CNOOC Petroleum Europe Limited

Environmental Statement 2022

Environmental Statement 2022

Foreword

It is my pleasure to introduce CNOOC Petroleum Europe Limited's (CPEL) 2022 Environmental Statement.

As a leading energy company with a vision of delivering safe and sustainable energy for all, we are committed to minimising our impact on the environment.

Included in this Environmental Statement is:

- A description of the facilities operated by CPEL and the activities carried out in 2022.
- A summary of our Environmental Management System.
- Environmental emissions and discharges figures from our 2022 operations.
- A review of our 2022 environmental objectives.
- An overview of our 2023 environmental objectives.

2022 was a busy year with a continued focus on developing initiatives that support safe and sustainable production of energy:

- Completion of a comprehensive environmental management system review, including a full roll out of environmental roles and responsibilities throughout CPEL.
- Publication of ERAPs for all CPEL operated assets.
- Operational improvement activities resulting in a 12% reduction on Scope 1 GHG emissions in 2022 when compared to 2018 levels.
- Produced water performance improvement works conducted during TARs with a large focus on produced water quality on the Scott platform.
- Zero Waste to Landfill campaign delivering many months of zero waste success with ongoing initiatives for further diversion from landfill.

We also achieved several milestones at an operational level:

- Named Operator of the Year at OEUK Awards.
- The lowest volume of releases, and lowest number of regulatory non-conformances.
- CPEL achieved two years with zero LTIs recorded across all our operated assets.
- All three assets executed TARs with no spill or non-compliance events.
- OPRED Regulatory Inspections were successfully conducted on each platform and the COSL Innovator, our contracted drilling rig.

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

Safe and responsible energy production remains integral to the sustainable growth of our company and looking forward into 2023, our environmental objectives will progress our Net Zero ambitions, while challenging us to reduce the number and volume of spills. I hope that you will find this Environmental Statement both informative and indicative of CPEL's unwavering commitment to protecting our people from harm and minimise the impact of our operations on the environment.

Qing Jiang
Managing Director, UK

Contents

Introduction

CNOOC Petroleum Europe Limited (CPEL), is a wholly owned subsidiary of CNOOC Limited.

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 CPEL refers to UK operations only.

CPEL 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

CPEL 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 & Decommissioning (OPRED) in April 2023. The next EMS OSPAR verification is scheduled for April 2025.

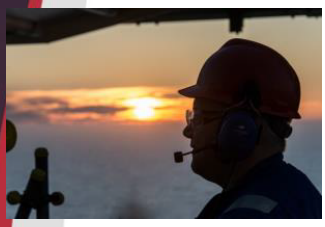
Environment Representatives (E-Reps)

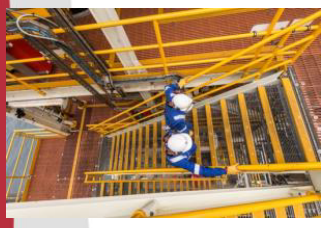
CPEL's E-Reps help to drive workforce engagement across our various environmental activities including;

- 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 programmes.
- Area inspections.
- Supporting environmental audits and inspections.
- Identification and trialling of new environmental training options.

Health, Safety, Environment & Social Responsibility

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





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.

Qing Jiang
Managing Director UK

CNOOC

Asset Information

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 commenced production 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 Ancala operated Scottish Area Gas Evacuation (SAGE) system to St Fergus in north-east Scotland.

Buzzard

FACT Buzzard achieved 6 years hydrocarbon release free in January 2023.

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 commenced production in January 2007
Water Depth	96 metres
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 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's exceptional safety record spans over 8 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. Production commenced 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.

Drilling Operations

COSL Innovator

Rig Name	COSL Innovator
Type	Semi-Submersible
Campaigns in 2022	■ 2Ettrick P&A ■ Golden Eagle DPF

Atmospheric Emissions

Production GHG Emissions as CO_2 equivalent

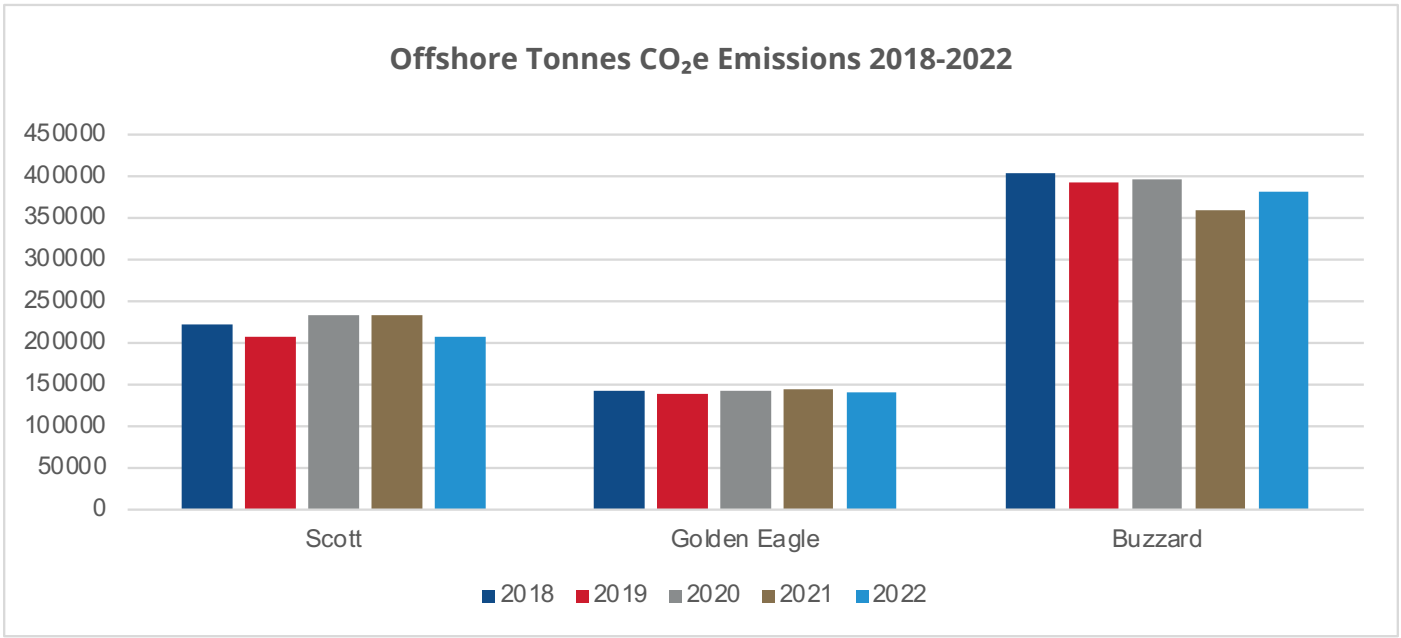
The chart below shows a decrease in combined CO_2e emissions from 737,790 tonnes in 2021 to 728,692 tonnes in 2022.

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 (HFC)s. These non-combustion and non-CO_2 gases are converted to their CO_2 equivalents using their global warming potentials.

During the platform turnarounds (TARs) there is a reduction in power demand and therefore CO_2 emissions. Due to a series of extended TARs in 2021, it was expected that CO_2 emissions would rise in 2022 however, this was not the case. The implementation of asset specific Emission Reduction Action Plans (ERAPs) has contributed significantly to the improving emission reduction figures. Power generation related emissions were lower than the previous year due to several outages and subsequent improvements to prevent reoccurrence and improve process stability. Emissions from flaring have reduced continuously year on year due to plant integrity improvements, process optimisations and increased cultural awareness of emissions from flaring.

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 barrels of oil equivalent). 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.

CO_2e Emissions from Production Activities



GHG emissions from CPEL's offshore installations by tonnes CO2 equivalent, between 2018 and 2022

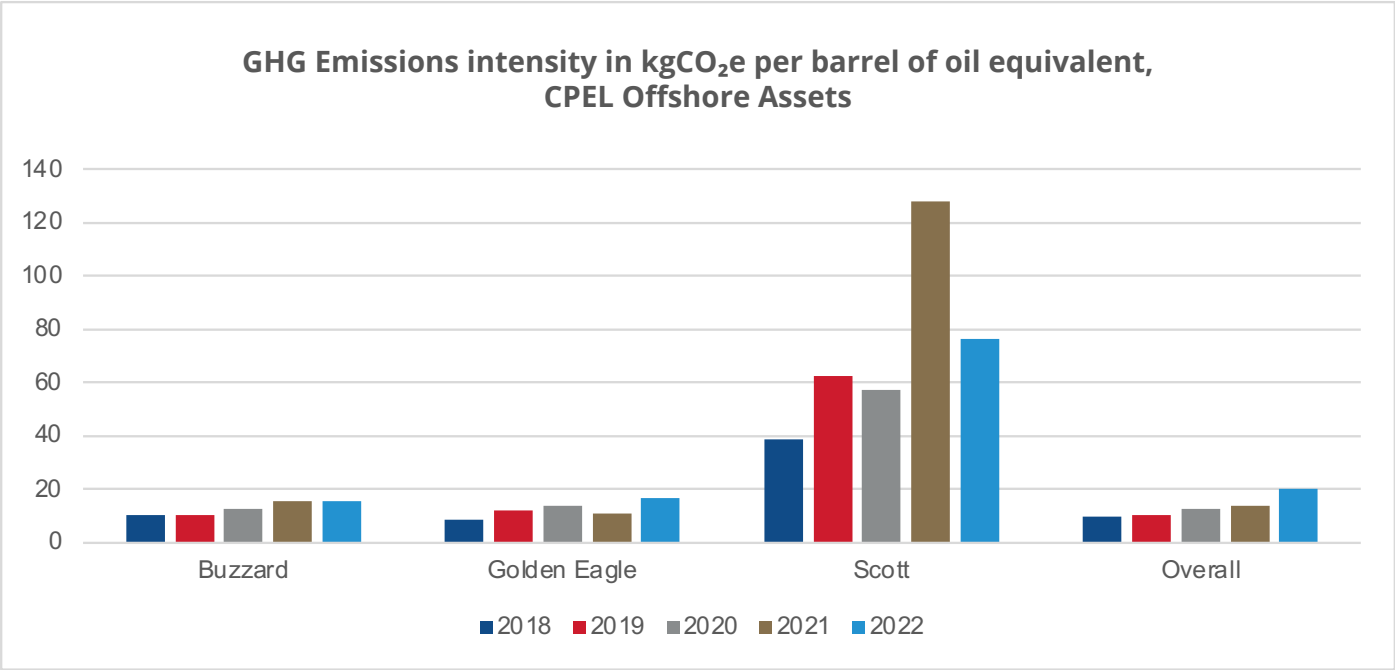
Individual Installation CO_2 Emissions

The first chart shows individual installation performance on CO_2e emissions 2018 - 2022.

Overall GHG emission rates in 2022 were 9,000 tonnes CO_2e lower than in 2021. This was despite much shorter TARs in 2022. As depicted above, the reduction is mainly associated with the Scott platform and is due to lower power generation related emissions resulting from reduced gas turbine availability.

Typically, shorter TARs would result in increased emissions when hydrocarbon production is shutdown, power demand is lower and flaring ceases. In 2022, the predicted increase was mitigated by efforts to reduce flaring through plant modifications and production optimisations. In fact, flaring has continually improved in recent years through the adoption of best practices and management plans. CPEL's Flare and Vent Management Standard requires recording periods of elevated flaring as events in the incident reporting system. This activity has ensured elevated flaring root causes are identified, actioned where appropriate, and lessons learned to prevent reoccurrence.

The first revisions of the asset Emissions Reduction Action Plans (ERAPs) were published in 2022 – these plans identify possible routes to reducing GHG emissions in fulfilment of regulatory and stakeholder expectations. The impact of implementation of the ERAPs will be reviewed in 2023.



GHG Emissions intensity in kgCO2e per barrel of oil equivalent, CPEL's Offshore Assets

Overall GHG Intensity is increasing. This can be expected as assets mature beyond production plateau, requiring the same or more power for less production. In general, as reservoirs are depleted, they produce more water (cut) associated with the hydrocarbons and need to inject more water to replace the fluids produced and retain reservoir pressure. All fluid handling has a power requirement, and that power generation has associated emissions, in CPEL's case this is from the combustion of fuel gas and to a lesser extend diesel, in the dual fuel turbines.

Overall offshore GHG Intensity in 2022 was 20 $kgCO_2e$/boe.

Note, CO_2e equivalent refers to converting all relevant Kyoto GHGs to CO_2e using their Global warming potential (GWP). The inventory includes CO_2, CH_4, N_2O, HFCs (PFCs and SF6 not considered relevant to CPEL's offshore operations).

Oil in Produced Water Discharge

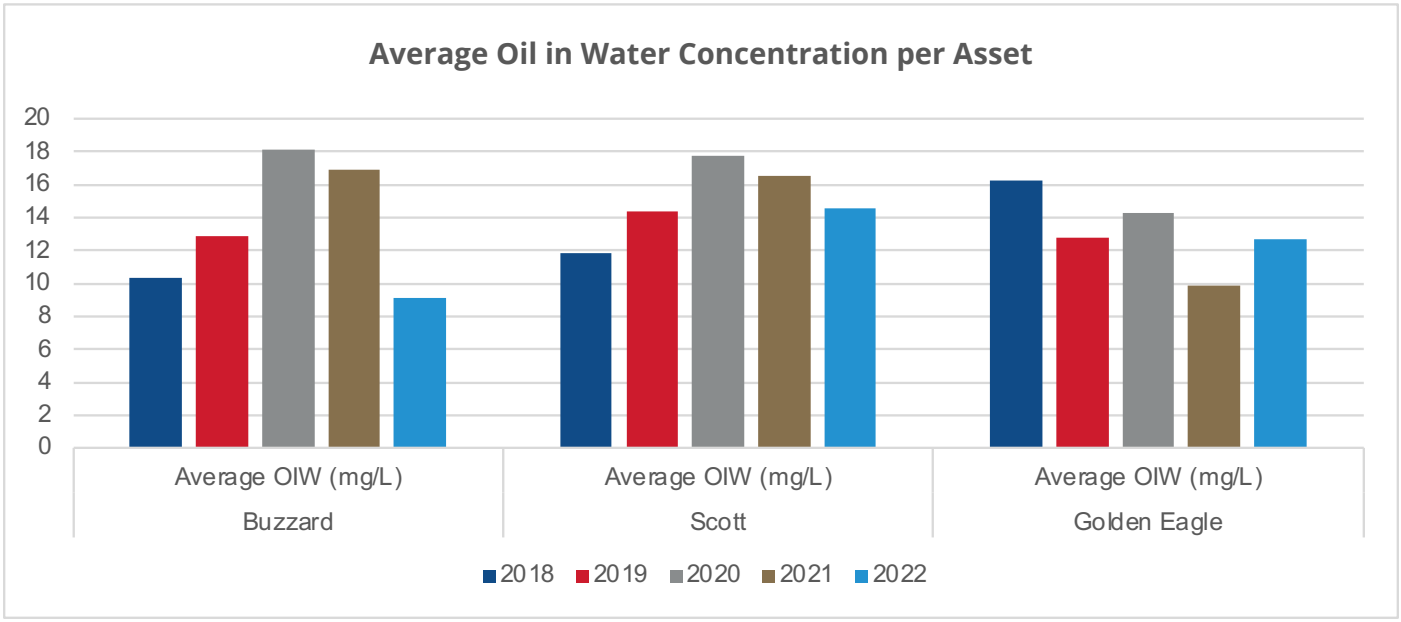
Oil in Produced Water Discharge

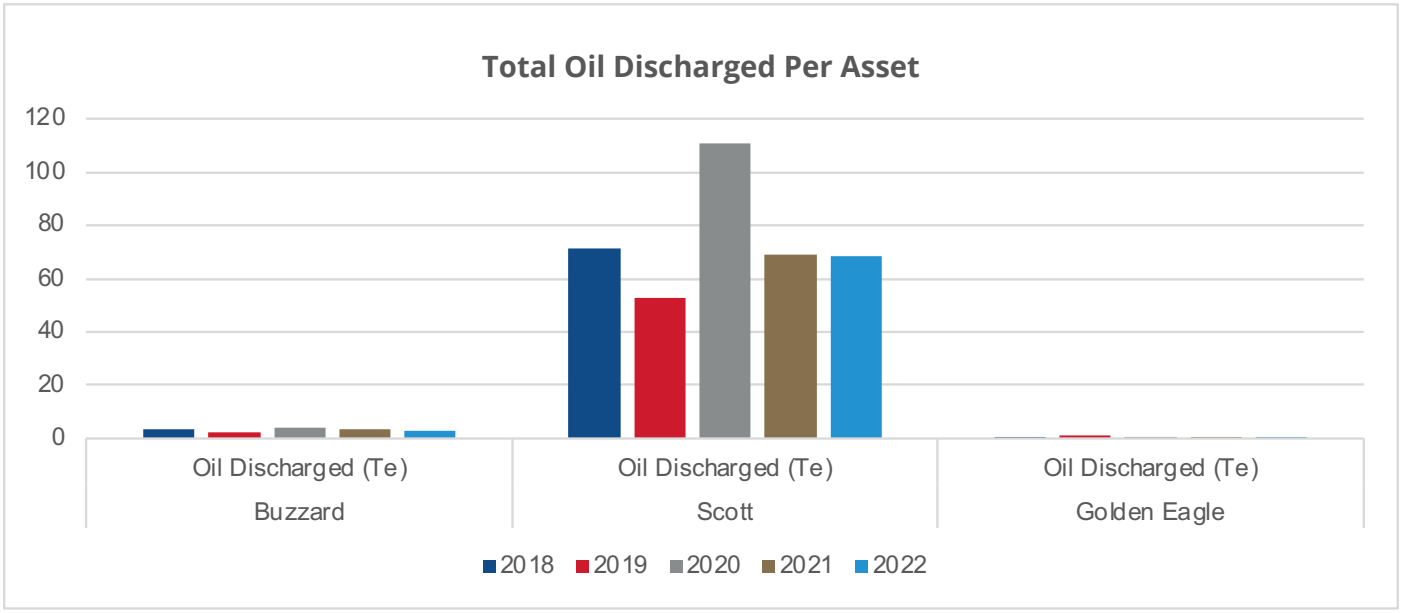
The mass of oil discharged decreased from 72.5 tonnes in 2021 to 71.5 tonnes in 2022. Although this decrease may seem small, the volume of produced water discharged increased by 14% from 2021 to 2022.

This improvement in the oil in produced water concentration is due to an increased focus on the improvement of produced water treatment facilities on the Scott platform.

Total water volume discharged increased on all assets in 2022. This is due to the extended TARs undertaken in 2021 leading to lower-than-normal total volumes discharged during this period. The Scott platform had increased produced water discharges in 2022 due to the increasing age of its associated fields. Golden Eagle and Buzzard experienced a series of outages which led to the requirement for discharge rather than re-injection.

Water re-injection increased on Buzzard and Golden Eagle in line with the continued ageing of the fields to maintain reservoir pressure. 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 Water Concentration per Asset
20
18
16
14
12
10
8
6
4
2
0
Average OIW (mg/L)
Buzzard
Average OIW (mg/L)
Scott
Average OIW (mg/L)
Golden Eagle
2018
2019
2020
2021
2022


Total Oil Discharged Per Asset
120
100
80
60
40
20
0
Oil Discharged (Te)
Buzzard
Oil Discharged (Te)
Scott
Oil Discharged (Te)
Golden Eagle
2018
2019
2020
2021
2022

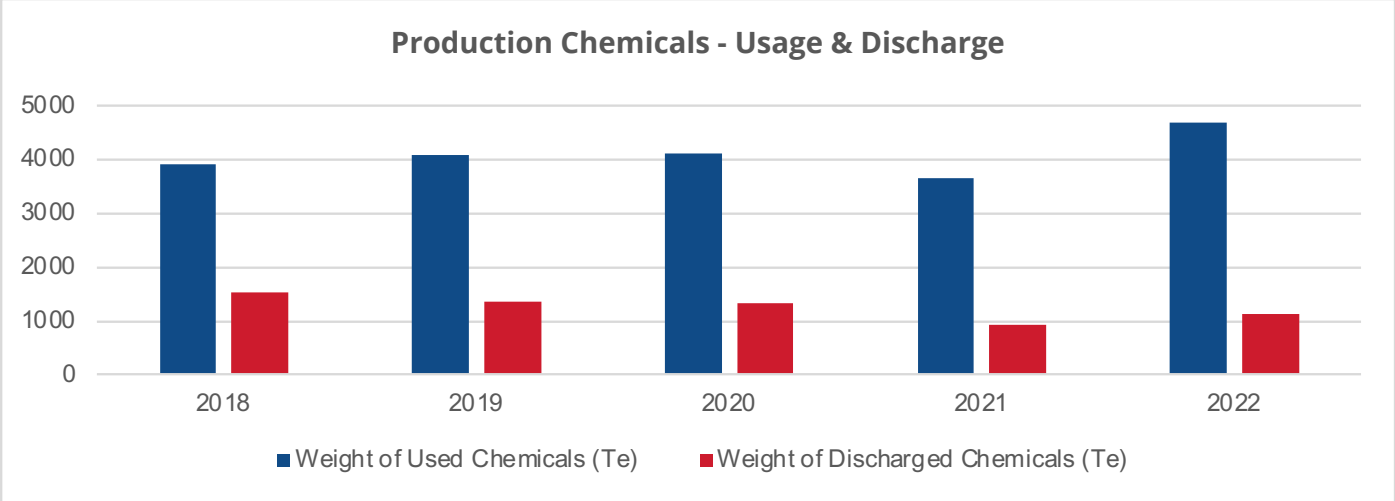
Chemicals

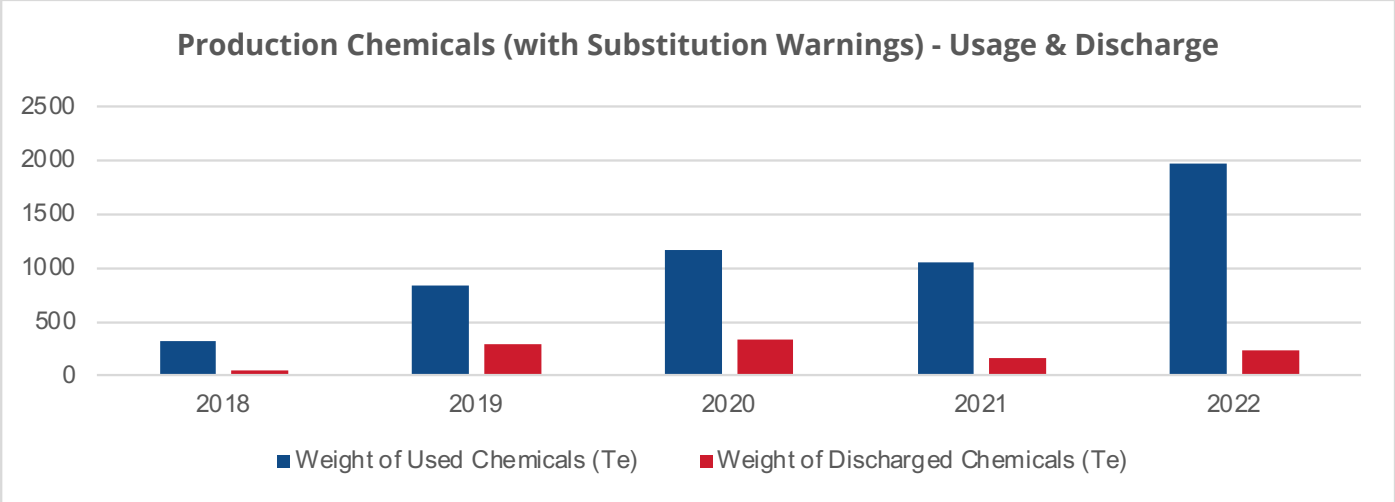
Production Chemicals

The increasing volume of produced water required to meet the higher re-injection demand and maintain reservoir pressure has meant more production chemicals have been discharged in 2022 compared to 2021. The extended platform TARs in 2021 also meant less production chemicals were used due to increased downtime which contributes to the reason for an increase in 2022.

Chemicals which are hazardous to the marine environment are subject to substitution (SUB) warnings under the Harmonized Mandatory Control Scheme (HMCS). Usage of production chemicals with SUB warnings increased from 1,047 tonnes in 2021 to 1,968 tonnes in 2022. This correlates with the earlier information regarding the increase in demand for produced water re-injection.

The SUB chemical discharged weight was approximately 50% higher than 2021 figures which falls in line with the increase in production chemical usage described previously. At this time, no alternatives to the substitution chemicals being used by CPEL have been sourced. CPEL will continue to explore more environmentally friendly chemicals to replace these SUB warning chemicals.

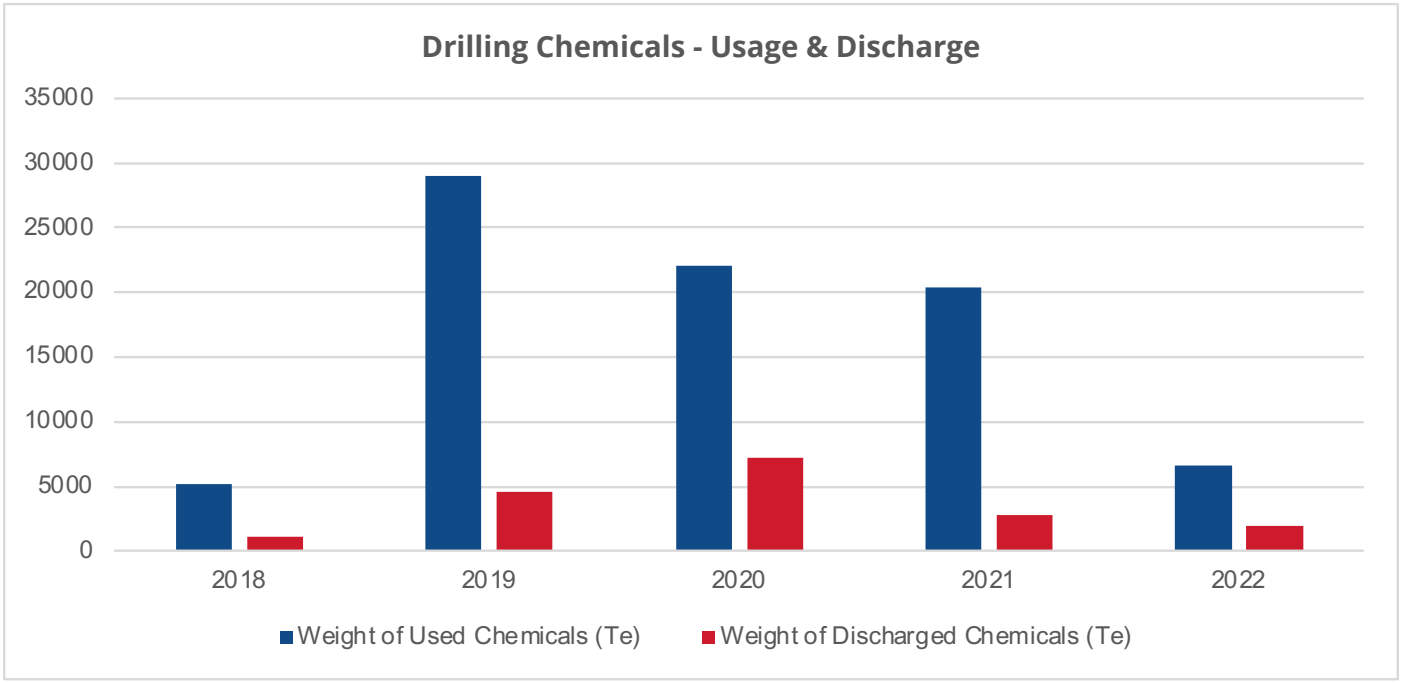


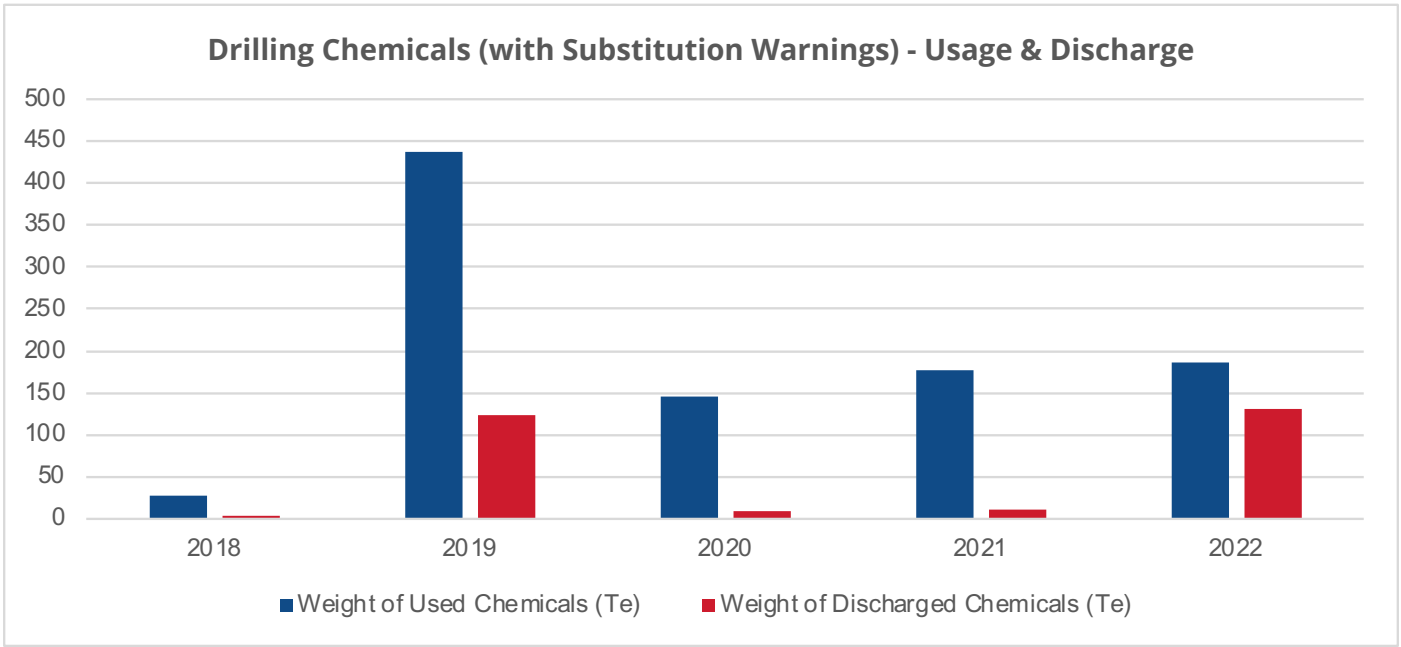


Drilling - including well intervention and pipeline chemicals

Chemical use decreased significantly from 20417 tonnes in 2021 to 6580 tonnes in 2022. This is due to a decrease in drilling, activity since 2021. Discharged weight also decreased for the same reasons.

The use of SUB labelled chemicals for drilling increased from 176 tonnes in 2021 to circa. 186 tonnes in 2022. Overall discharge of chemicals with SUB warnings increased from 11 tonnes in 2021 to 131 tonnes in 2022. This is primarily down to the use of one chemical during a well intervention campaign. This chemical had no suitable alternatives for the required application and accounted for over 90% of the total sub chemical discharge.

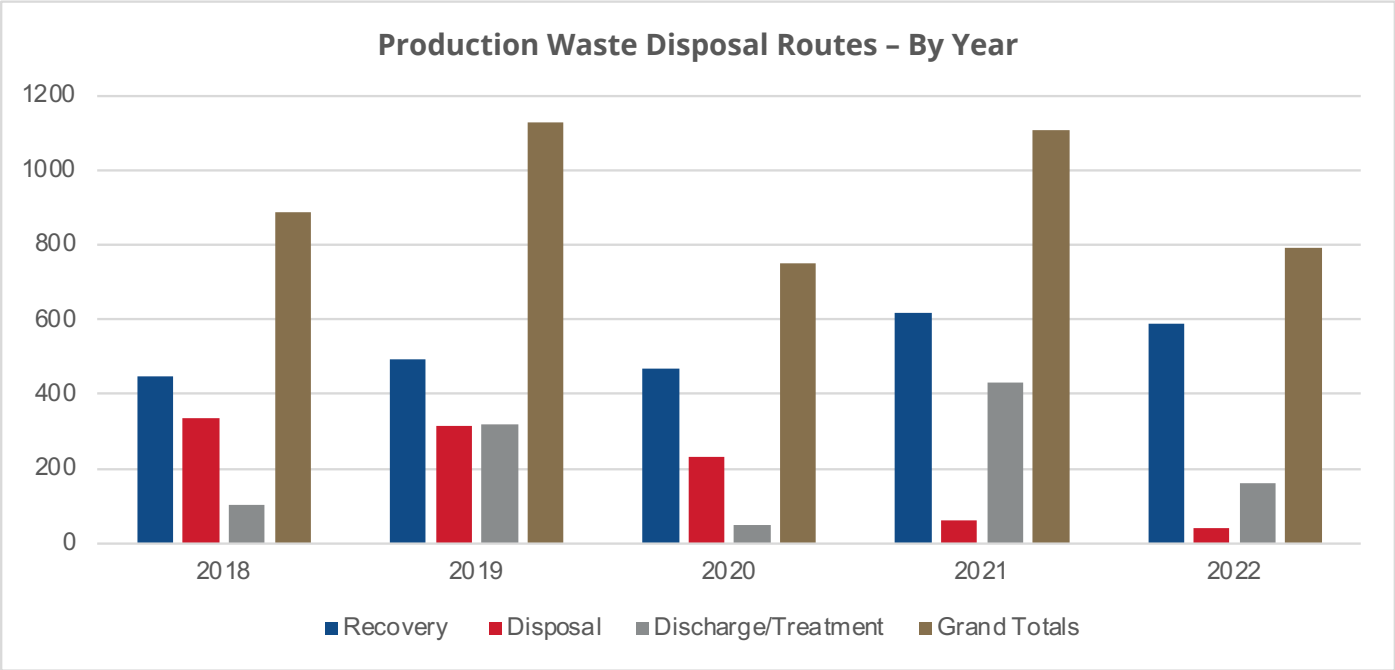




Waste

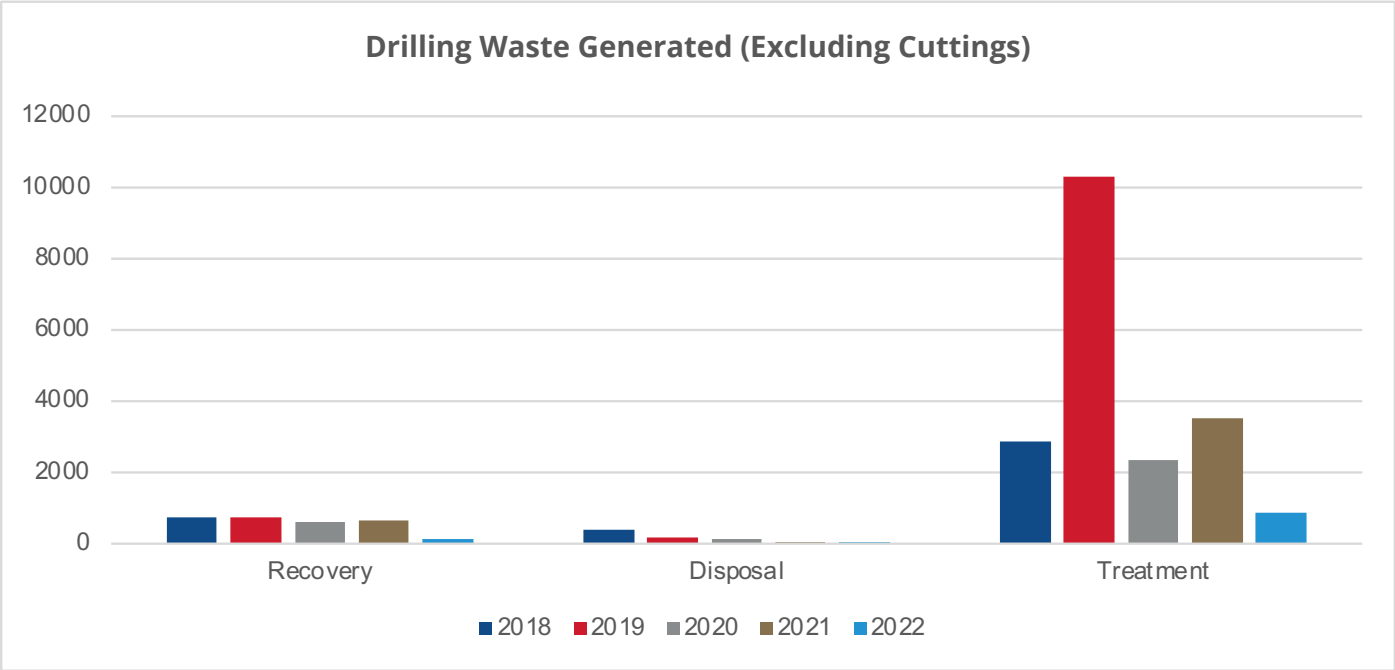
Production Waste

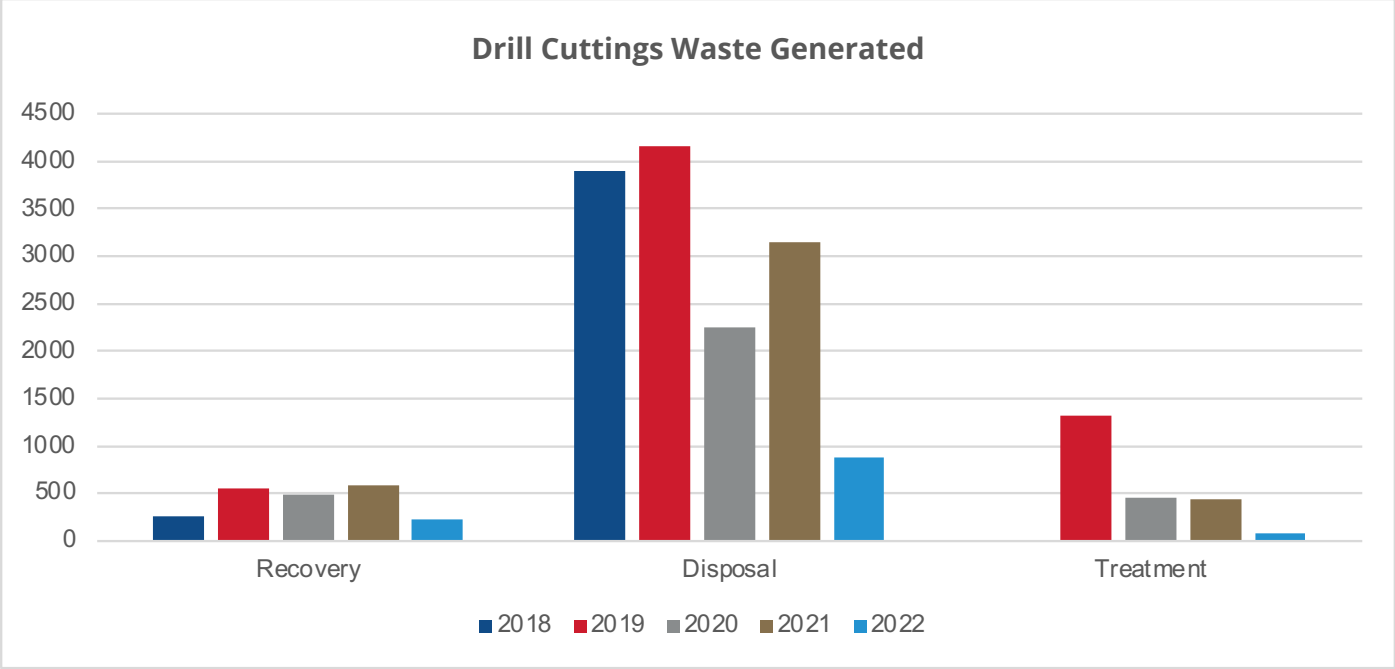
In 2022, 793 tonnes of waste were generated across all installations, which is a decrease from the 1,109 tonnes of waste generated in 2021. This reduction is attributable to the extended TARs across the assets that occurred in 2021 which generated increased volumes of waste. With a Zero Waste to Landfill focus across all CPEL operations, continued low levels of waste was disposed of to landfill with alternative methods and routes being utilised where possible.



Drilling Waste

Drilling waste generated (excluding cuttings) in 2022 was circa. 963 tonnes whereas 2021 was circa. 4,178 tonnes. This is due to the decreased drilling activity in 2022 compared to 2021. During 2021, both the Noble Sam Hartley & Prospector 5 came to the end of their contracts. This led to significant cleaning activities required during the offhire process and the production of significant volumes of waste which also accounts for the significant decrease in 2022 as these activities were not required.

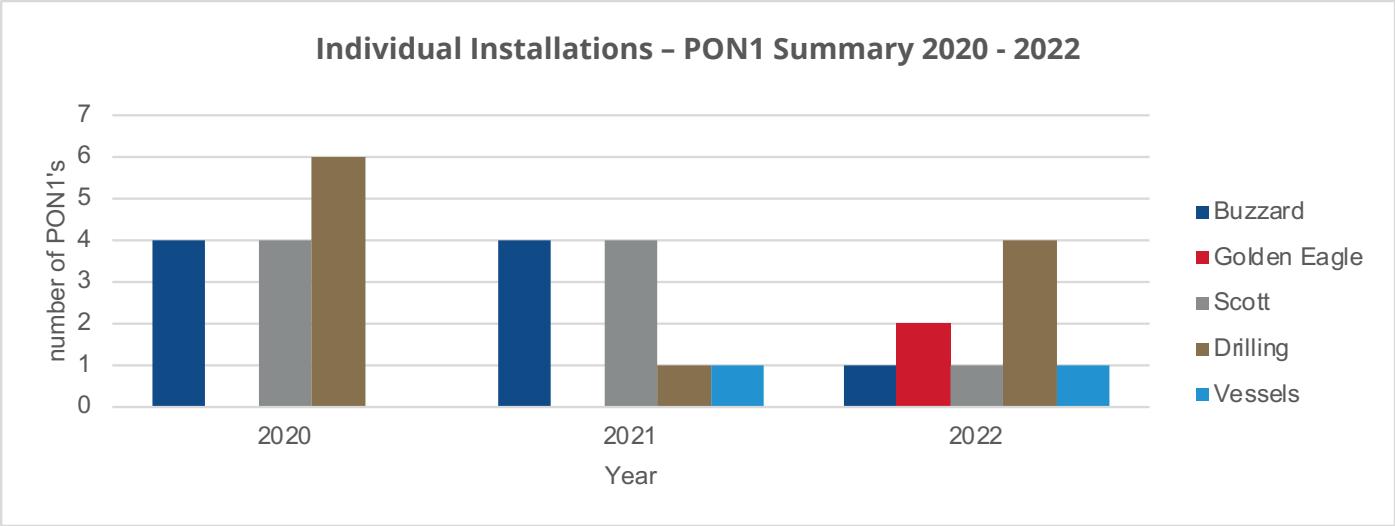




Legal Compliance

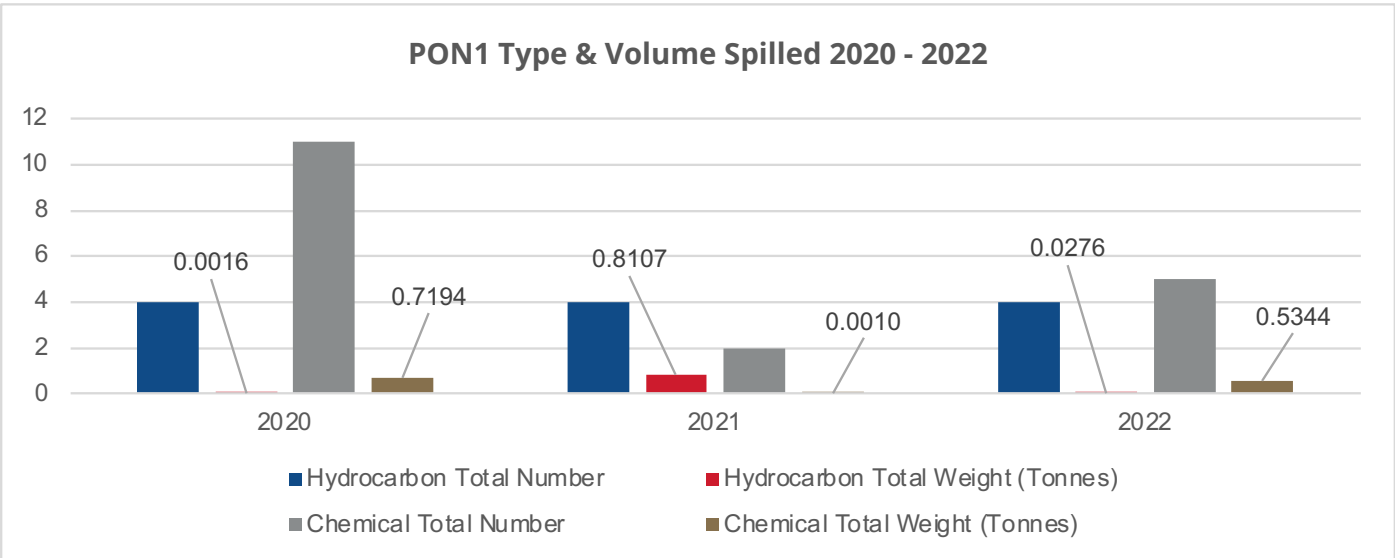
2022 Unplanned Releases

During 2022, there were 9 unplanned releases, an increase from 8 releases in 2021. This figure does not include ongoing PON1s. This is the second lowest recorded number of PON1 reports for CPEL's operations. The majority of releases were from drilling activities (4). The Scott, Golden Eagle, Buzzard and Vessels had 1, 2, 1 and 1 respectively.



The breakdown of the number of PON1s that occurred in 2022 shows that 5 were hydrocarbon related and 4 were chemical related. There was a total of 0.562 tonnes spilled in 2022, of which, hydrocarbon releases accounted for 0.5344 tonnes while chemical spills accounted for 0.0278 tonnes in total.

Although the number of PON1s were higher in 2022 than in 2021, this is the lowest volume of PON1 spilled fluids to date for CPEL. This is attributed to increased environmental hazard awareness and the fact that when spills did occur, they were caught and controlled very quickly, with minimal volumes released.



2022 Regulatory Non-Compliances

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

There were 2 non-compliances incurred during 2022. The first related to the Buzzard PPC Permit SOx emissions limit. This was exceeded due to power generation issues leading to greater than forecasted use of diesel. This non-compliance was detected by CPEL's internal emissions monitoring. The second non-compliance occurred in relation to the COSL Innovator due to inaccurate description of a drainage discharge route within the term OPPC permit. This non-compliance was detected by CPEL's internal audit and assurance activity.

Environmental Objectives & Targets

CPEL's goals and objectives are targeted to address our significant aspects and impacts and ensure compliance with legal and other obligations. 2022 environmental goals and objectives were achieved and exceeded. A management review was held and concluded that the Environmental Management System is fit for purpose in driving continual improvement across CPEL's environmental performance in line with these goals and objectives.

Environmental Objectives 2023

CPEL's environmental objectives are to:

- Manage and minimise emissions from power generation, flare and unburned hydrocarbons.
- Optimise Energy Intensity in line with newly established Energy Performance Indicators (EnPIs).
- Manage and minimise discharges to sea of oil and hazardous chemicals.
- Manage and minimise waste generation within the supply chain to achieve zero waste to landfill.
- Prevent and mitigate significant environmental unplanned/accidental discharges to sea and air.
- Promote and improve environmental awareness and engagement.

2023 environmental targets are:

- Maintain trajectory towards 10% reduction on 2018 baseline emissions by 2025.
- Zero waste to landfill – one or more months < 1 tonne waste to landfill.
- Zero significant (enforcement action level) spills to sea.
- Zero unplanned production permit variations.
- Monthly monitoring of EnPIs.

These objectives and targets are supported by an Environmental Management System foundation of engagement, compliance, and continuous improvement.

Energy for All