system. Exercises to prepare in the event of a spill are completed annually.

7.2 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 into the A-2002 well on the Sean PD installation. Volumes of water and concentrations of oil are metered, monitored and reported on the Environmental and Emissions Monitoring System (EEMS) system. Drainage water discharged from the skimmer tank is also tested for oil content and reported.

7.3 Offshore Chemicals

ONE-Dyas holds a chemical permit for chemicals associated with gas and oil production activities on the Sean Papa and Romeo. The permit 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 Environmental Emissions Monitoring System (EEMS).

7.4 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 opportunities.

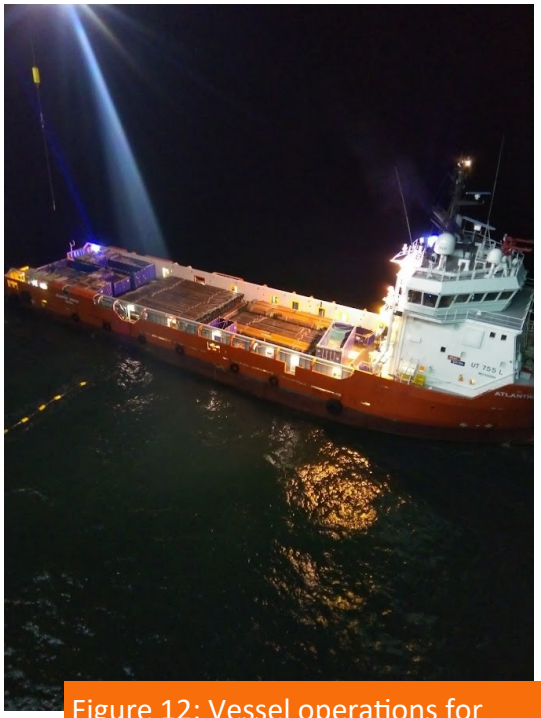


Figure 12: Vessel operations for backloading waste

7.5 Atmospheric Emissions

Sean Papa atmospheric emissions are highly regulated and reported under several pieces of associated legislation. This includes venting, Carbon Dioxide (under United Kingdom 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.

9 Environmental Objectives and Targets

A description of the extent to which the environmental objectives and targets of ONE-Dyas 2023 have been achieved

2023 Environmental Objective	Achievement
Measurement and confirmation of venting through drone measurement	✓ Drone measurement of methane and other air emissions was completed in June 2023.
Reduce measurement and monitoring uncertainty for methane sources	✓ Meters used for measurement have been assessed for low flows. Methane monitoring has been reviewed for accuracy against OGMP tiers.
Further reduction in methane emissions and alignment with OGMP 2.0 standards	✓ ONE-Dyas have signed up to OGMP 2.0. and will report 2023 emissions. ✘ Site measurements have led to more accurate measuring of emissions, but reported emissions were not reduced.
Complete review of energy savings opportunities	✓ The review was completed and the report issued in early 2024.
Actively participate in Southern North Sea Net Zero initiatives such as the Gas Transition Sector Council (GTSC) Net Zero Workstream and involvement in the Bacton Energy Hub discussions	✓ ONE-Dyas actively participated in a number of reviews and a report was presented.
Complete environmental permit training for new operators >95% trained by end of 2023	✘ Environmental permit training was at 92% for 2023 due to new staff joining who had not completed the course.
Continued implementation of the seabird management programme	✓ Annual surveys were completed, a monitoring camera was installed and a disturbance mitigation plan published.

10 Spills to Sea

Two new spills of less than 0.05 kg to sea occurred during 2023 from the Sean Papa platform for which a PON 1 was issued to OPRED. This was an increase by one from 2022. The 2017 incident is ongoing and the quantity of fluid lost is updated to the regulator on a monthly basis, the amount lost has been reduced by 90% from 2020. All incidents have been investigated and actions tracked on the Synergi system.

Date	Type	Quantity	Description
01/0/2023	Residual oil	0.02 kg	Seawater from PP Fire pump test run leaked into the fire pump room from gland packing cooling. The water washed some residual oil from under the engine into the sea.
19/09/2023	Oil from separator	0.03 kg	Skimmer tank plate packs were cleaned during the annual shutdown. Some of the flushing water with residual oil was not captured in the bund and dripped into the sea below.
Ongoing from 17/02/2017	Oceanic subsea hydraulic fluid	63 kg during 2023	From the Sean Papa. This leak is ongoing from 2017 from a subsea hydraulic connection to the Bacton export pipeline SSIV. This has been monitored and the PON1 updated on a monthly basis. Lowering the pressure has reduced the leak from 675 kg in 2020 to 299 kg in 2021 and to 53kg in 2022.

Figure 13:
Southern North Sea sunrise

11 Oil in Water

All produced water originating from the Sean Papa and Romeo wells is physically treated and re-injected. There are no re-injection limits applied to the oil in water content. No produced water was discharged during 2023, the volumes of water and oil re-injected during 2023 (as reported monthly on EEMS) are shown in Figure 14. Produced water volumes increased in June due to production from well 2010 which is a high water producer.

The skimmer installed to replace the lost caisson from the PD platform, has the facility to sample the drainage water discharged. These results as reported in Figure 15 are all markedly below the 40 mg/L discharge limit, some missing samples were the result of little or no flow.

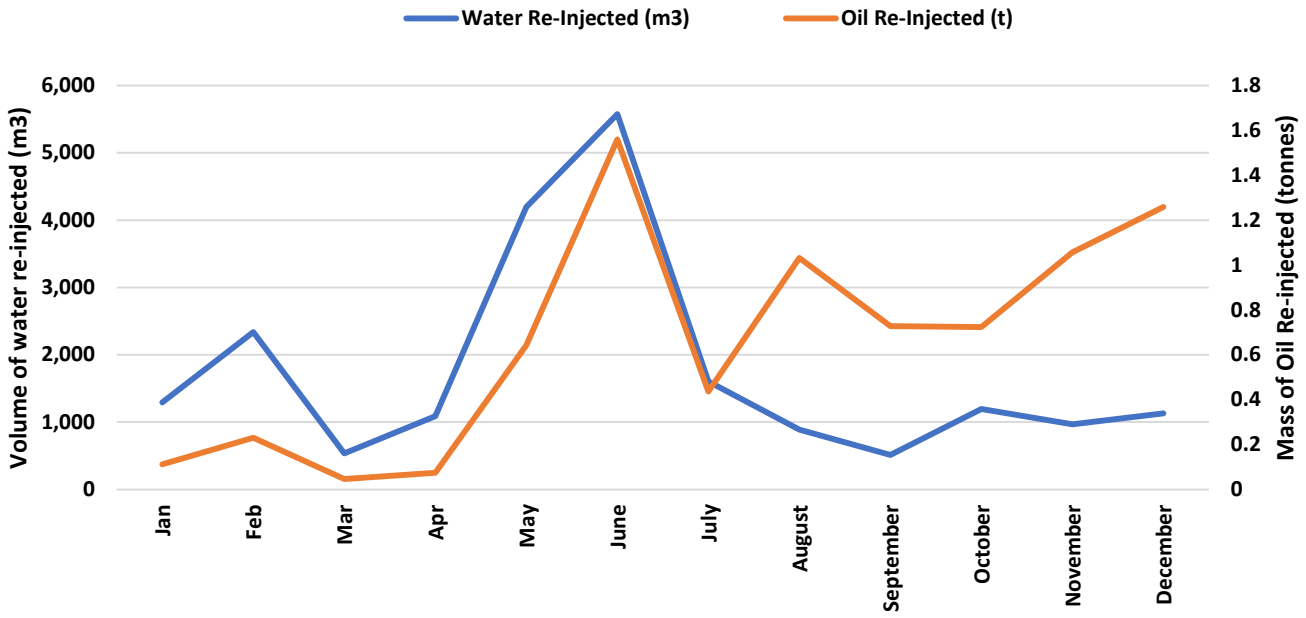


Figure 14:
Volume of produced water and mass of oil re-injected

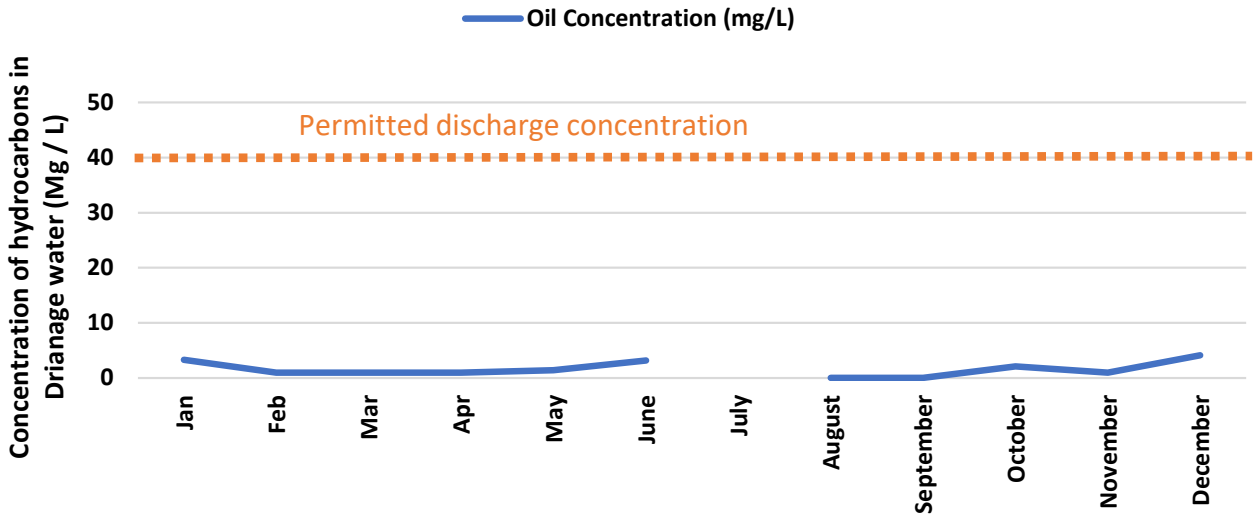
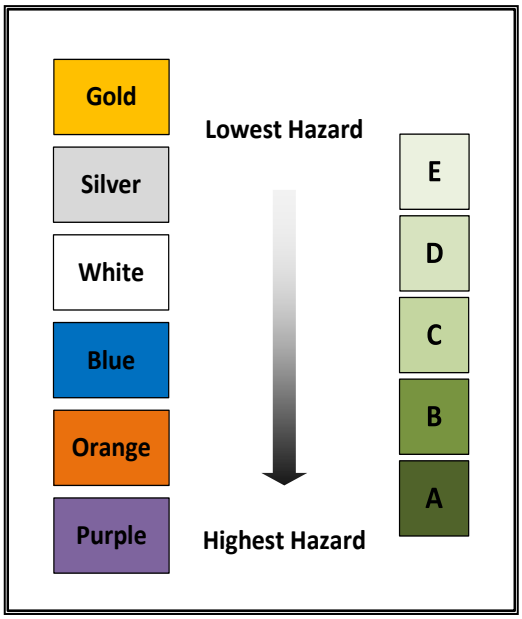


Figure 15:
Oil in water concentration in drainage water

12 Production Chemicals

Total use and discharge of chemicals (as reported in EEMS for 2023) is reported below (Figure 16) according to the label and ranking categories. Overall chemical use increased from 2022 (from 6,000 kg to 23,000 kg) most of this was Calcium Chloride Brine annulus fluid which was not discharged and is classed as Posing Little Or No Risk to the environment (PLONOR). The total mass of chemicals discharged was 154 kg. This was in the use of Oceanic (category D) added to the Sub Sea Control Valve and from detergents used for cleaning.



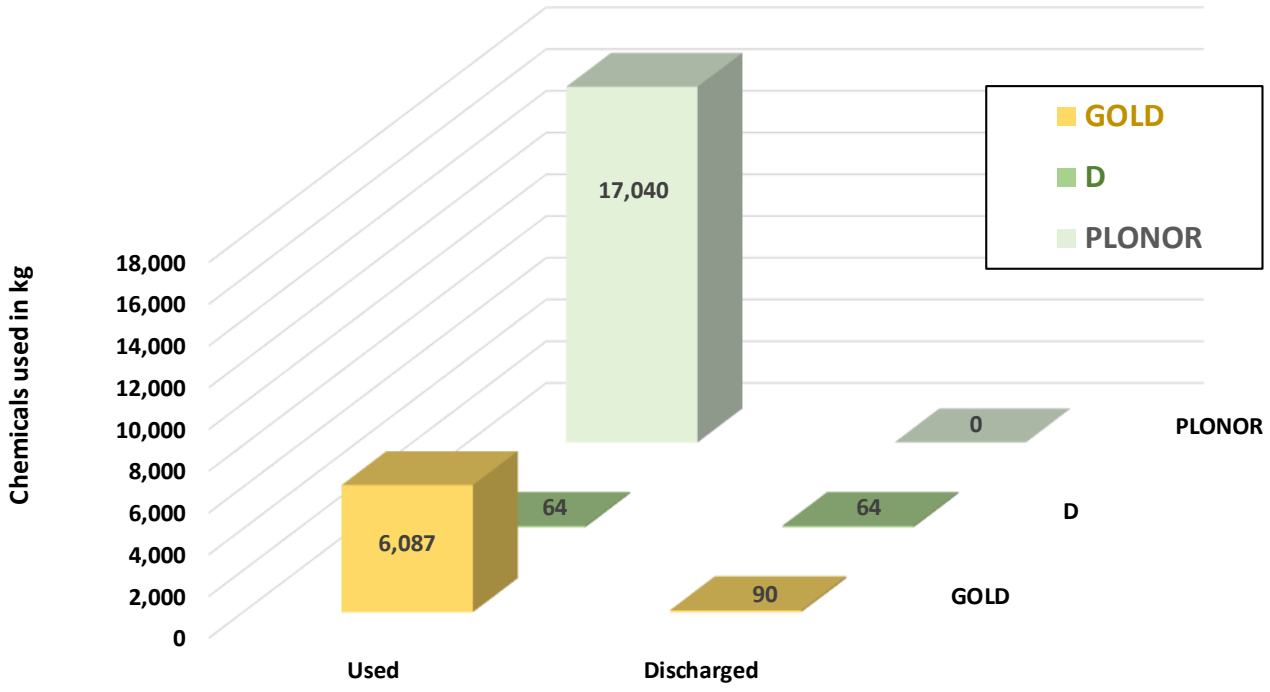


Figure 16:

Production Chemicals used and discharged from the Sean Platform in 2023

13 Production Waste

The Sean Papa and Romeo platforms shipped a total of 85 tonnes of waste in 2023, which is a decrease from 2022 (92 tonnes). Most of the waste was shipped to Den Helder in The Netherlands for treatment. The tonnes of waste have been charted according to type and disposal route. The types of waste remained similar to last year (Figure 17). The decrease in waste was due to a decrease in waste from cleaning less vessels in 2023. Segregated recyclables and scrap metal increased and also so did general waste in 2023. Proportions of waste disposal are broadly similar to 2022, no waste was disposed to landfill again in 2023 (Figure 18).

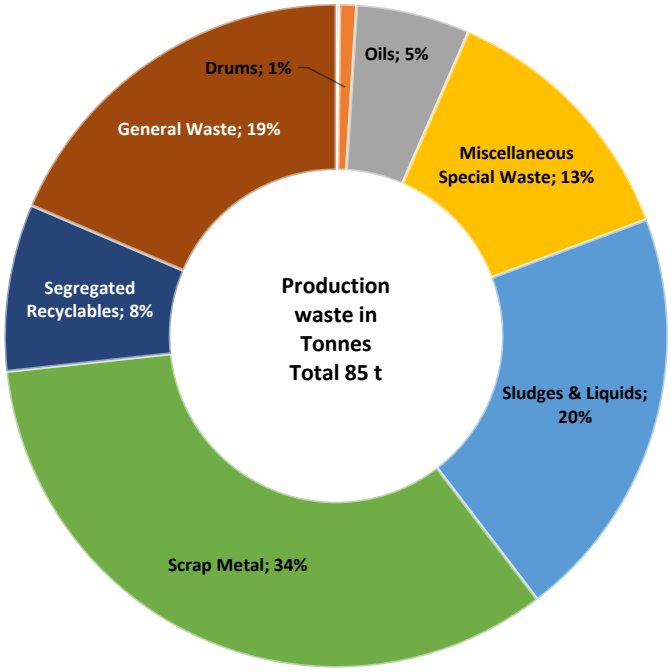


Figure 17:
2023 Sean production waste in tonnes categorised by waste type

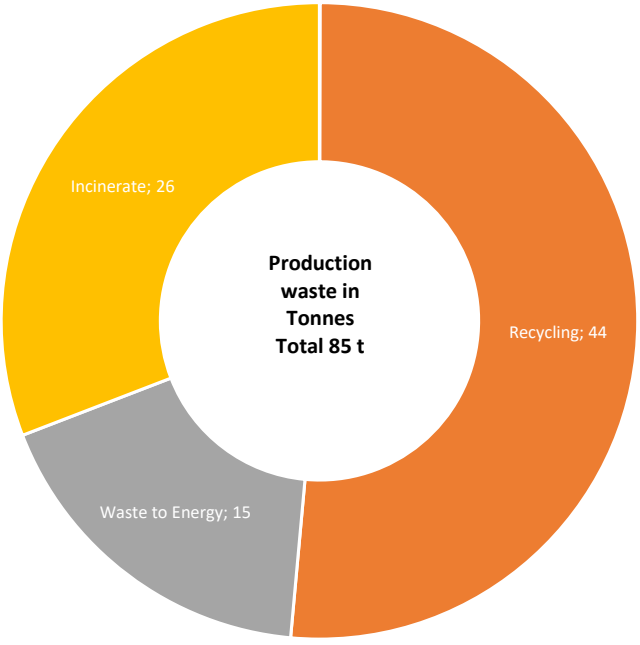
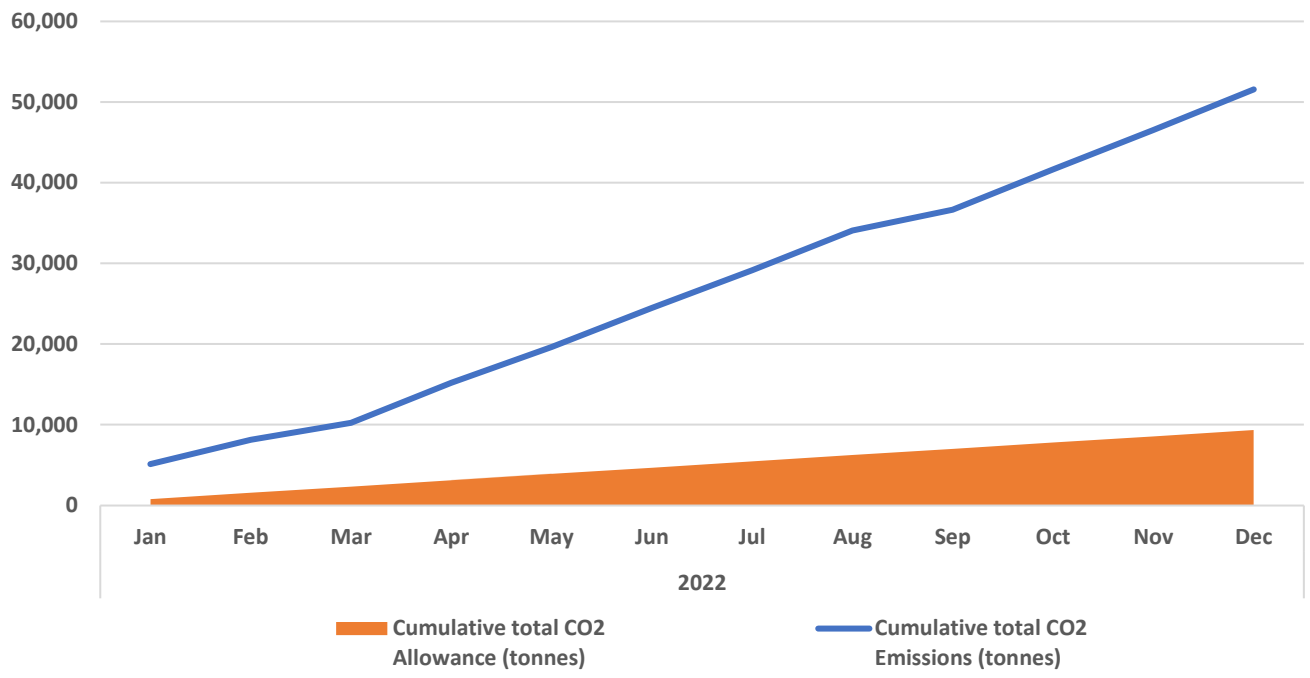


Figure 18:
2023 Sean production waste in tonnes categorised by disposal route

14 Carbon Dioxide

Carbon Dioxide emissions are strictly monitored and reported for UK-ETS purposes. On the Sean Papa, 51.7 thousand tonnes of Carbon Dioxide was emitted from fuel gas and diesel use in 2022. This was a small decrease from 2022 (56.3 thousand tonnes) due to an unplanned shut down period in March.

The monthly accumulated Carbon Dioxide emissions from all combustion equipment on the platform is presented in Figure 19 below. Carbon allowances remained lower again in 2023 due to a reduction in activity levels.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cumulative total CO2 Emissions (tonnes)	**5,120**	**8,136**	**10,223**	**15,187**	**19,640**	**24,458**	**29,137**	**34,078**	**36,640**	**41,644**	**46,538**	**51,734**
Cumulative total CO2 Allowance (tonnes)	**779**	**1,558**	**2,337**	**3,115**	**3,894**	**4,673**	**5,452**	**6,231**	**7,010**	**7,788**	**8,567**	**9,346**

Figure 19:
2023 Sean Carbon Dioxide emissions and allowances in tonnes

15 Air Emissions

Emissions reported to EEMS under a permit issued under the Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013 are shown in Figure 20 below. These are split into emissions from diesel combustion and fuel gas combustion. The largest proportion of emissions from combustion are for Nitrous Oxides (NOx) emitted from the combustion of fuel gas and diesel. Emissions from diesel increased in 2023 and emissions from fuel gas decreased due to a reduction in production time in 2023.

Emissions vented under the Energy Act 1976 are included, which show the highest contribution from Methane (CH_4) emissions. The 2023 Sean Papa venting emissions data shows an increase in reported Methane emissions from 301 tonnes CH_4 in 2022 to 435 tonnes in 2023. The increase in reported Methane emissions is the result of the discovery of additional Methane emission sources that were not detectable prior to the use of the drone measurement method. These have now been included in the total.

Fugitive emissions from EEMS have been included in the graph for completeness.

There were no emissions of refrigeration gases in again in 2023 from the UK ONE-Dyas assets.

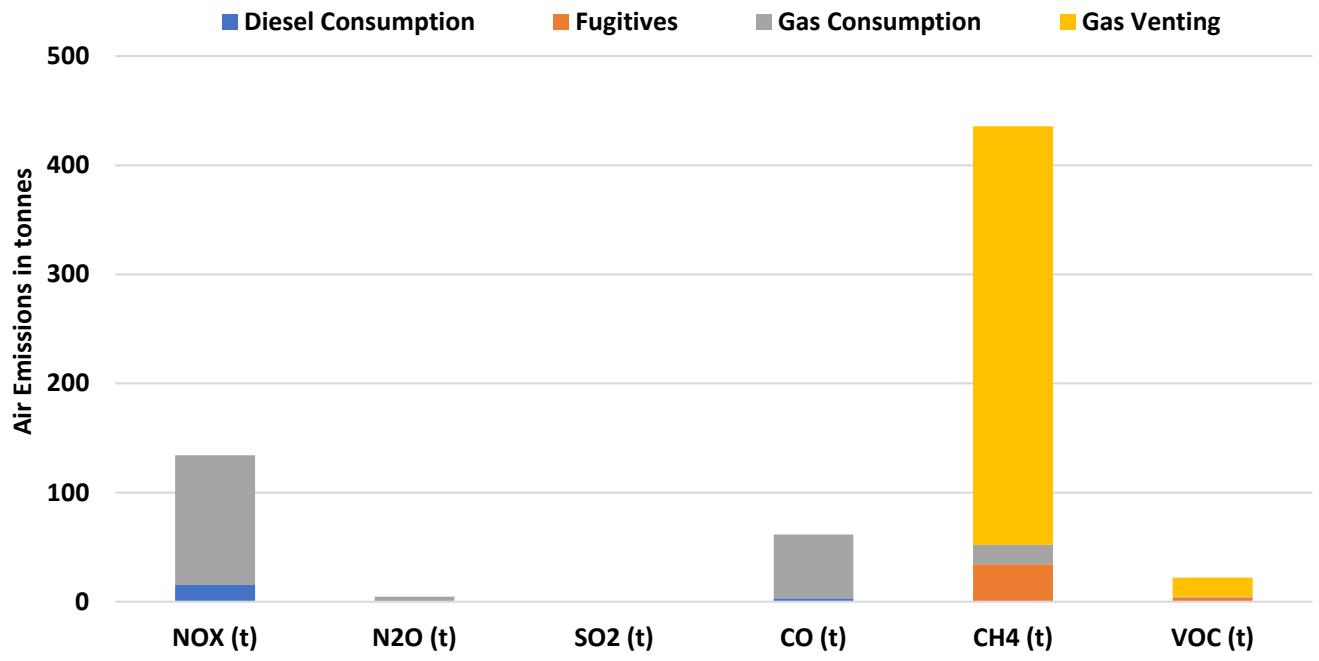


Figure 20:
2023 Emissions from Sean combustion and venting

16 Drilling emissions

As permitted by OPRED, a total of 894 tonnes of chemicals were used in the 42/15a Crosgan appraisal well (Figure 20) Approximately half of these were discharged. No Oil Based Muds (OBM) were used and 92% of the chemicals discharged were classed as Posing Little or No Risk to the Environment (PLONOR). Total mass of drill cuttings and drill fluids discharged to sea is shown in Figure 21 containing a total of 0.03 tonnes of Oil.

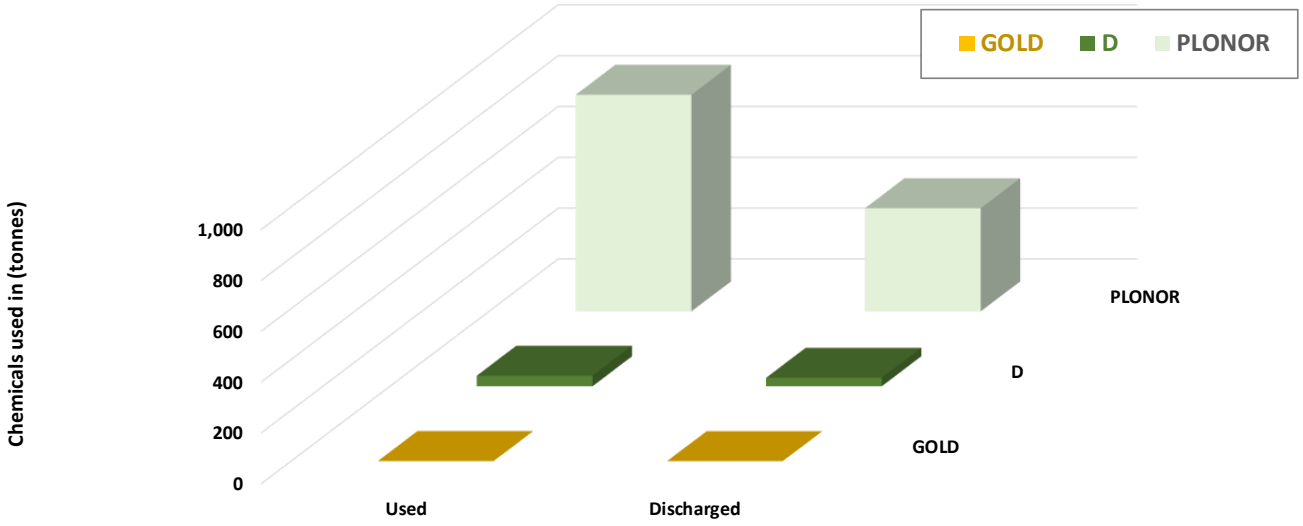


Figure 21:

2023 Chemical use and discharge from drilling of 42/15a Crosgan appraisal well

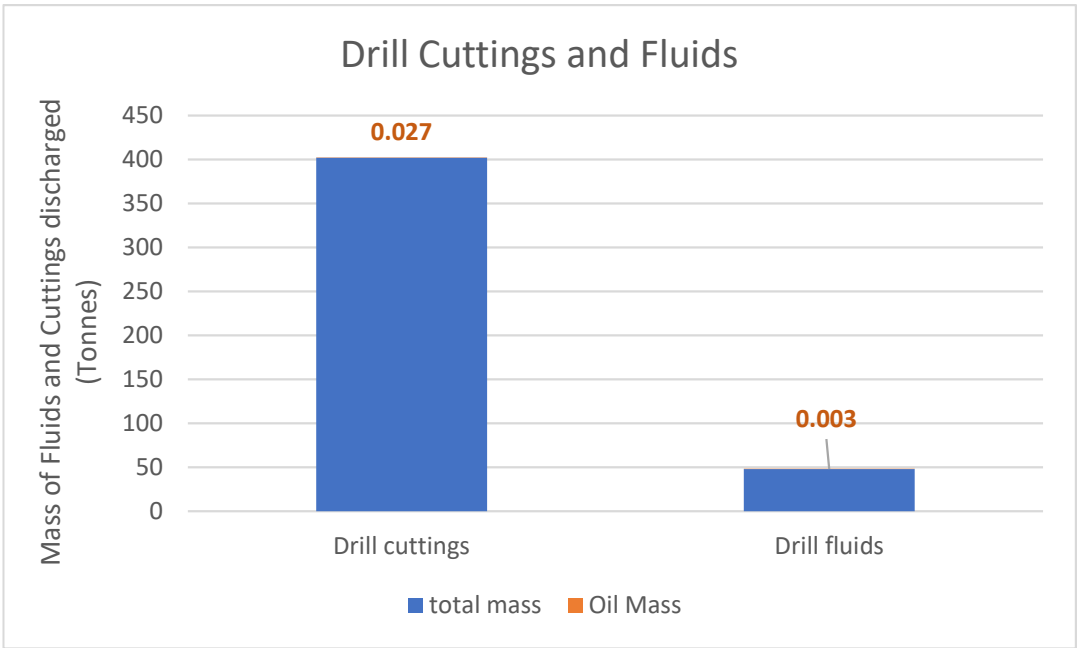


Figure 22:

2023 Drill cuttings and drill fluids discharged from drilling of 42/15a Crosgan appraisal well

16 Drilling Emissions

Air emissions reported on EEMS from drilling the Crosgan 42/15a appraisal well are shown in figure 22. The majority is Carbon Dioxide from consumption of diesel in the Valaris 123 and from the flaring of well test fluids.

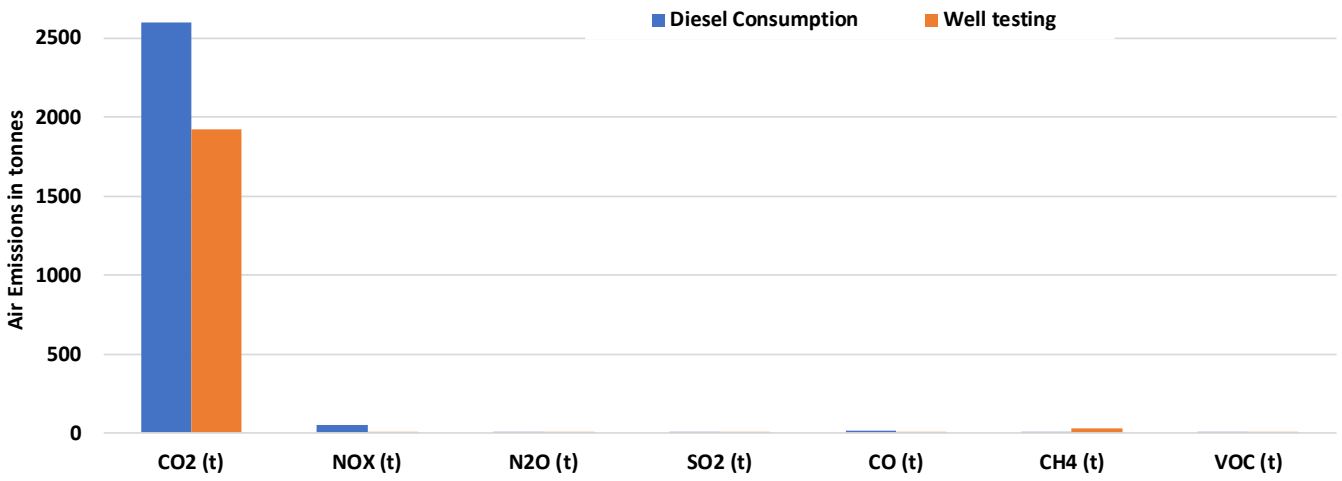


Figure 23:
2023 Emissions to air from drilling of 42/15a Crosgan appraisal well

Figure 24:
2023 42/15a Crosgan appraisal well Drilling operations

ONE-Dyas has developed the environmental objectives below for 2024

→ Report 2023 methane data OGMP 2.0 - develop improvement plan and intensity target

→ Investigate and implement possible measurement techniques to increase methane reporting tiers

→ Implement methane reduction techniques within asset timescales

→ Implement identified feasible energy savings opportunities

→ Complete environmental awareness training and development for Environmental Reps

→ Continued implementation of the seabird management programme and participation in research opportunities

→ Plan and implement monitoring of scope 1, 2 and 3 emissions from Romeo well Plug and Abandonment (P&A) activities

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