



CNOOC Petroleum
Europe Limited
**Environmental
Statement 2018**

Environmental Statement 2018

Foreword

Energy for All



It is my pleasure to present to you CNOOC Petroleum Europe Limited's (CNOOC) 2018 Environmental Statement.

We are committed to minimising our impact on the environment and recognise that protecting the environment is integral to the Company's sustainable growth.

Included in this Environmental Statement is:

- A description of the facilities operated by CNOOC and the activities carried out in 2018
- A summary of our Environmental Management System
- Environmental emissions and discharges figures from our 2018 operations
- CNOOC's 2018 objectives and their progress
- A brief overview of our key 2019 objectives

2018 has been a busy and challenging year in terms of the number of PON1 releases reported; and many initiatives have been delivered to focus on improving our impact on the environment:

- Offshore Representatives led PON1 awareness workshops
- Identification of priority environmental hazard control plant and equipment within the maintenance management system
- Successful delivery of 23 Environmental Documents/ Procedures
- Completion of CNOOC's scheduled SoSREP Exercise and support to the Department for Business, Energy and Industrial Strategy (BEIS) National Exercise

These achievements were only possible due to the hard work, commitment and engagement of our workforce at CNOOC, who consistently strive to **Be the Best** and **Win Together**.

2018 has been a successful year with many milestones being achieved:

- Buzzard reached 700 million barrels and celebrated a safety milestone of 2 years Lost Time Incident (LTI) free
- Golden Eagle celebrated being LTI free for its full operational life during which over 85 million barrels of oil equivalent has been produced
- Scott reached 25 years of production
- The Glengorm field was successfully drilled as the largest UK North Sea discovery since 2008

In addition, 14th January 2019 marked an exciting milestone for our organisation: the Nexen Energy subsidiary officially integrated into the CNOOC International team and brand.

CNOOC strives to be a leading force for clean and green energy development and recognises the importance of caring for the environment. Looking forward into 2019, CNOOC is committed to reduce the number and volume of spills through further environmental improvement activities and enforcing challenging environmental targets in key performance indicators.

I hope that you will find this Environmental Statement both informative and indicative of the continued commitment that CNOOC has to minimising our footprint on the North Sea Environment.

Ray Riddoch

Managing Director UK & Sr. VP Europe and Africa

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Introduction

Energy for All

CNOOC Petroleum Europe Limited, which will be referred to as 'CNOOC' in this document, is a wholly-owned subsidiary of CNOOC Limited (CL). CL is the largest producer of offshore crude oil and natural gas in China and one of the largest independent oil and gas exploration and production companies in the world. CL mainly engages in exploration, development, production and sale of crude oil and natural gas. The Company's core operation areas are Bohai, Western South China Sea, Eastern South China Sea and East China Sea in offshore China. Overseas, CL has oil and gas assets in Asia, Africa, North America, South America, Oceania and Europe. Throughout this statement CNOOC refers to UK operations only.

CNOOC is one of the largest producers of oil and gas in the UK North Sea, contributing more than 25% of the UK's oil production, and 10% of the country's energy needs. CNOOC is the operator of three production platforms, including the Buzzard, Golden Eagle and Scott installations. We are actively exploring in the Central North Sea and West of Shetland, and our UK operations support exploration activity in Ireland and Africa.



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**Health, Safety,
Environment &
Social Responsibility**

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Our commitment to

Health, Environment, Safety & Social Responsibility



This Policy Commitment underpins the requirements outlined in the Corporate Policy Framework and applies to all activities carried out by and under the control of CNOOC Petroleum Europe Limited, its branches and subsidiaries (CPEL).

Within CPEL, the Board of Directors owns and takes responsibility for our overall HSE&SR performance working with our executive leadership and functional teams. We believe that management and staff commitment to HSE&SR is essential to ensuring a healthy, safe and environmentally acceptable operating environment.

We see our people are our most important asset and we will not compromise our HSE&SR standards to achieve other corporate goals, in so far as it is reasonably practicable. As such, we value the experience, professionalism and integrity of our workforce, and the commitment, leadership and accountability of all personnel for our HSE&SR performance.

We integrate HSE&SR planning and management into our day-to-day activities, defining individual responsibilities, authority and accountability. By providing adequate control of HS&E risks arising from our work activities, we strive to prevent accidents, injuries and cases of work related ill health, damage to equipment and the environment.

We meet all applicable regulatory requirements, as well as other compliance requirements to which we subscribe, and strive to deliver continuous improvement in our HSE&SR performance.

Occupational Health and Personal Safety

CPEL consult with our people on matters affecting their health and safety working conditions, plant and equipment, and provide appropriate HSE&SR information, instruction, training and supervision to employees and contractors.

We strive to optimise the safety of all our worksites by contracting those contractors who can demonstrate that they have suitable HS&E performance and management systems in place.

In addition, we ensure that emergency response capability is in place and periodically test for all our operations and facilities.

We ensure all workers are competent to carry out their tasks, in so far as they can impact on the health and safety of themselves and those around them, or the environment.

CPEL maintains safe and healthy working conditions, by providing and maintaining safe plant and equipment, and ensuring that the use and handling of substances is carried out safely.

Process Safety

CPEL applies the principles of Process Safety Management to maintain the integrity of our operations.

We ensure that risks associated with major accident hazards, arising out of our offshore operations, are identified and controlled.

Environmental Management

CPEL is committed to integrating responsible environmental management into all aspects of its operations.

Our EMS provides the framework for setting and reviewing environmental targets and objectives, and the process by which the EMS is documented, implemented and maintained. Our actions will support the prevention of pollution and the reduction of waste generation.

Social Responsibility

We are committed to behaving ethically and contributing to economic development while improving the quality of life of the workforce and their families as well as the local community within the sphere of our activities.

At regular intervals the Board of Directors reviews and revises this policy, as necessary. The Directors of the company each individually and collectively share the commitment and will seek to act as Directors in accordance with the above principles.



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Ray Riddoch
Managing Director UK
& Sr. VP Europe and Africa



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Asset Information

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Production Operations

Scott

FACT

Scott celebrated 25 years of production in 2018



Location	188 kilometres north east of Aberdeen
Block Number	Block 15/22
Discovery Date	The Scott field was discovered in 1987 and came on stream in 1993.
Water Depth	142 metres
Tie Back	Telford and Rochelle fields
Infrastructure	The Scott installation consists of two steel jackets, the Drilling/Production (DP) platform and the Utilities Quarters (UQ) platform linked by two bridges.
Export	Oil is exported via a subsea pipeline into the Ineos operated Forties Pipeline System (FPS) to the Kinneil reception terminal on the Firth of Forth. Gas is exported via the Apache operated Scottish Area Gas Evacuation (SAGE) system to St Fergus in north-east Scotland.

Buzzard

FACT

Buzzard commenced a major infill drilling campaign in 2018



Location	55 kilometres north east of Aberdeen
Block Number	Block 20/06a
Discovery Date	The Buzzard field was discovered in May 2001 and came on stream in January 2007
Water Depth	96 metres
Tie Back	N/A
Infrastructure	The Buzzard installation consists of four platforms (Wellhead, Production, H2S sweetening and UQ) supported by steel jackets which are interconnected by three bridges
Export	Oil is exported from the Buzzard installation via a subsea pipeline into the Ineos operated FPS to the Kinneil reception terminal on the Firth of Forth. Gas is exported via the Frigg system to St Fergus in north-east Scotland.

Golden Eagle

FACT

Golden Eagle drilled, completed and produced from FPB



Location 66 kilometres north east of Aberdeen

Block Number Block 20/1S

Discovery Date The Golden Eagle and Peregrine fields were discovered 2007-2009. First oil was produced in late October 2014

Water Depth 104 metres

Tie Back Solitaire and Peregrine

Infrastructure The Golden Eagle Field consists of two subsea drilling centre manifolds (Northern and Southern), tied-back to two installed bridge-linked platforms (GEAD platform complex)

Export Oil and gas from the development is processed at the GEAD platform complex, with gas exported to the SAGE export line via the Ettrick pipeline end manifold (PLEM), and oil exported to the Flotta Terminal via a tie-in at the Claymore field.

Ettrick Field



Location 120 kilometres north east of Aberdeen

Block Number Blocks 20/2a & 20/3a

Discovery Date The Ettrick Field was discovered in 1981 and came on-stream in July 2009. Cessation of Production (COP) and Decommissioning commenced in June 2016. Plug and abandonment operations commenced in 2018

Water Depth 115 metres

Tie Back Blackbird Development

Infrastructure N/A

Export N/A

Drilling Operations

Stena Spey



Rig Name	Stena Spey
Type	Semi-Submersible
Wells Drilled in 2018	<ul style="list-style-type: none"> ■ Golden Eagle FPB (S2) ■ Peregrine Field, 20/01-S2

COSL Pioneer



Rig Name	COSL Pioneer
Type	Semi-Submersible
Wells Drilled in 2018	<ul style="list-style-type: none"> ■ Plug and Abandonment Ettrick and Blackbird Field, 20/02a-8, 20/92a-E1

Maersk Innovator



Rig Name	Maersk Innovator
Type	Jack-Up
Wells Drilled in 2018	<ul style="list-style-type: none"> ■ Buzzard Field, 20/06a- CP40

Prospector 5



Rig Name	Prospector 5
Type	Jack-Up
Wells Drilled in 2018	<ul style="list-style-type: none"> ■ Glengorm II, 22/21c-M

Interventions

Well Enhancer



Rig Name	Well Enhancer
Type	Vessel
Wells Drilled in 2018	<ul style="list-style-type: none"> ■ Golden Eagle 14/26a-N1 and 14/26a-N2 ■ Buzzard Subsea Intervention – C8

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Environmental Programmes

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Environmental Management System

CNOOC has implemented an Environmental Management System (EMS) aligned with the requirements of ISO 14001:2015. The EMS is independently verified in line with the requirements of the Oslo/Paris Convention (OSPAR) Recommendation 2003/5, to promote the use and implementation of Environmental Management Systems on the UKCS.

An OSPAR verification statement with zero comments was reported to the Department for Business, Energy and Industrial Strategy (BEIS) in 2017. The next EMS OSPAR verification is scheduled for May 2019.

Environment Representatives (E-REP)

CNOOC E-Reps continue to provide valuable support in offshore workforce engagement during various activities and initiatives, including;

- Roll out of procedures and environmental initiatives
- Reduction of waste
- Spill reduction and environmental hazard identification programs
- Area inspections
- Supporting environmental audits and regulatory inspections

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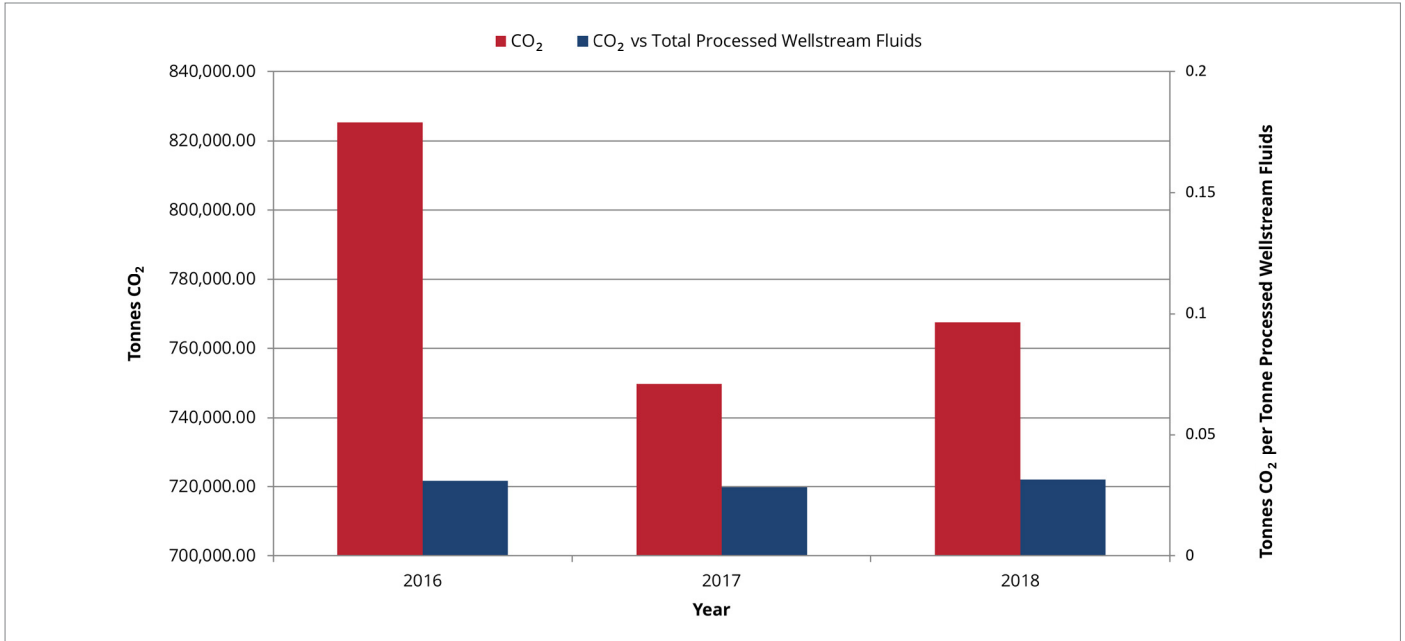
Atmospheric Emissions

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Production CO₂ Emissions

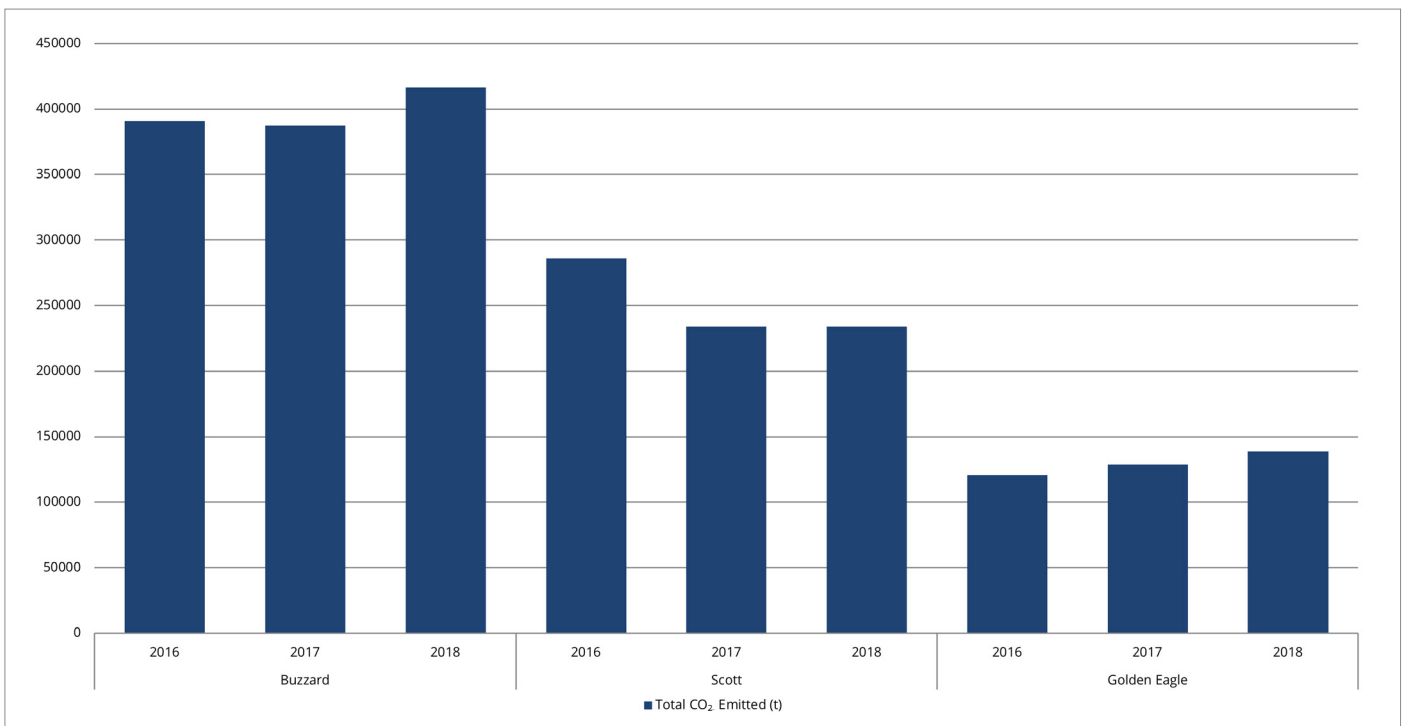
The chart below shows an increase in combined CO₂ emissions from 749,612 tonnes in 2017 to 767,511 tonnes in 2018. This 2% increase can be attributed to elevated flaring particularly on Buzzard due to an export gas outage for pipeline maintenance.

CO₂ Emissions from Production Activities



Individual Installation CO₂ Emissions

The chart below shows individual installation performance on CO₂ emissions in 2018. Scott's gross emission rates for 2017 and 2018 are very similar; this is due to lower flare and diesel use in 2018 vs higher fuel gas. Water injection was lower in 2018 due to technical issues, however this was offset by the power demands of higher production uptime. The increase in CO₂ emissions for Golden Eagle can be attributed to the steady increase in fuel gas utilisation, which is due to an increased water injection power requirement. Buzzard, as noted above, experienced elevated flaring in June 2018 due to an export gas outage to facilitate pipeline operator maintenance; the majority of the excess gas was re-injected to be produced again at a later date.



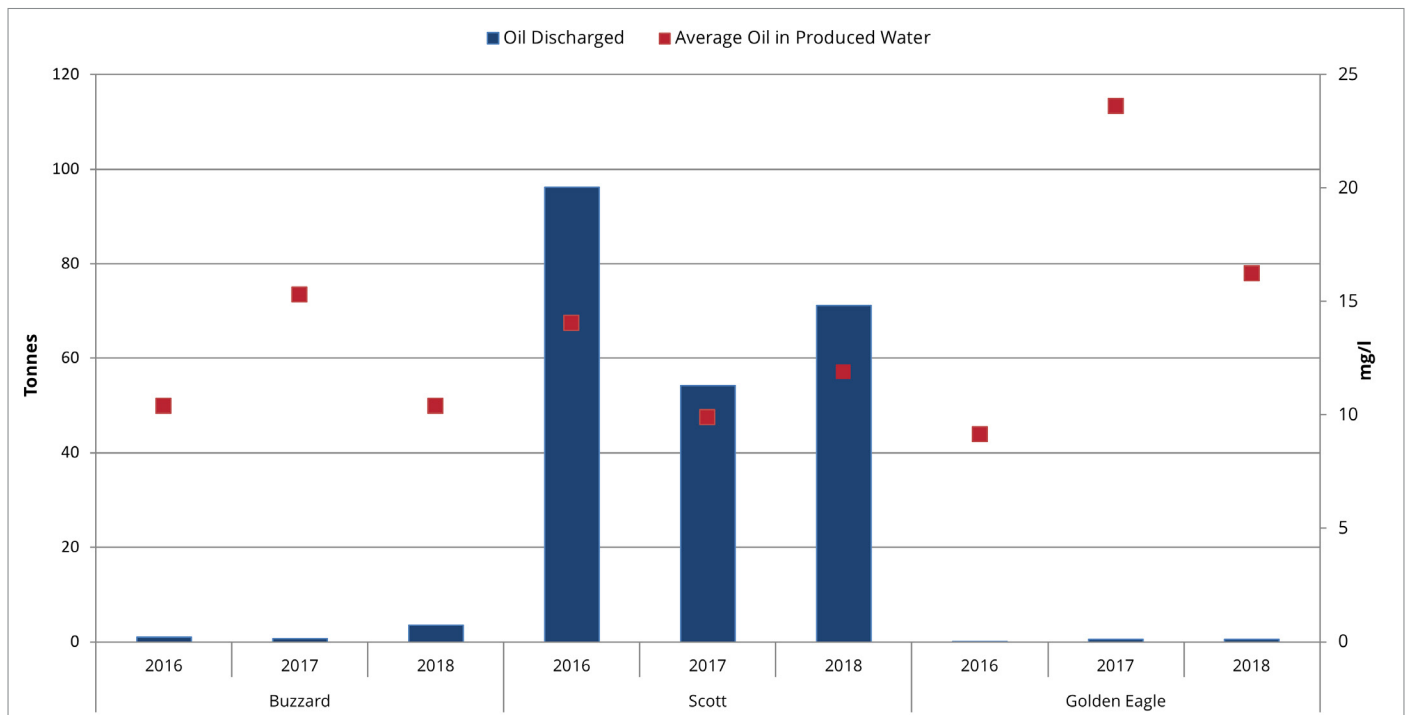
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Oil in Produced Water Discharge

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The mass of oil discharged increased from 55 tonnes in 2017 to 75 tonnes in 2018. This increase can be attributed to the increase in production efficiency (uptime) on Scott compared to 2017 hence an increase in produced water/oil discharged. There was a decrease in average oil in produced water on Golden Eagle which is due to improvements in the water handling process equipment and optimisation of the demulsifier. Produced water volumes for Buzzard and Golden Eagle increased as produced water rates from the wells have increased significantly due to water cuts increasing. This is the anticipated reservoir behaviour as the field moves on from the early life stage. Therefore, any time there is a trip of water injection resulting in a requirement to overboard produced water, there will be a greater volume discharged for a given time.

Produced water re-injection is an important process as it helps improve production and reduces overboard discharge of oil and chemicals in produced water. This is especially noticeable on Buzzard and Golden Eagle where produced water re-injection uptime is high resulting in very low produced water discharges. The Scott platform does not have produced water re-injection capability.



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Chemicals

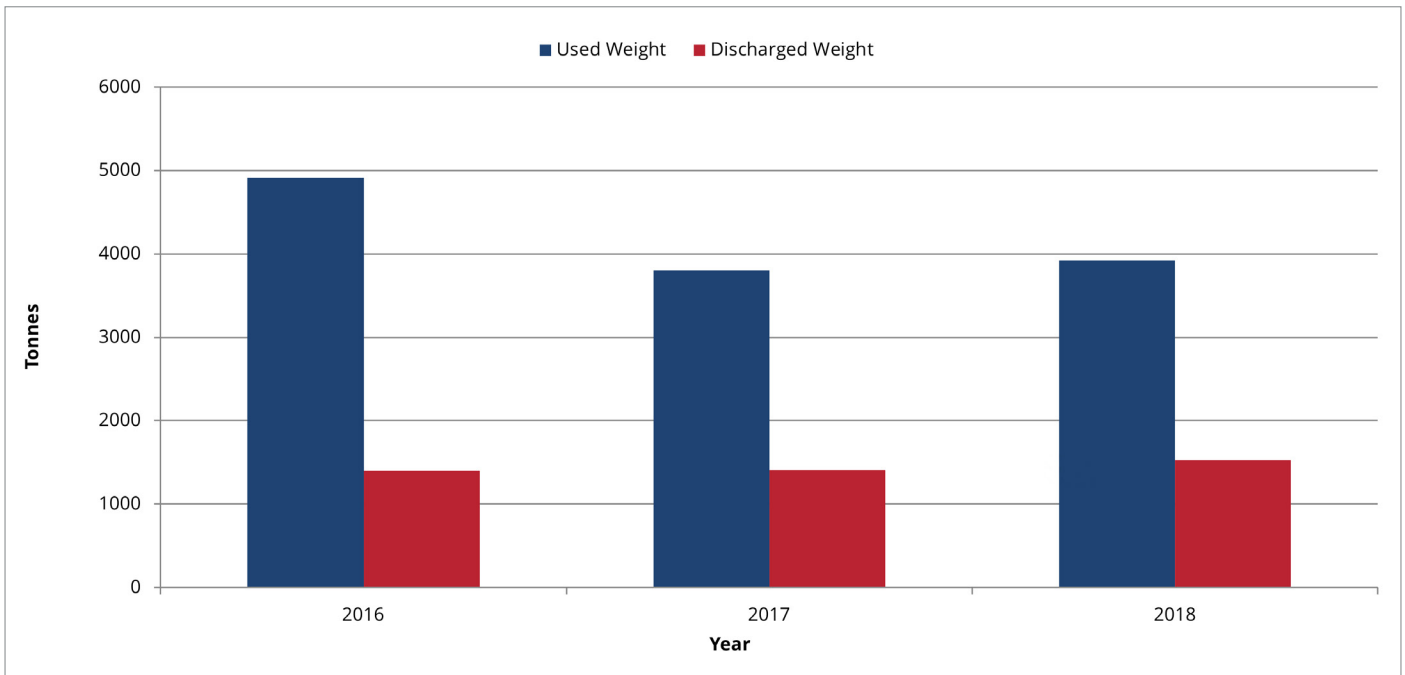
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Production Chemicals

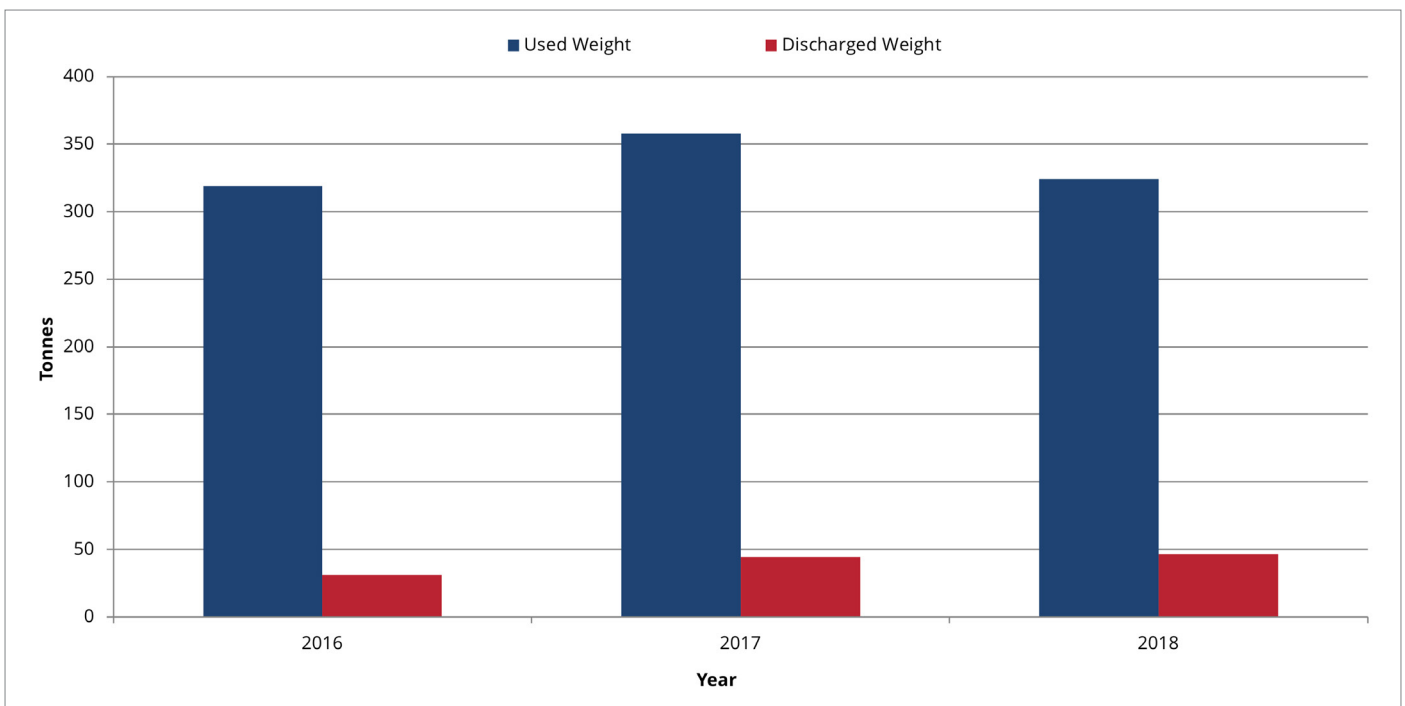
During 2018, there was a small increase in chemicals being used and discharged compared to 2017, this is due to the increased volume of produced water discharge.

Usage of production chemicals with substitution (SUB) warnings has decreased with the total usage in 2017 being 358 tonnes compared to 324 tonnes in 2018. Discharge of substitution warning carrying chemicals was consistent for 2017 and 2018. The vast majority of 'sub warning' chemicals used on CNOOC installations are dosed downstream of the last stage of separation (e.g. export Corrosion Inhibitors). This means there is no associated discharge of chemicals.

Production Chemical Usage



Production Chemical Usage with Substitution Warnings

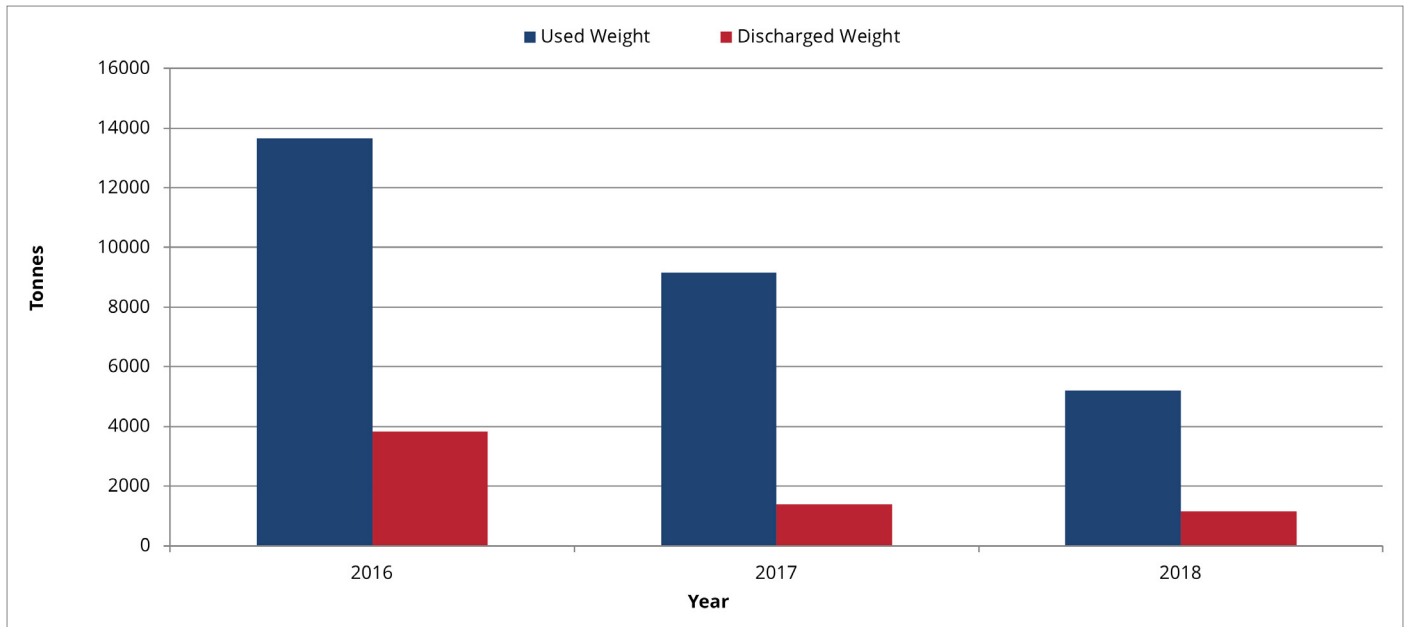


Drilling – Including Well Intervention Chemicals

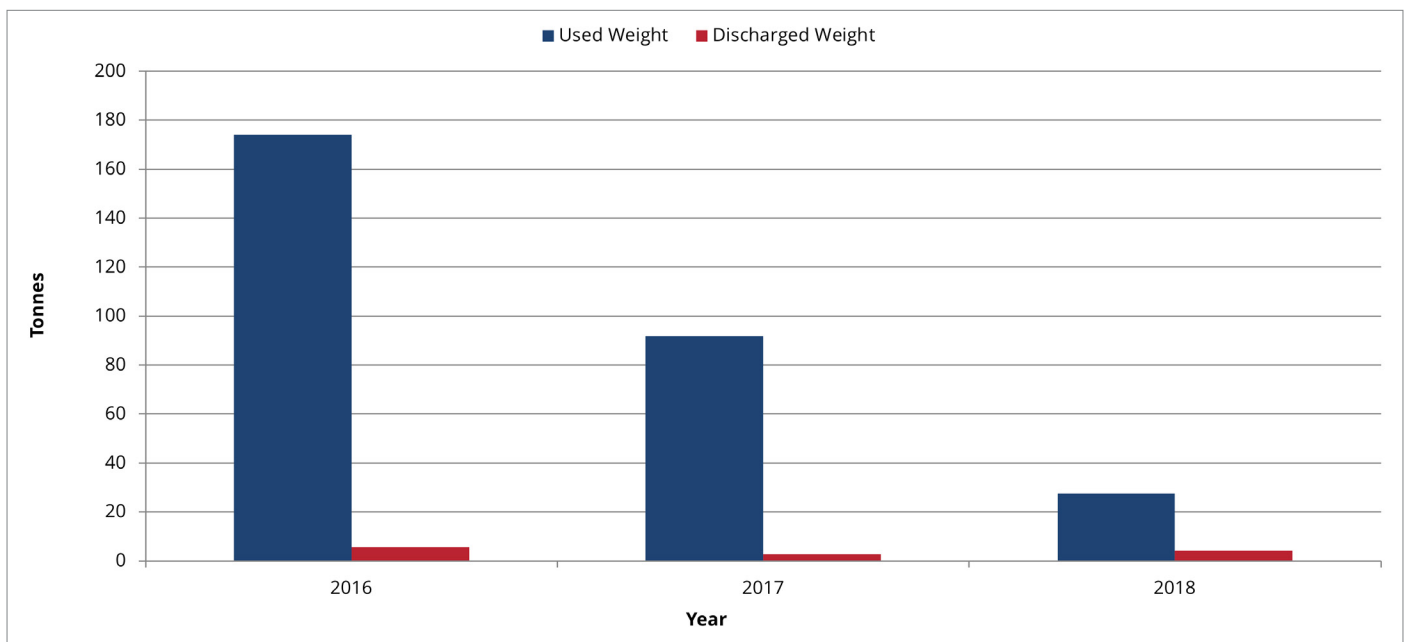
Chemical usage decreased from 9151 tonnes in 2017 to 5210 tonnes in 2018. The decrease in usage and discharge of chemicals is attributed to the collaboration between CNOOC and our vendors in our commitment to protecting the environment.

The use of SUB labelled chemicals for drilling also decreased from 92 tonnes in 2017 to 27 tonnes in 2018. Overall discharge of chemicals with sub warnings increased slightly from 3 tonnes in 2017 to 4 tonnes in 2018.

Drilling Chemical Usage



Drilling Chemicals Usage with Substitution Warning

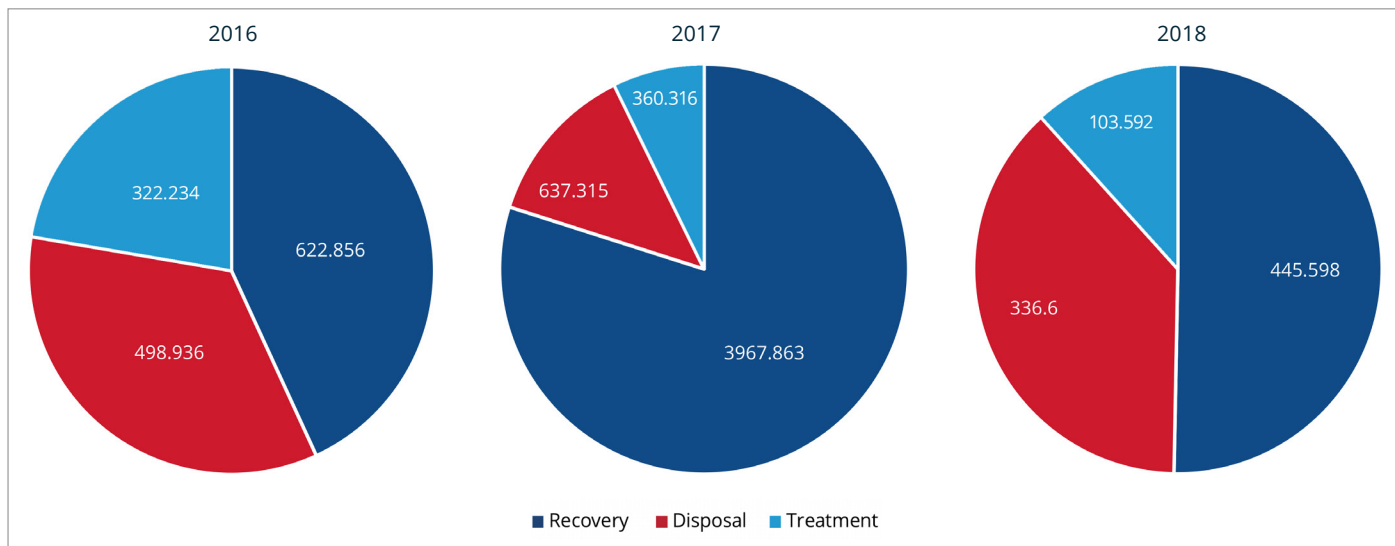


Waste

Production Waste

In 2018 circa. 970 tonnes of waste was generated across all installations and the Etrick Blackbird decommissioning programme. This figure represents a decrease of 4000 tonnes compared to the cross-installation total of 4965 tonnes in 2017. The substantial decrease in waste recovered can be largely attributed to the removal of subsea infrastructures during the Etrick Blackbird decommissioning which generated a high volume of waste in 2017. The significant reduction in waste sent for treatment in 2018 compared to 2017 is due to a reduction in slops generated by Scott Platform drilling in 2018.

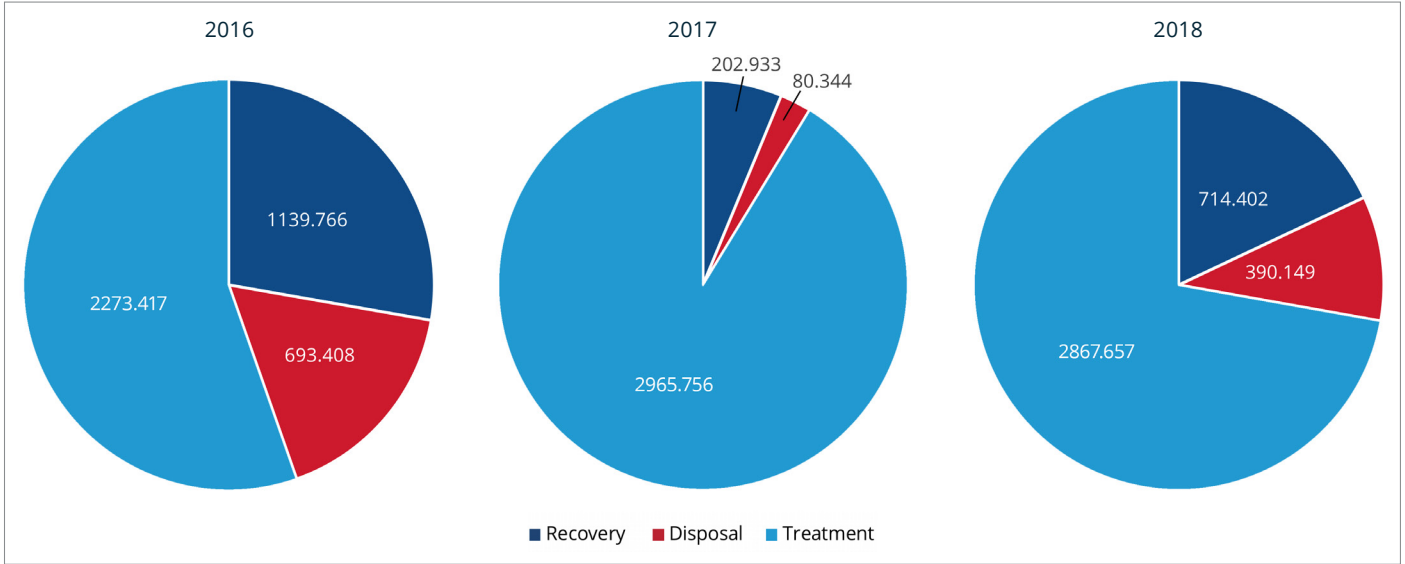
Production Waste Disposal Routes – By Year



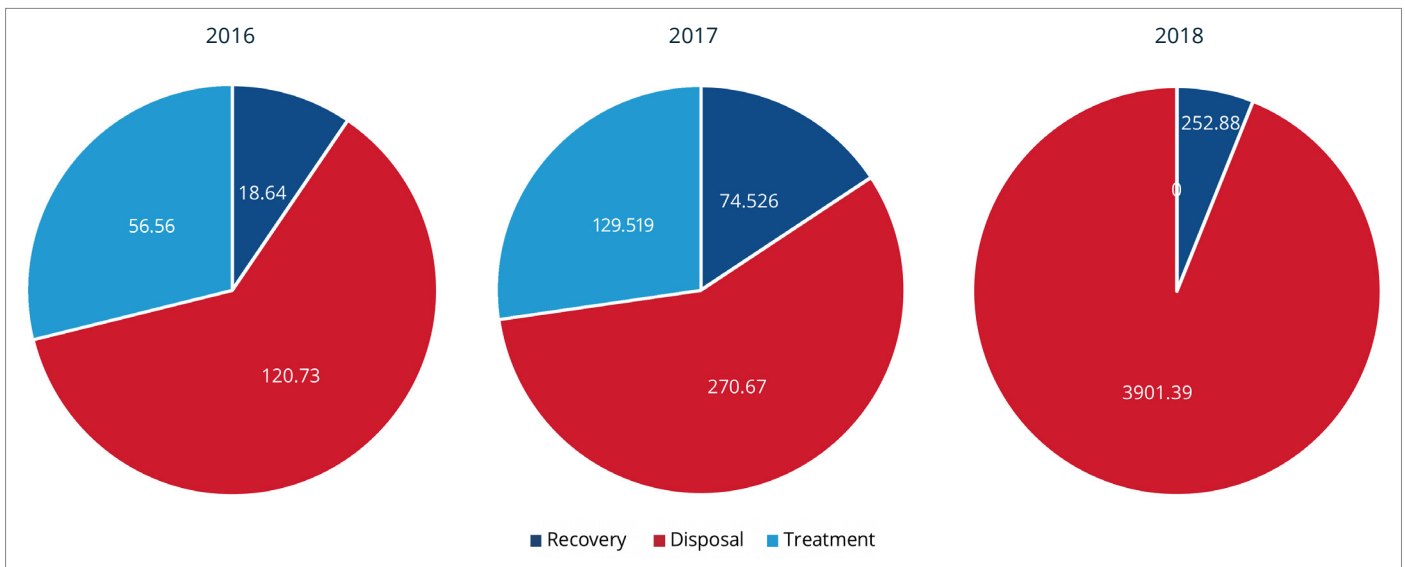
Drilling Waste

Drilling waste generated (excluding cuttings) in 2018 was circa. 3972 tonnes. This is an increase of approximately 723 tonnes compared to waste generated during drilling activities in 2017. The increase in the drilling waste that has been sent for disposal, from 80 tonnes in 2017 to 390 tonnes in 2018, is due to the increase in drilling activities. The significant increase from 200 tonnes to 714 tonnes for waste sent for recovery is due to the high volume of waste generated during the Ettrick Plug and Abandonment operations using the COSL Pioneer rig. The waste for Plug and Abandonment activities was sent for waste to energy disposal.

Drilling Waste Generated (Excluding Cuttings)



Drill Cuttings Waste Generated



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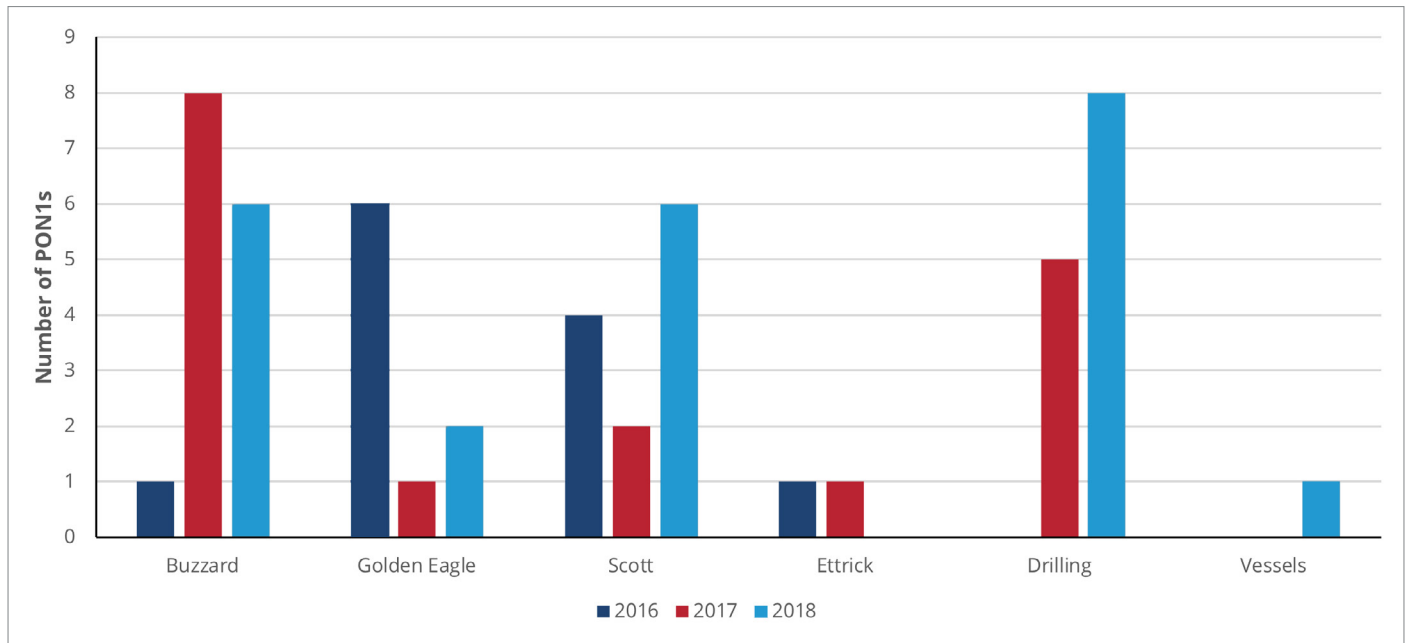
Legal Compliance

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2018 Unplanned Releases

During 2018, there were 23 unplanned releases, an increase from 17 unplanned releases in 2017. 14 of the releases in 2018 were from production platform operations. The total increase in spills can be attributed to the increase in operations and drilling activities.

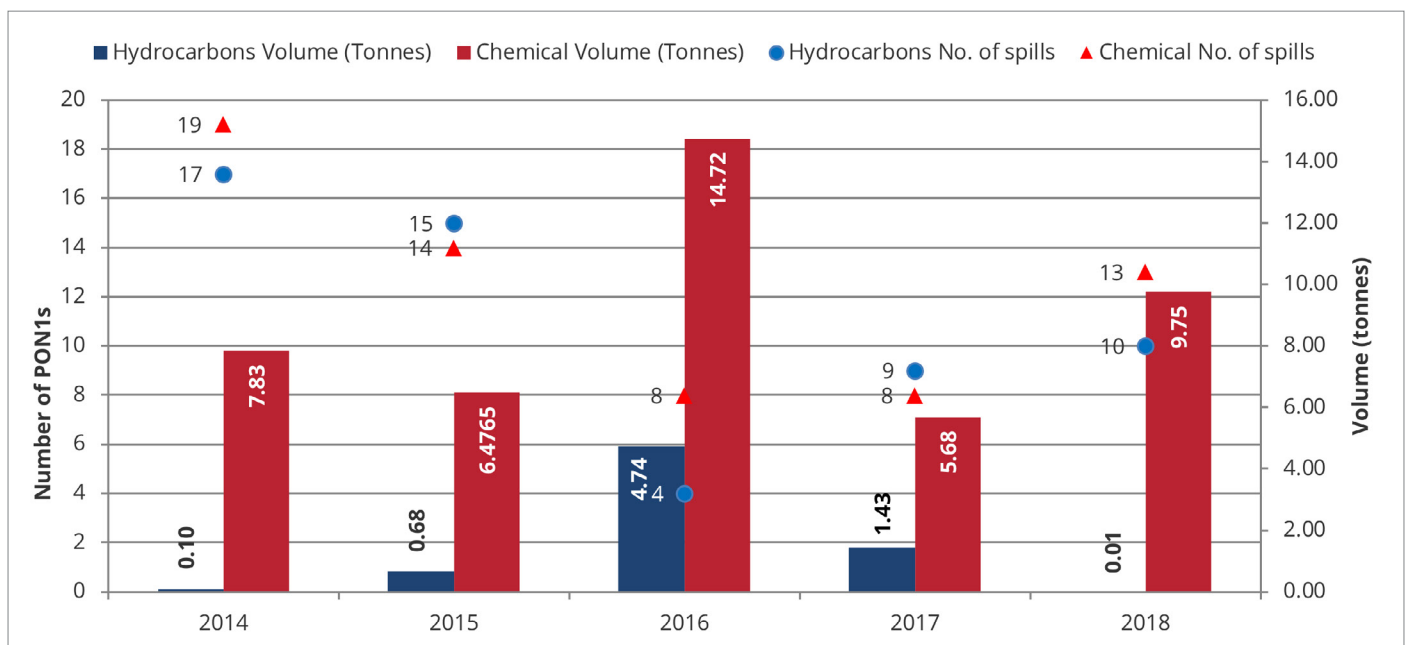
Individual Installations - PON1 Summary



A total of 10 releases resulted in 0.00572 tonnes of oil being released to sea, a substantial decrease compared to previous years.

The remaining 13 releases resulted in 9.748 tonnes of chemicals being released to sea. A single spill caused by a Telford water injection pipeline leak accounted for 6.695 tonnes of the total.

PON1 Summary 2014-2018



2018 Regulatory Non-Compliances

In addition to CNOOC reporting unplanned oil and chemical spills associated with offshore activities, CNOOC is also required to submit a notification to the Regulator in the event of a non-compliance with the current legislative regime.

	OCR (Offshore Chemical Regulations) Non Compliance	OPPC (Oil Pollution Prevention and Control) Non Compliance	EIA (Environmental Impact Assessment) Non Compliance	Discharge Pending Analysis	EUETS	IPPC	PPC	Pending Reply from SEPA
Scott		2						
Buzzard	1	2						
Ettrick								
Golden Eagle		2						
Drilling Rigs								
Vessels			3					

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Environmental Objectives

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Environmental Objectives 2018

2018 Objective	Programme	Performance
Ettrick Blackbird Decommissioning	Support the Ettrick Decommissioning team throughout the 2018 Plug and Abandonment program and future decommissioning work scopes.	Delivery of all permits and consents for operations to take place. Environmental inspections conducted before and during operations.
Spill Reduction & Prevention	Spill reduction and prevention through communication and actioning lessons learned from previous events and focus on high spill risk activities, equipment and contractors.	PON 1 workshops held offshore and onshore for production operations to identify opportunities for improvement. Energy Institute Spills video rolled out across operations. Business critical equipment which are environmental barriers were identified within the maintenance management system for visibility and appropriate prioritisation. Hose Management and Inspection awareness campaign communicated during Health, Safety and Environment (HSE) meetings offshore and Hydrocarbon Release Prevention (HRP) workgroups.
Compliance	Maintenance and improvement in compliance to minimise the risk of non-compliances through review and implementation of new Regulatory and industry guidance, workforce involvement and offshore compliance checks.	Roll out of Environmental Compliance handbooks to the drilling rigs has resulted in better awareness and environmental observations submitted. Review and comment on multiple Regulatory consultations during 2018. Communication of new Regulatory guidance and integration into CNOOC procedures. Update and roll out of Oil Pollution Prevention and Control (OPPC) and Offshore Chemicals Regulations compliance procedures and chemical management work instructions. Support to offshore workforce in completion of worksite inspection checklists and completion of environmental compliance inspections on each platform.
EU ETS and LCP/ PPC Compliance	Successful delivery of European Union Emissions Trading System (EU ETS) and Large Combustion Plant/ Pollution Prevention and Control (LCP/ PPC) compliance activities ahead of regulatory deadlines.	EU ETS verification successfully delivered. LCP/PPC emissions sampling and reporting completed in full on time for Golden Eagle and Buzzard.

Environmental Objectives 2019

2019 Objective	Programme
Well delivery process development and support including environmental support to Buzzard Phase II (BPII) and New Country Entry	Support to well delivery process improvement activities. Environmental support to the BPII team throughout the 2019 drilling program and Ireland and Senegal new country entries.
Spill Reduction & Prevention	Spill reduction and prevention through communication and actioning lessons learned from previous events and focusing on high spill risk activities, equipment and contractors. PON1 focused awareness campaign to be rolled out.
2019 Emissions Compliance	Successful delivery of annual EU ETS verification, 2019 National Implementation Measures (NIMs) submission, Energy Savings Opportunity Scheme (ESOS) updates and Scott LCP/PPC compliance activities ahead of regulatory deadlines.
EMS OSPAR Verification	Preparation and delivery of the EMS verification including offshore visit and post verification management of opportunities for improvement.

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