

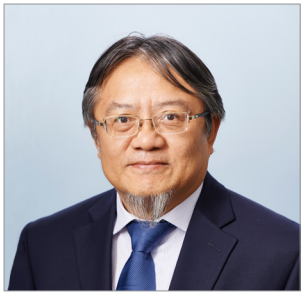



CNOOC Petroleum Europe Limited

Environmental Statement 2021

Foreword

Energy for All



It is my pleasure to present to you CNOOC Petroleum Europe Limited's (CNOOC) 2021 Environmental Statement.

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

Included in this Environmental Statement is:

- A description of the facilities operated by CNOOC and the activities carried out in 2021
- A summary of our Environmental Management System (EMS)
- Environmental emissions and discharges figures from our 2021 operations
- CNOOC's 2021 objectives and their progress
- A brief overview of our key 2022 objectives

Despite the challenges faced due to the global pandemic, 2021 has been a busy year with a continued emphasis on developing initiatives that will focus on improving our impact on the environment:

- Completion of chemical tank risk assessments and issuing of reports and recommendations
- Scott and Buzzard RBA management plans accepted and implemented
- Produced water performance improvements works conducted during platform turnarounds (TARs)
- Flare and vent studies completed
- Asset based greenhouse gas (GHG) Emissions Reduction Action Plan workshops
- E-Rep's National Examination Board in Occupational Safety and Health (NEBOSH) environmental awareness training
- Zero waste to landfill campaign delivering many months of zero waste success
- Successful review, update and production of 30 Environmental Documents and procedures

These improvements 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.**

2021 has also been a successful year with many milestones being achieved:

- The lowest number of PON1 reports for the organisation
- Golden Eagle celebrated 3 years PON1 free and CNOOC reached 1-year LTI free
- The Buzzard field passed the 800 million barrel of oil equivalent (BOE) production milestone in September 2021
- All three assets executed extended TARs with no spill or non-compliance events
- The Golden Eagle infill project completed the final milestone with first oil from the final well in the campaign
- The Buzzard Phase II (BPII) topside's module was safely and successfully installed on Buzzard, marking a key milestone in the BPII first oil
- On 21 November 2021, first oil was safely delivered from the BPII development
- 9 E-Reps passed NEBOSH Environmental Awareness Course

CNOOC strives to be a leading force for best in class energy development and recognises the importance of caring for the environment. Looking forward into 2022, CNOOC is committed to progressing our Net Zero ambitions, further reducing the number and volume of spills, and achieving 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 UK Continental Shelf.

Jiang Qing
Managing Director, UK

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Energy for All

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.

CNOOC Limited (the 'Company' or 'CNOOC Limited', together with its subsidiaries, the 'Group'), incorporated in the Hong Kong Special Administration Region in August 1999, was listed on the New York Stock Exchange (code: CEO) and The Stock Exchange of Hong Kong Limited (code: 00883) on 27 and 28 February 2001, respectively. The Company was admitted as a constituent stock of the Hang Seng Index in July 2001. The Company's American Depositary Receipts were listed on the Toronto Stock Exchange (code: CNU) on 18 September 2013.

The CNOOC Group 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. The Group mainly engages in exploration, development, production and sale of crude oil and natural gas.

Throughout this statement CNOOC refers to UK operations only.

CNOOC is a leading upstream business in the UK North Sea and operator of the Buzzard, Golden Eagle, and Scott assets. Our strategy is to maximize the value of our UK portfolio and create new opportunities for safe and sustainable growth. We are committed to delivering on the North Sea Transition Deal emissions reduction targets and being a Net Zero energy business in the UK by 2050.

Environmental Management System

CNOOC has implemented an Environmental Management System ('EMS') aligned with 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 Offshore Petroleum Regulator for Environment and Decommissioning ('OPRED') in May 2021. The next EMS OSPAR verification is scheduled for April 2023.

Environment Representatives (E-Reps)

CNOOC E-Reps continue to provide valuable support to offshore workforce engagement during various activities including:

- Roll out of procedures and environmental initiatives
- Reduction of waste, including the 'Zero Waste to Landfill' Initiative
- Spill reduction, OPEP awareness drills and environmental hazard identification programs
- Area inspections
- Supporting environmental audits and inspections
- Identification and trialling of new environmental training options

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Health, Safety, Environment & Social Responsibility

The HSE&SR Policy shown below, details the beliefs, values and principles governing the management of HSE&SR within CNOOC.

Energy for All

ECN-HS-POL-00065
Revision 11.0, February 2022

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 to 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.

Energy and Emissions Management

CPEL measures, monitors and controls our energy consuming and emissions producing practices with the aim of creating a net reduction in greenhouse gas emissions in contribution to a lower carbon economy.

Our Net Zero business plan aligns with CNOOC's principles of green development to enable a low carbon energy future and achieve emissions neutrality by 2050.

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.

Jiang Qing
Managing Director UK

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Asset Information

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Production Operations

Scott

FACT The Scott asset commenced production in 1993.

Location	141 kilometres north-east of Rattray Head, Peterhead
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 Backs	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 Wood operated Scottish Area Gas Evacuation (SAGE) system to St Fergus in north-east Scotland

Buzzard

FACT Buzzard achieved 5 years hydrocarbon release free in January 2022.

Location	55 kilometres north-east of Rattray Head, Peterhead
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 Backs	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 has an exceptional safety record spanning over 7 years LTI free.

Location	65 kilometres north-east of Rattray Head, Peterhead
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 Backs	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, and oil exported to the Flotta Terminal via a tie-in at the Claymore field

Drilling Operations

Noble Sam Hartley

Rig Name	Noble Sam Hartley
Type	Jack-Up
Wells Drilled in 2021	■ 20/01-G18 (BPG) ■ 20/01-G19 (CPE)

Borr Prospector 5

Rig Name	Borr Prospector 5
Type	Jack-Up
Wells Drilled in 2021	■ 22/26d-3, Glengorm South ■ 22/21c-14, Glengorm Central

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Atmospheric Emissions

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Production GHG Emissions as CO_2 equivalent ('CO_2e')

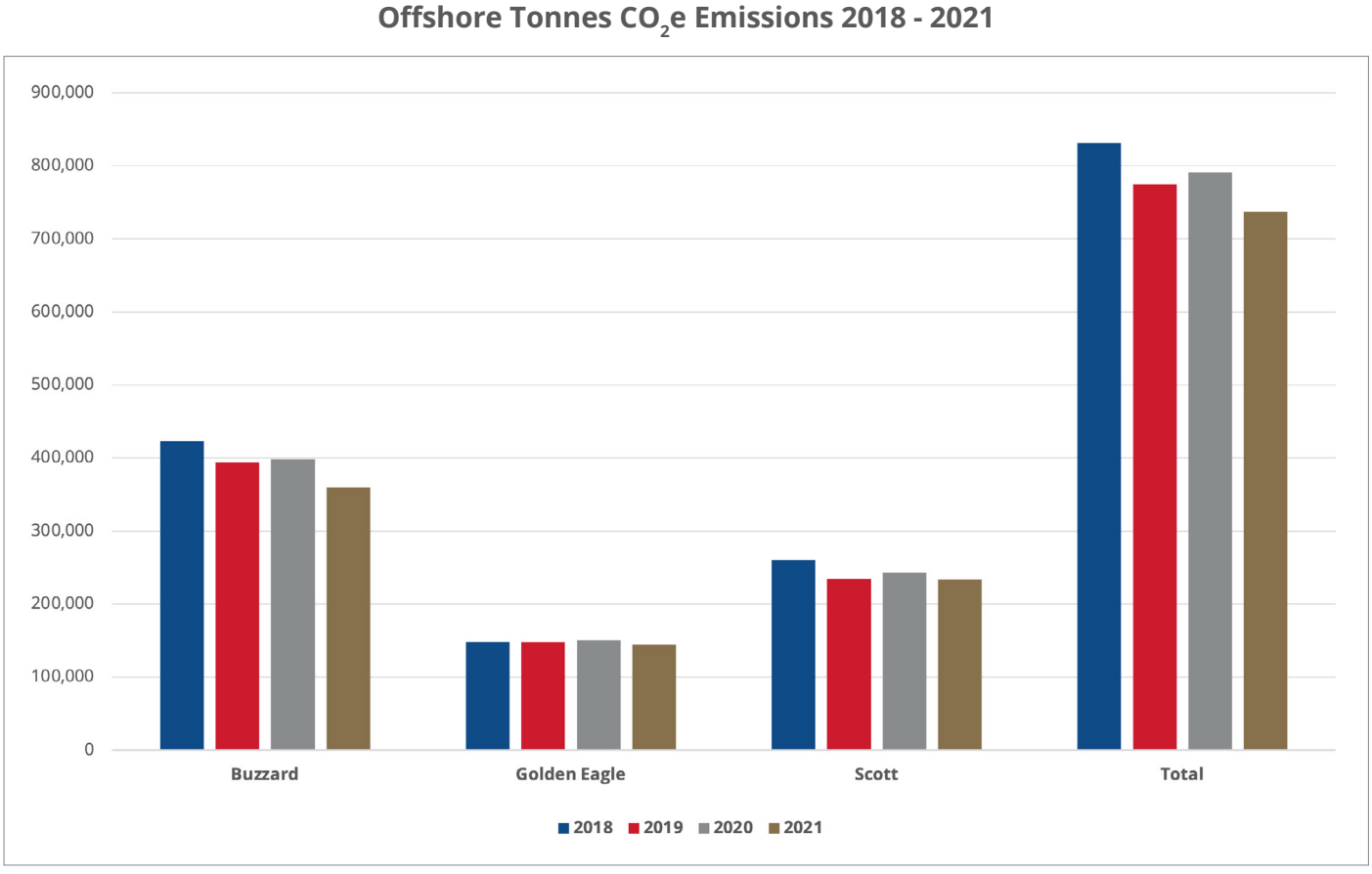
The chart below shows a decrease in combined CO_2e emissions from 791,598 tonnes in 2020 to 737,790 tonnes in 2021.

These figures are predominantly the CO_2 emissions from combustion reported under the Emissions Trading Scheme (ETS), but also include the non-combustion GHG emissions from turbines, flaring, venting, fugitives and Hydrofluorocarbons (HFCs). These non-combustion and non-CO_2 gases are converted to their CO_2 equivalents using their global warming potentials.

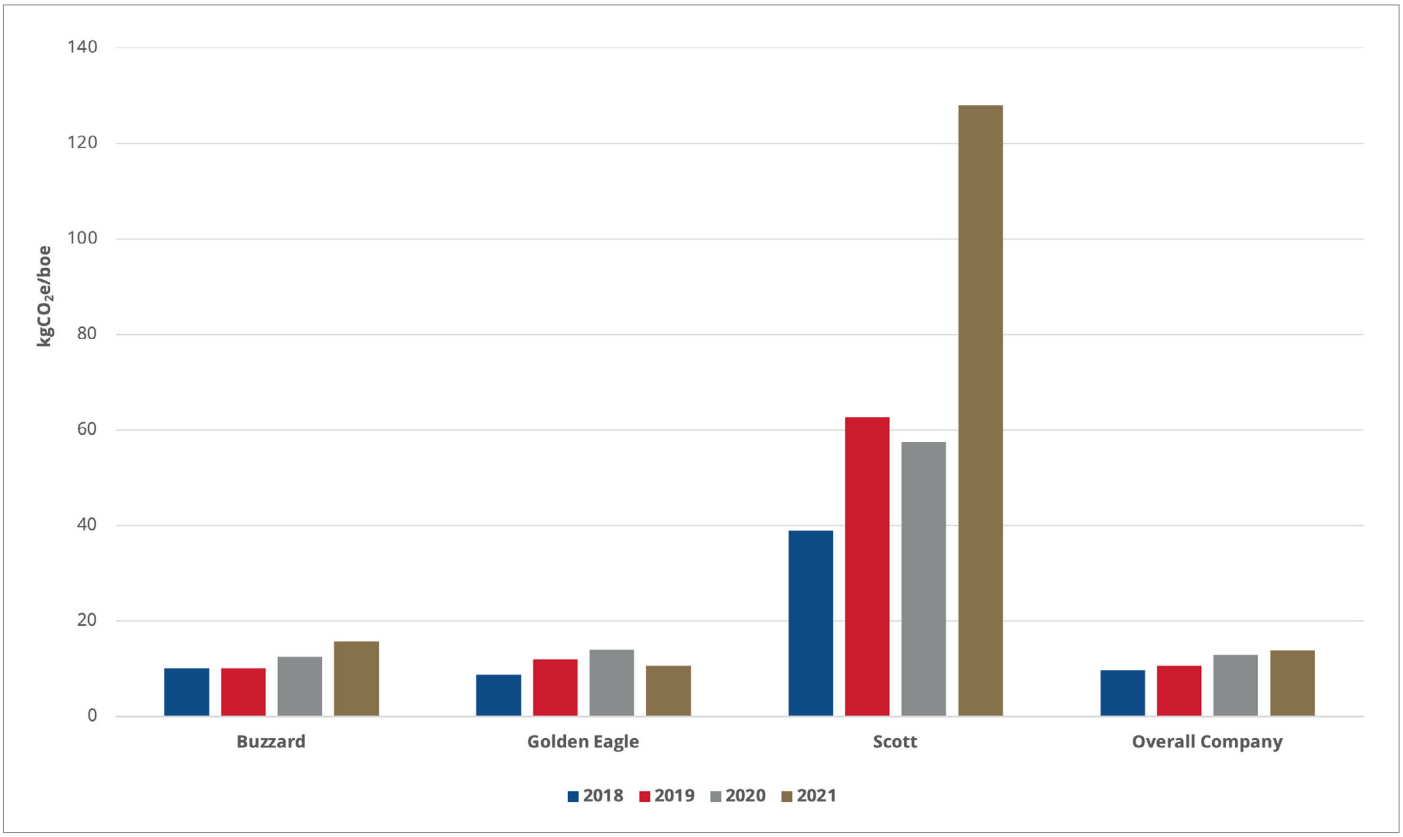
All assets showed a decrease in CO_2e emissions in 2021. During TARs there is a reduction in power demand and therefore CO_2 emissions. This decrease in CO_2 in 2021 is predominately due to there being extended production outages for the TARs. Despite emissions from diesel use increasing, power generation related emissions and flare emissions were lower than the previous year.

Flare and vent management plans were also implemented which included a requirement to record periods of elevated flaring as events in the CNOOC incident reporting system. This activity has ensured elevated flaring root causes are identified, actioned where appropriate, and lessons learned to prevent reoccurrence. Despite this, Scott power generation reliability decreased in 2021 resulting in reduced gas plant availability and increased flaring. However, implementation of the flare standard has also helped to decrease emissions from flaring from Buzzard and Golden Eagle in 2021.

CO_2e Emissions from Production Activities



GHG emissions from CNOOC's offshore installations by tonnes CO_2e, between 2018 and 2021



GHG Emissions intensity in kg CO_2e per BOE, CNOOC Offshore Assets

Emissions intensity is a productivity and efficiency ratio which expresses the GHG impact in kilogrammes of CO_2e emitted divided by the production output (in BOE). A decreasing intensity performance will reflect a positive and more efficient performance improvement in terms of less GHG emitted per unit of production. Overall, there is an increasing trend in emissions intensity. This is expected as production declines, particularly on older installations like Scott where production is significantly reduced but the power requirements remain relatively stable due to the demand for more water to be injected to maintain reservoir pressure. This metric is commonly used to compare performance between assets, though doing this can be misleading and must be put in context of the asset, the basin and the product type. It also fails to take account of any downstream processing.

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Oil in Produced Water Discharge (Permitted Discharges)

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Oil in Produced Water Discharge

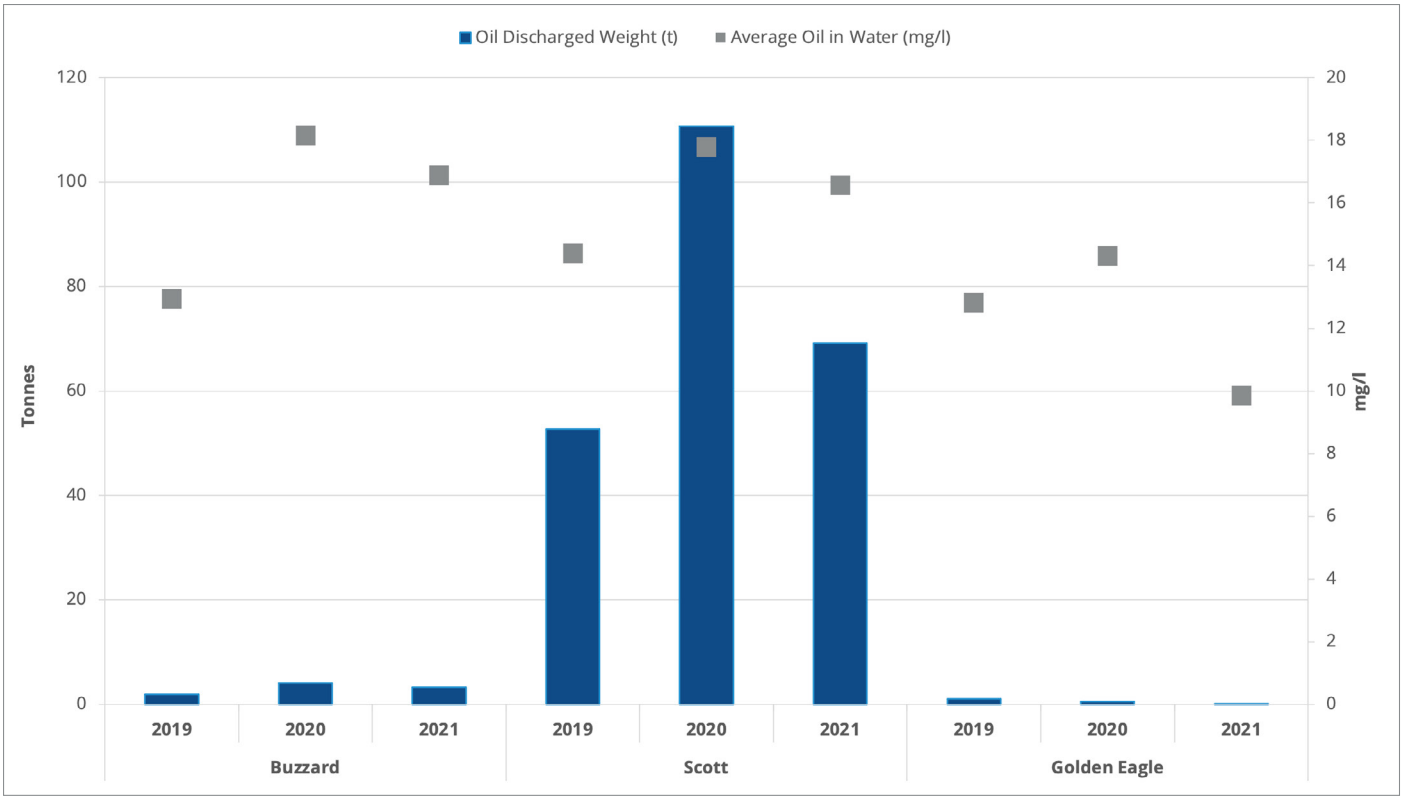
The mass of oil discharged decreased from 115 tonnes in 2020 to 73 tonnes in 2021. This is due to improved performance/optimisation of chemical additive (demulsifier) along with improvements to produced water handling facilities implemented during the asset TARs in 2021.

Total water volume discharged decreased on all assets due to the extended production outages for the TARs undertaken in 2021. This decrease in production uptime reduced overall produced water generation and discharge. Scott also had reduced production rates during a period of gas lift outage resulting in less produced water generation and discharge.

Water re-injection decreased on Buzzard and Golden Eagle in line with the reduction in produced water. Produced water re-injection is an important process as it maintains reservoir pressure for improved 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.

Average oil in produced water concentration also decreased as a result of improvements made to the produced water systems during the TARs.

Oil in Produced Water Discharged Per Asset



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Chemicals

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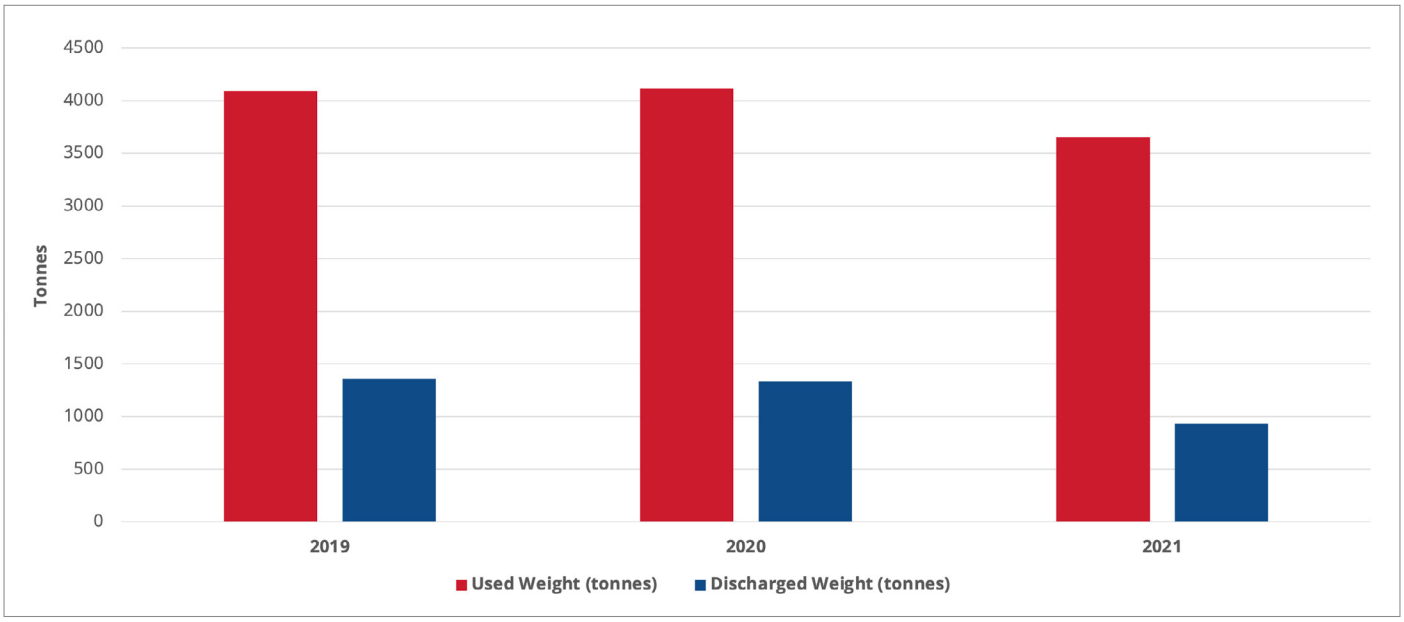
Production Chemicals

The decreasing volume of produced water due to less production uptime on all assets meant less chemicals were used and discharged. The Scott asset undertook two TARs last year, and the Telford field was shut in for the last four months of the year. As the majority of Scott/Telford production chemicals are disposed of overboard (75-80%), there was a significant reduction in overall chemical volume discharged.

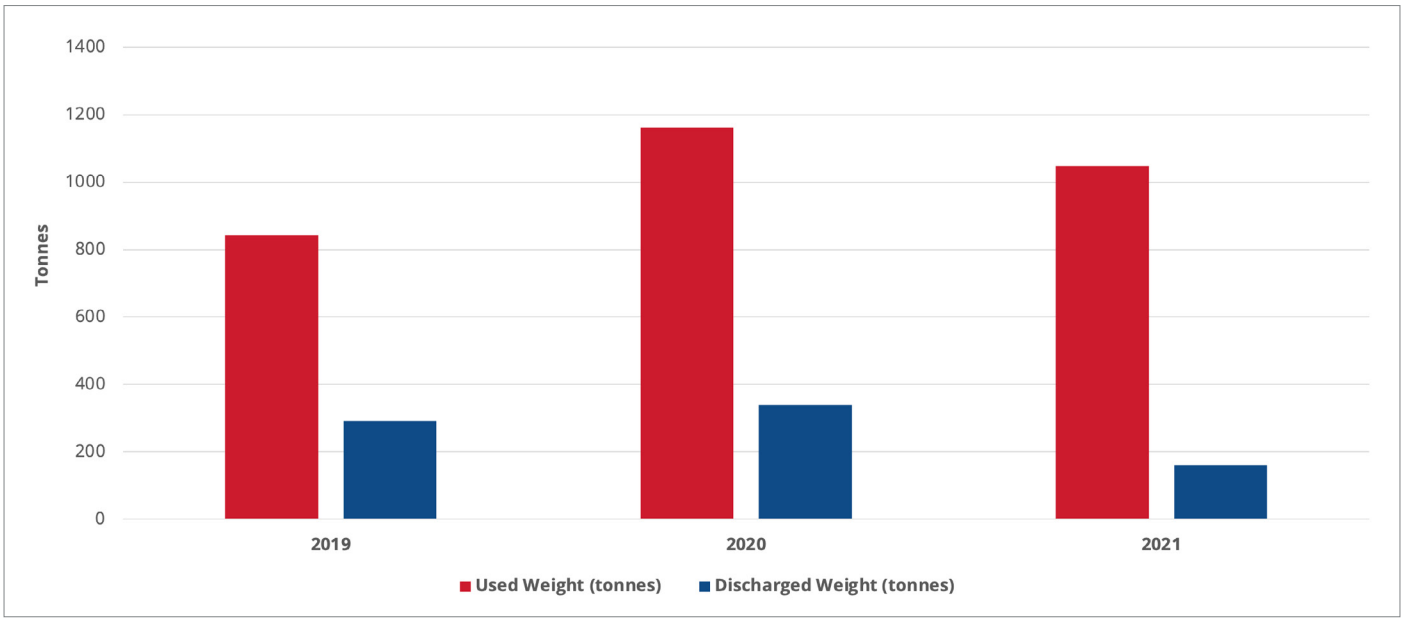
Chemicals which are hazardous to the marine environment are subject to substitution (SUB) warnings under the Harmonised Mandatory Control Scheme. Usage of production chemicals with SUB warnings decreased from 1,163 tonnes in 2020 to 1,048 tonnes in 2021. Due to TAR downtime across the three assets this decrease would have been substantial. However, the decrease in SUB chemical use was offset by chemicals used on both Buzzard and Golden Eagle, Permtreat PC-191 and Transaqua HT2, both gaining SUB warnings during 2021.

However, the SUB chemical discharged weight was approximately half of that in 2020 due to the majority of the SUB chemicals used on Buzzard and Golden Eagle being re-injected into the reservoir or exported (85-90%).

Production Chemical Usage



Production Chemical Usage with Substitution Warnings

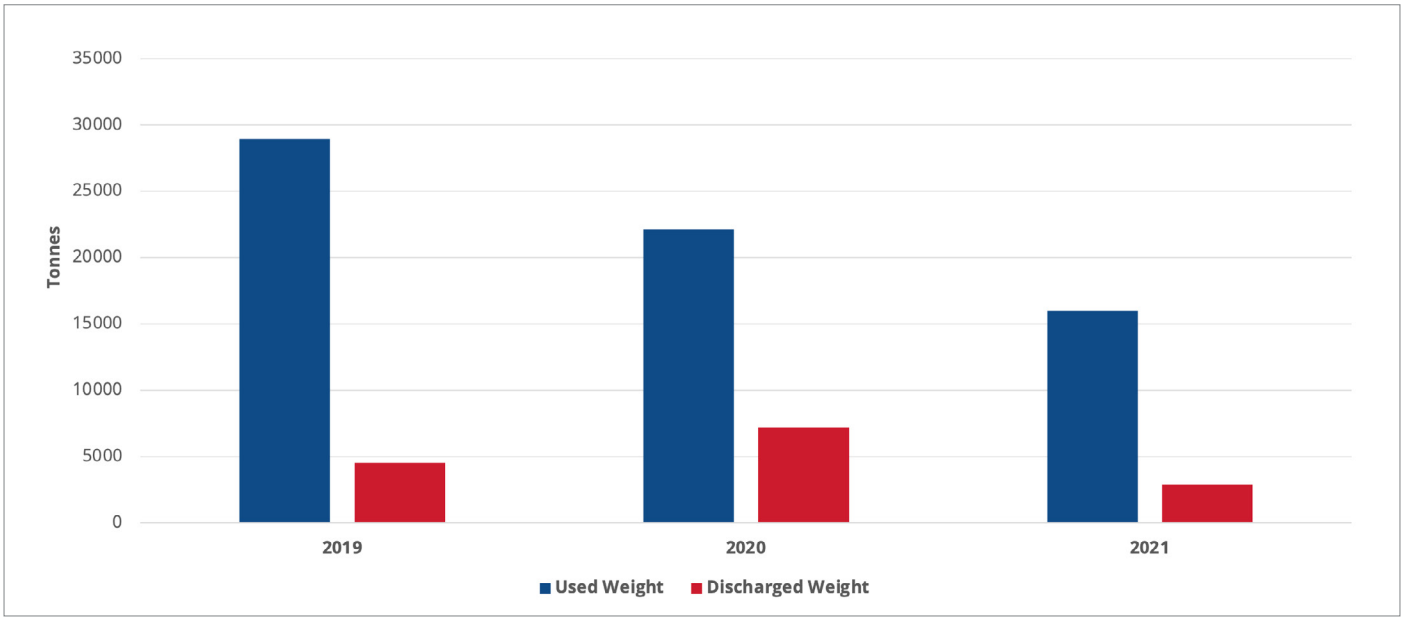


Drilling – Including Well Intervention and Pipeline Chemicals

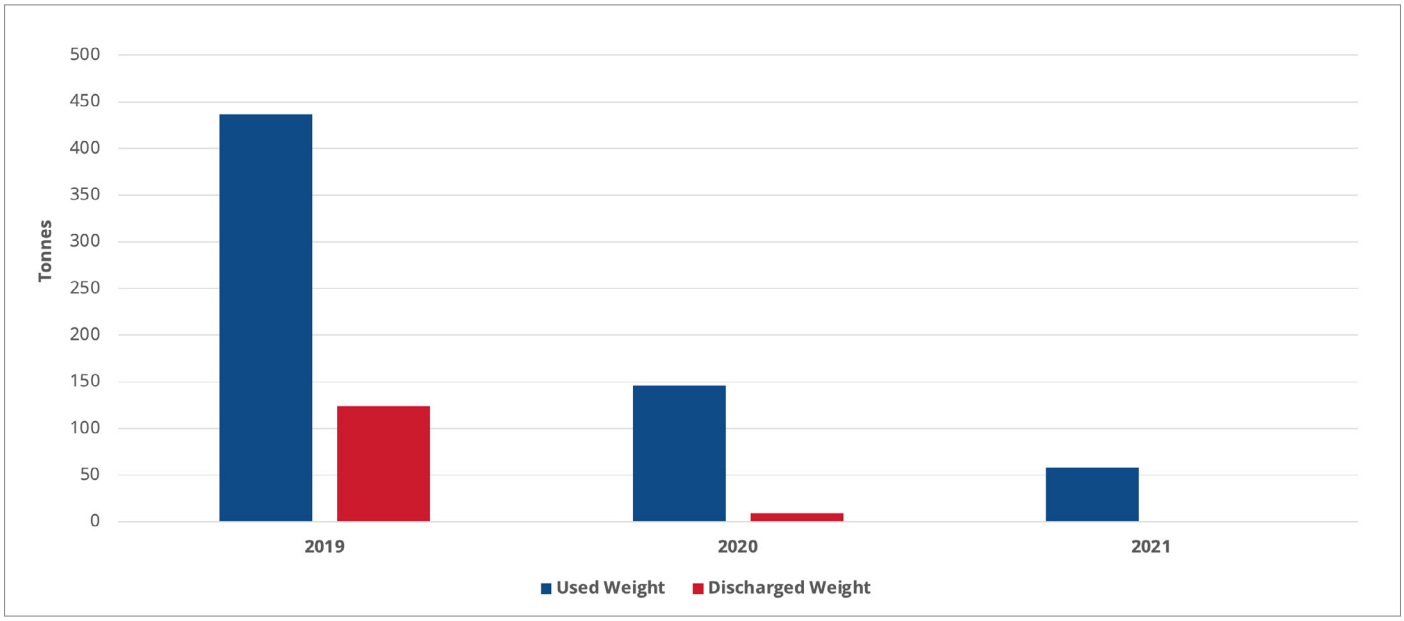
Chemical usage has steadily decreased from 28,938 tonnes in 2019 to 15,963 tonnes in 2021. This is due to a decrease in drilling, well intervention and pipeline activities since 2019. Discharged weight also decreased for the same reasons.

The use of SUB labelled chemicals for drilling decreased substantially from 146 tonnes in 2020 to 58 tonnes in 2021. Overall discharge of chemicals with SUB warnings also decreased from 9 tonnes in 2020 to 0.25 tonnes in 2021. This correlates with the lower drilling activity in 2021 in comparison to the year before.

Drilling Chemical Usage



Drilling Chemicals Usage with Substitution Warning



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Waste

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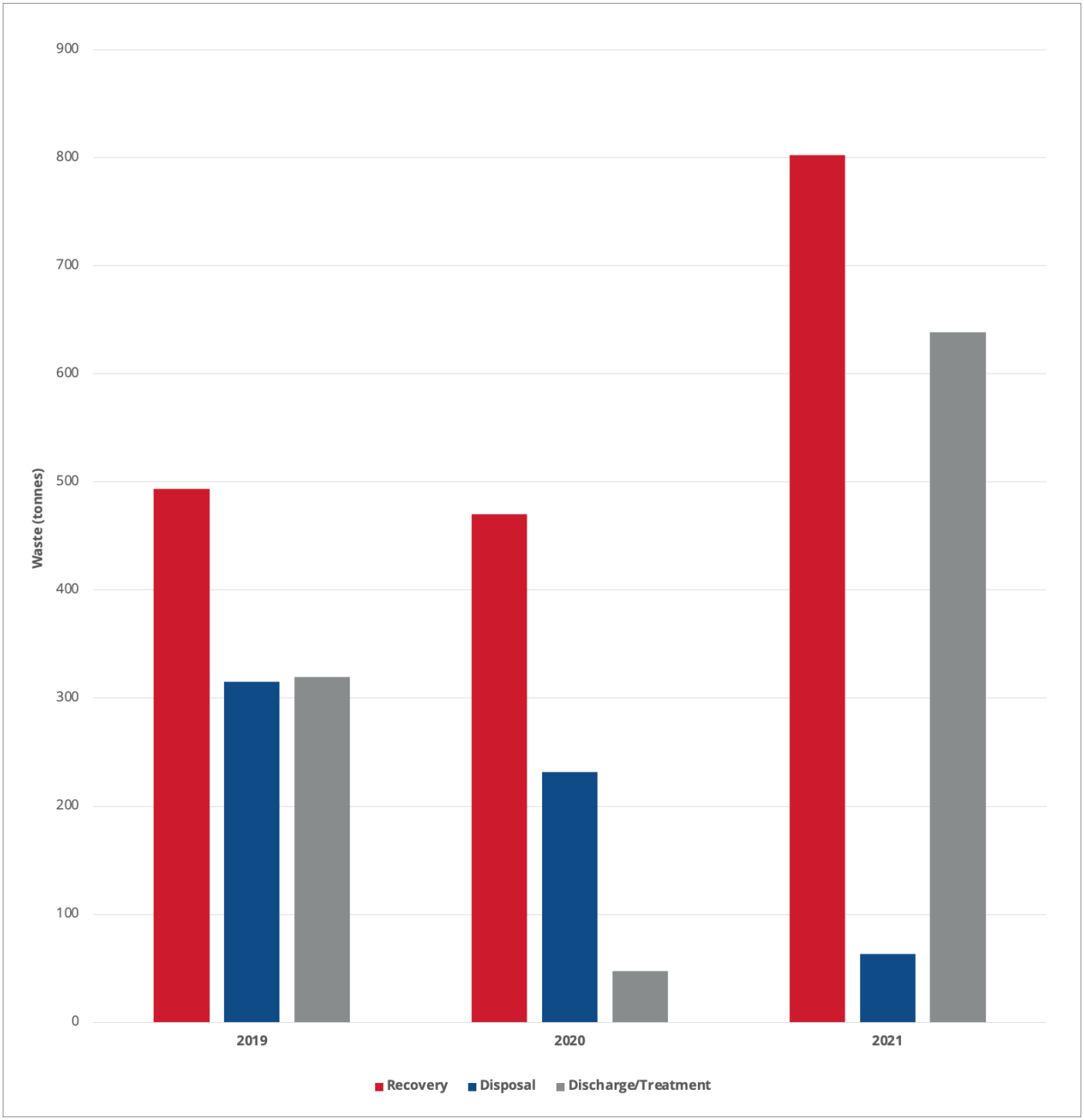
Production Waste

In 2021 circa. 1505 tonnes of waste was generated across all installations, which is an increase from the 749 tonnes of waste generated in 2020. This is attributable to the extended TARs across the assets. With the lack of TAR outages in 2020 activities were extended into 2021 increasing the overall waste generated. With a zero waste to landfill focus across CNOOC operations, less waste was disposed of to landfill with alternative methods and routes being utilised where possible. The majority of the waste from the TARs was subject to discharge under consent/treatment.

Production Waste Disposal Routes – By Year

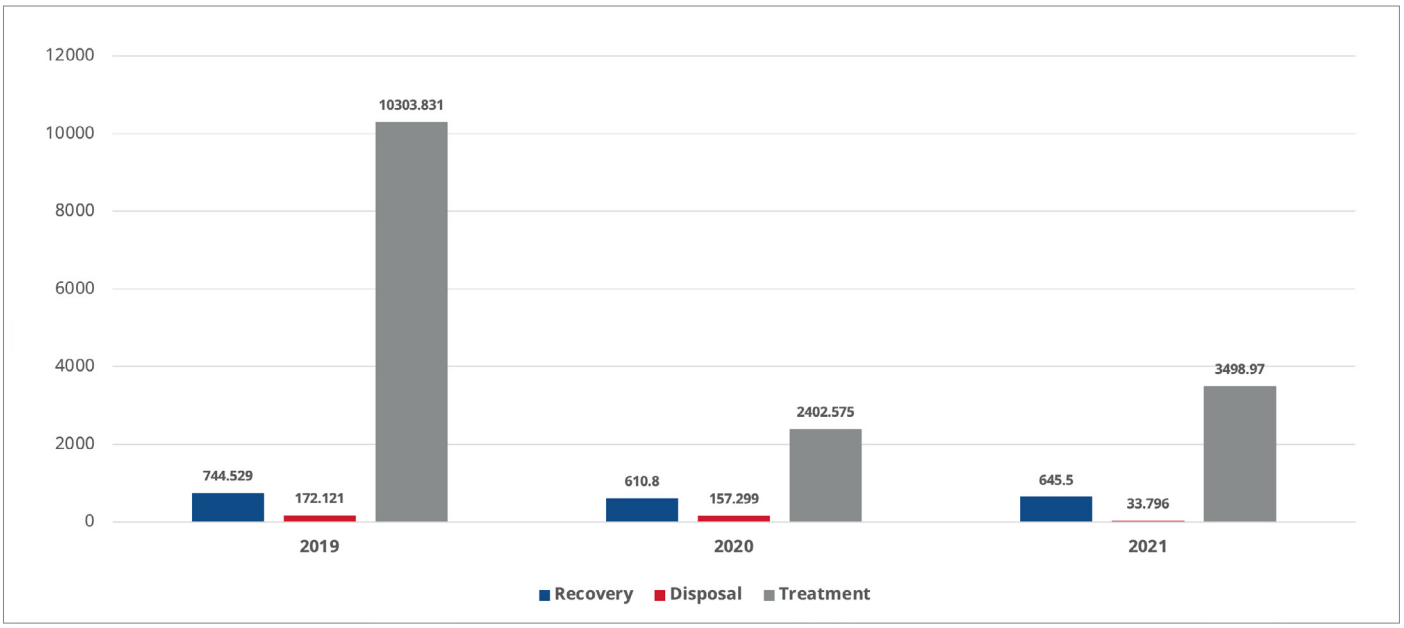


Drilling Waste

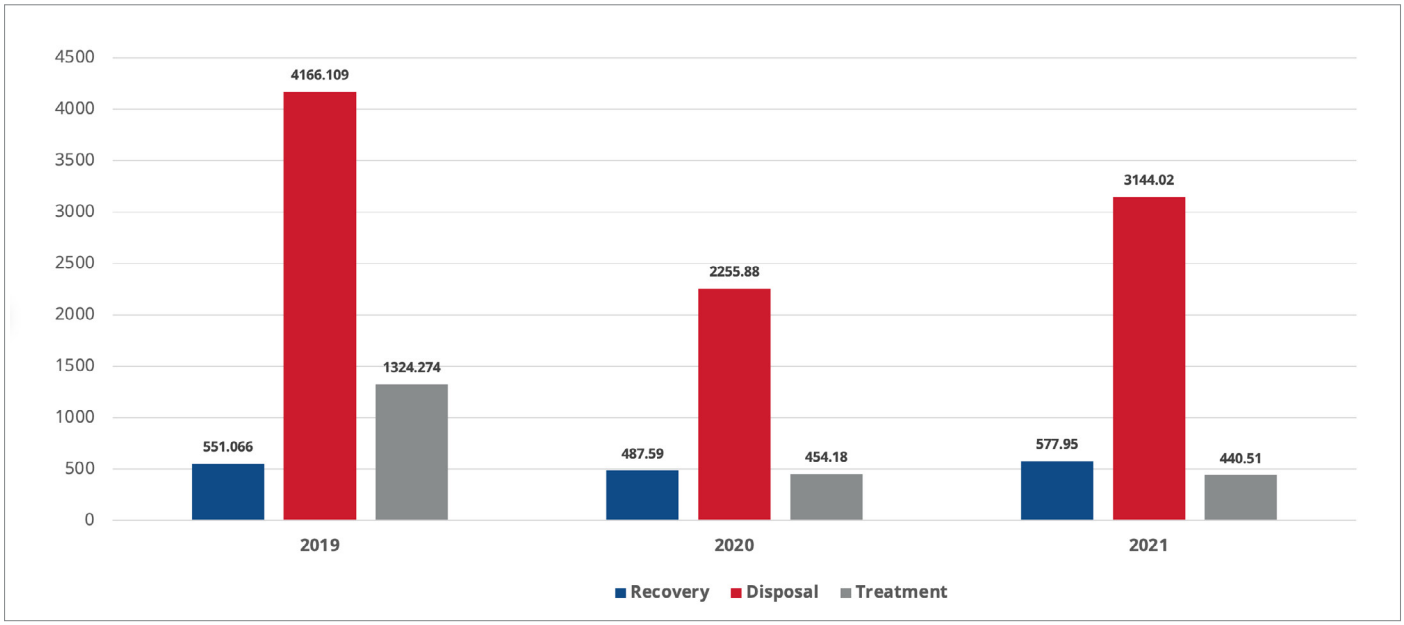
Drilling waste generated (excluding cuttings) in 2021 was circa. 4,178 tonnes whereas 2020 was circa. 3,171 tonnes. Despite slightly less drilling activity overall in 2021, both the Prospector 5 and the Noble Sam Hartley came to the end of their contracts during this period. This entailed the cleaning of all pits and silos prior to release of the mobile offshore drilling units (MODUs), generating large volumes of slops and excess chemicals for disposal/treatment.

Noble Sam Hartley cuttings and slops were treated offshore in 2020 and 2021. A large volume of cuttings and slops from the Prospector 5 were sent onshore for treatment. The Glengorm wells generated larger volumes of drilling cuttings due to the hole geometry on both wells i.e., deep, large diameter hole sections used on both the central and south wells. Scott also had to skip and ship cuttings onshore during 2021.

Drilling Waste Generated (Excluding Cuttings)



Drill Cuttings Waste Generated



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Legal Compliance

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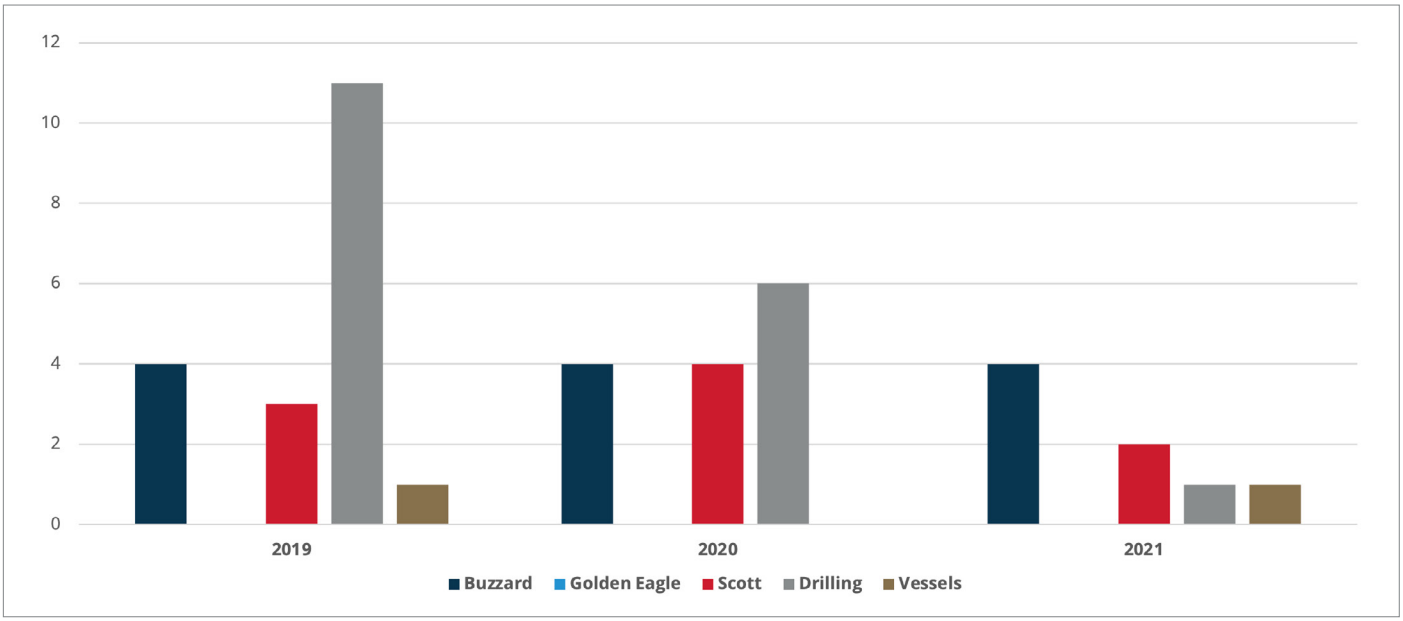
2021 Unplanned Releases

During 2021, there were 8 unplanned releases, a decrease from 14 releases in 2020. This figure does not include permitted discharge notifications or ongoing PON1s. This is the lowest recorded number of PON1 reports for CNOOC operations. The majority of releases were from the Buzzard and Scott assets. Golden Eagle have not recorded any PON1 releases since 2018.

Individual Installations – PON1 Summary

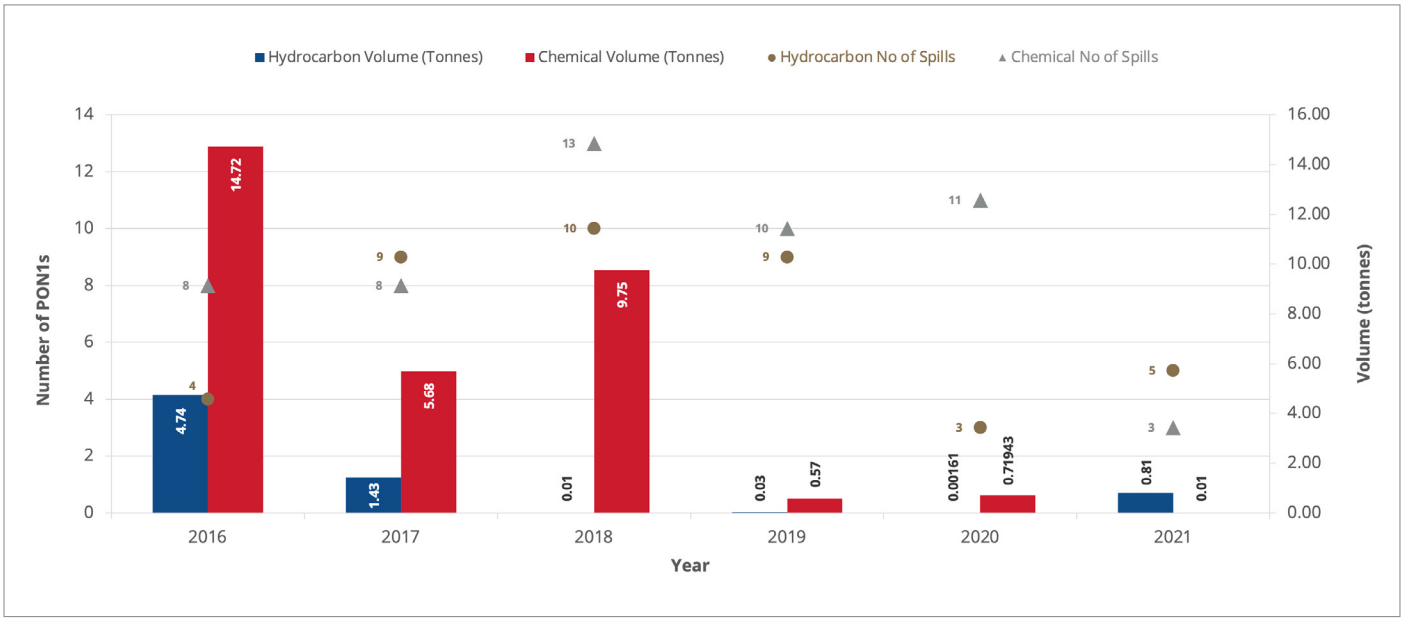


The majority of spills were hydrocarbon releases resulting in 0.81 tonnes of oil being released to sea, an increase from the 0.0016 tonnes released in 2020. This higher spill volume is largely attributed to the hydraulic oil leak PON1 on the Prospector 5 drilling rig in April.

The remainder were chemical releases, resulting in 0.01 tonnes of chemicals being released to sea, a decrease from 0.72 tonnes in 2020. There was a large decrease in chemical spills overall, dropping from 11 chemical PON1s in 2020 to 3 in 2021.

In addition to the above, there were also 2 permitted discharge notifications submitted to the regulator in 2021 from the Buzzard asset. This was due to a recurring issue at the start of the year with the produced water/open drains caisson resulting in a sheen during pumping operations. This issue was resolved in the second half of the year.

PON1 Summary: 2016-2021



2021 Regulatory Non-Compliances

In addition to CNOOC reporting unplanned oil and chemical spills associated with offshore activities, CNOOC are also required to submit 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	UK ETS	IPPC	PPC	Pending Reply from SEPA
Scott								
Buzzard	**1**	**3**						
Ettrick								
Golden Eagle		**1**						
Drilling Rigs								
Vessels	**1**							

The majority of non-compliances were OPPC related and due to oil in produced water samples breaching the 100mg/L limit. The Buzzard OCR non-compliance was due to a treated seawater leak from a sea water dump caisson and the vessel non-compliance was during the BPII subsea campaign where chemical use was exceeded.

Environmental Objectives

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Environmental Objectives 2021

The 2021 Environmental Objectives were delivered as follows:

2021 Objective Area	Programme	Performance
Atmospheric emissions management improvements	• Improved energy & emissions management systems and monitoring and reporting mechanisms • Publish methane strategy • Asset flare, vent and fugitive emissions management plans • Undertake asset environmental stewardship workshops and publish plans • UK ETS transition ongoing	• ISO50001 gap analysis completed and implementation action plan in progress • Gap analysis completed to integrate methane management, OGMP2.0 assessment completed, and action plans created • Asset workshop outputs used as inputs to emissions reduction action plans (ERAPs) • 2021 ETS emissions and activity data verification completed with no significant comments • Flare and vent studies completed for Buzzard and Golden Eagle and recommendations included in asset ERAPs
Discharges to sea and EMS	• Environmental considerations during planning and risk assessment for major TARs • Awareness campaign focus on permit compliance and lessons learned • Work with chemical management vendor to promote the greening and optimisation of chemical use • Chemical tank risk assessments • Publish and implement produced water management plans – Buzzard and Scott • 5 yearly Oil Pollution Emergency Plan (OPEP) review for Scott • ISO 14001 alignment improvements • Environmental field evaluations – ops and drilling	• Successful EMS OSPAR verification with no comments • Lowest number of PON1 spill events • No spill events associated with the 2021 TARs • Completion of chemical tank risk assessments and issuing of reports and recommendations • Scott and Buzzard RBA management plans accepted and implemented. • Produced water performance improvements works conducted during TARs resulting in lower discharge concentrations on Scott
Waste management and culture	• Working directly with waste management and supply chain to identify new waste management options away from landfill and look at opportunities to support circular economy • E-Rep led trials of new recycling, composting and source reduction options offshore • Support E-Reps with engagement, training and awareness presentations • Continuation of waste management training to offshore operations • Zero waste to landfill ongoing	• Supply chain engagement sessions initiated to identify packaging reduction opportunities with contractors • New recycling routes identified – implementation of 100% recycling scheme for plastic tags • E-Reps opportunities for various training courses. Large uptake for the NEBOSH environmental awareness course • Continued zero waste support, engagement and awareness presentations given
Foundations – every year	• Engagement • Compliance • Continuous improvement	• 9 E-Reps passed 1 day NEBOSH Environmental Awareness Course • Positive OPRED inspections conducted on Buzzard and Golden Eagle • Annual compliance evaluation and site evaluations delivered • Quarterly environmental performance insights

Environmental Objectives 2022

The CNOOC Environmental Objectives are to:

- Manage and minimise emissions from power generation, flare and unburned hydrocarbons
- Manage and minimise discharges to sea of oil and hazardous chemicals
- Manage and minimise waste generation within the supply chain and zero waste to landfill
- Prevent and mitigate significant environmental unplanned/accidental discharges to sea and air

2022 Environmental Targets are:

- 3% reduction in Scope 1 GHG emissions year on year
- Maintain trajectory towards a target of 10% reduction on 2018 baseline emissions by 2025.
- Zero waste to landfill
- Zero significant (enforcement action level) spills to sea

These objectives and targets are supported by an Environmental Management System foundation of:

- Engagement
- Compliance
- Continuous Improvement

2022 Objective Area	Programme
Net Zero and emissions reduction	• Continue to improve energy and emissions management systems and monitoring and reporting mechanisms, including: - ISO50001 - Methane action plan - Flaring and Venting - PPC - ETS • Facilitate the communication and implementation of the ERAPs • Coordinate large combustion plant stack emissions sampling • Lunch and Learns and E-Rep involvement
Discharges to sea and spills	• Environmental considerations during planning and risk assessment for 2022 TARs • Awareness campaigns on permit compliance and environmental planning, drains and bunds and other lessons learned as a result of audits and inspections • Support to renewed hydrocarbon release prevention programme • Audit, review and update of environmental barrier control process • Continued implementation of produced water management plans – Buzzard and Scott • Buzzard OPEP update for Buzzard Phase 2 with updated weathering and dispersibility data • E-Reps engagement on spill risk identification
Waste management	• Onshore and offshore waste contractor site audits • Working directly with waste management and supply chain to identify waste (specifically packaging reduction) opportunities with our contractors to support circular economy • E-Rep involvement with waste reduction activities • E-Rep visits to ASCO onshore waste management facilities
EMS foundations	• Engagement • Compliance • Continuous environmental improvement

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