bp

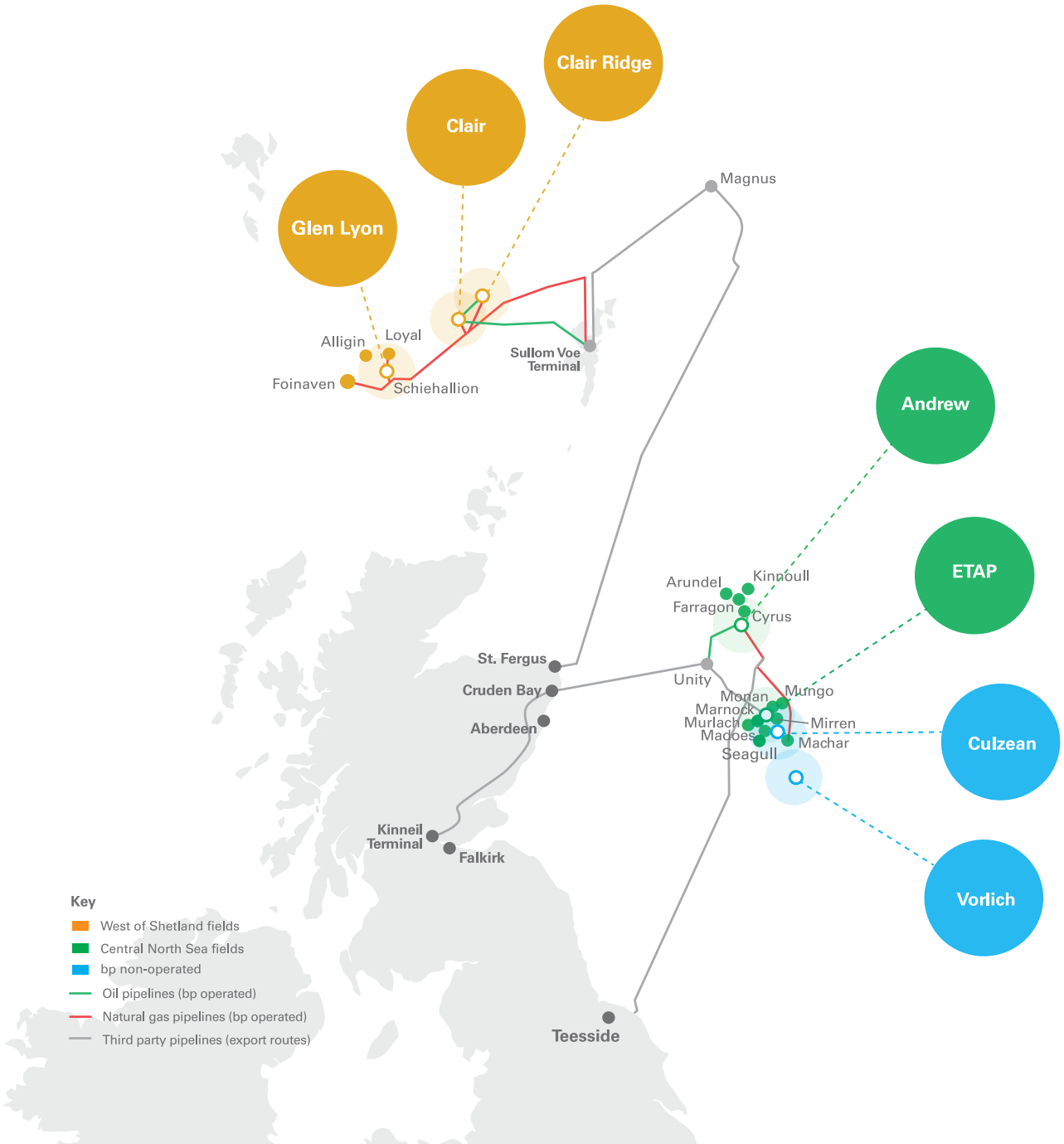
North Sea Region

2023 Annual Environmental Statement

Introduction

This is the annual environmental statement for the bp entities which operated in the United Kingdom Continental Shelf (UKCS) in 2023. It has been prepared in accordance with the requirements of OSPAR Recommendation 2003/5 to promote the use and implementation of environmental management systems by the offshore industry.

The statement covers offshore installations operated by bp entities and facilities owned and operated by third parties while providing services to bp entities in the North Sea. It does not include information on our non-operated portfolio. The data provided in this report was previously reported to the UK environmental regulator (OPRED) via the Environmental Emissions Monitoring System (EEMS).



bp North Sea

bp has been operating in the North Sea for 60 years, providing a reliable source of energy to consumers around the world. As the world transitions to lower carbon and renewable energy sources, oil and gas will still be needed. That's why we are continuing to invest in our North Sea portfolio to help meet today's energy needs, producing energy that can be delivered safely and responsibly while at the same time looking for new ways to lower emissions associated with our operations.

At bp we're in action on the 10 aims we set ourselves to get to net zero: five to help us become a net zero company, and five to help the world meet net zero.

These include:

NetZero operations

Aim 1 - To be net zero across our entire operations on an absolute basis by 2050 or sooner.

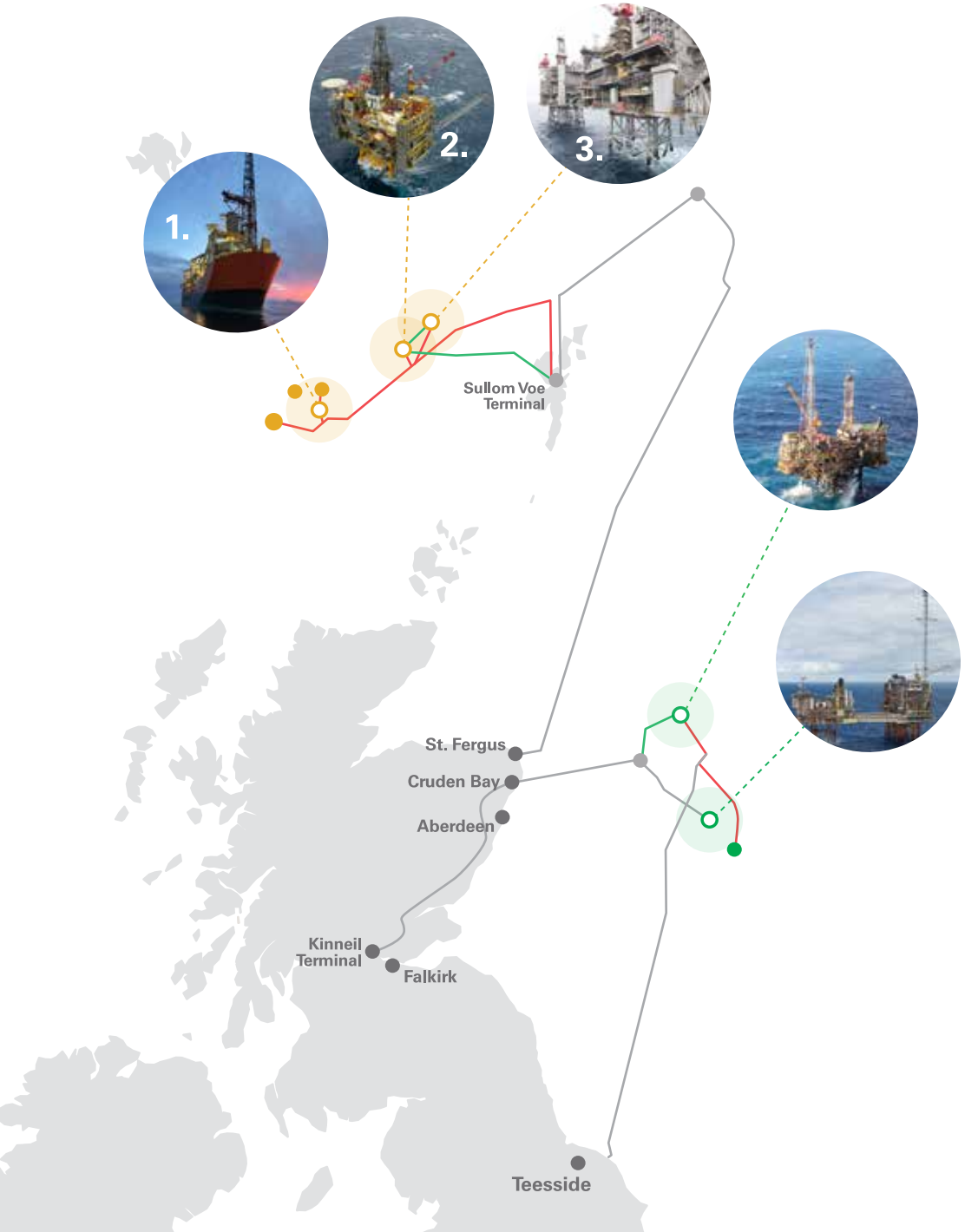
Reducing methane

Aim 4 - To install methane measurement at all our existing major oil and gas processing sites by 2023, publish the data, and then drive a 50% reduction in methane intensity of our operations.

This document sets out the progress we're making towards these aims in the North Sea, as well as other environmental updates, across our North Sea operations.

For example, in 2023:

- We completed the installation of our planned methane measurement equipment on our facilities.
- We decreased our operational emissions by 29% compared to the 2019 baseline.



1. Glen Lyon

The Schiehallion area incorporates the Schiehallion, Loyal and Alligin fields located around 175 kilometers west of the Shetland Islands. The fields produce through the Glen Lyon floating production, storage and offloading (FPSO) vessel.

In 2023, we commenced a drilling campaign to further develop fields in the Schiehallion area, with new production wells planned to tieback to the Glen Lyon FPSO.

2. Clair Phase 1

With an estimated seven billion barrels of oil in place, the Clair field is the largest oilfield on the UK Continental Shelf.

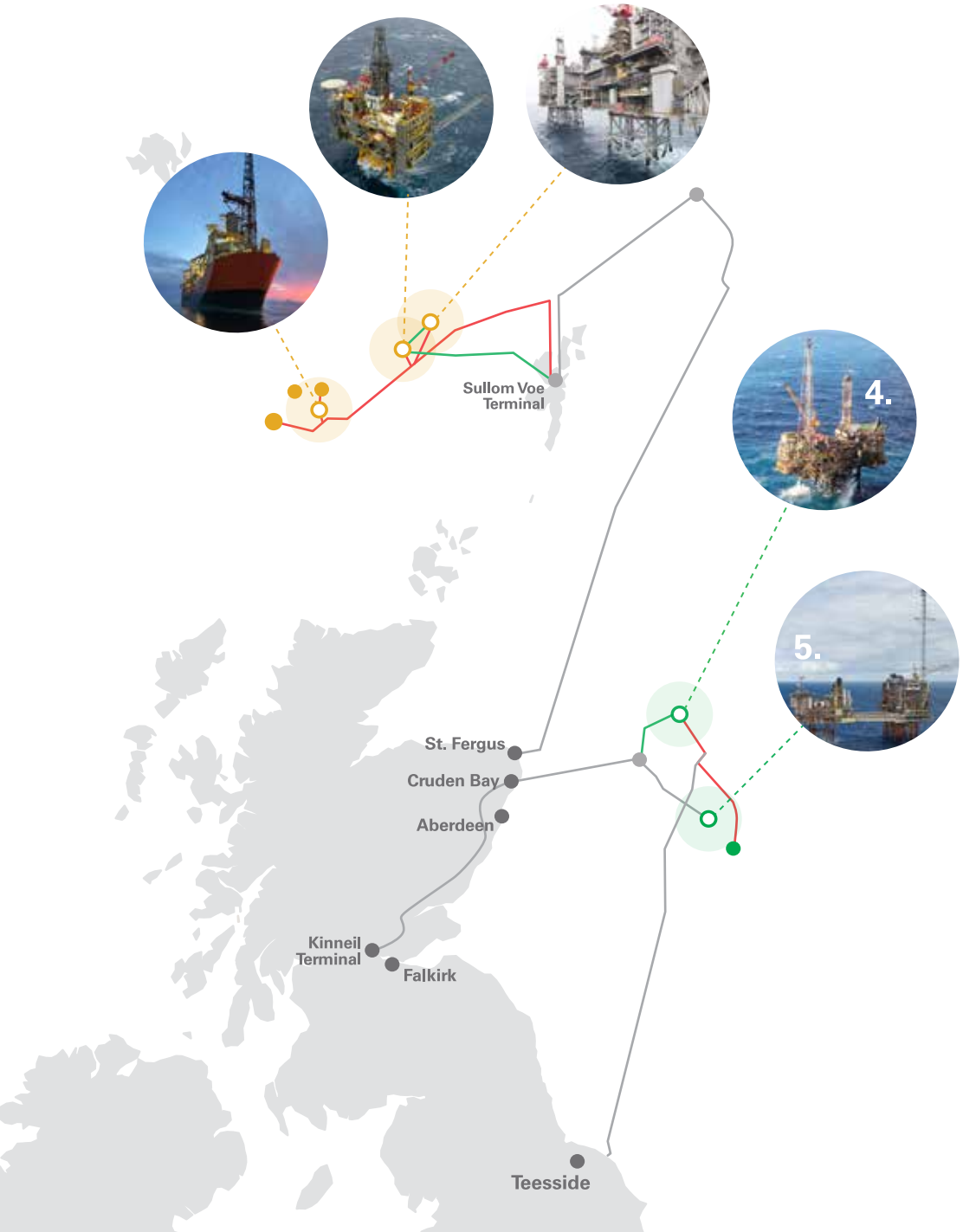
The field, located 75 kilometers west of Shetland, was discovered in 1977, but challenging reservoir characteristics and the technological limits of the time meant it was the mid-1990s before the field saw extensive drilling, and 2001 before bp and partners approved a development plan.

Production from the Clair field began in 2005 through the Clair Phase 1 platform, which was the first fixed platform west of Shetland.

3. Clair Ridge

The size of the Clair field dictates development via a phased approach. Clair Ridge is the second phase of development. The bridge-linked platforms, which delivered first oil in November 2018, are designed to recover an estimated 640 million barrels of oil. bp and partners are now considering options to unlock future energy potential from the Clair field through a third phase of development.

In 2022, bp, along with other west of Shetland operators, signed a memorandum of understanding to explore electrification options for west of Shetland oil and gas interests, including at Clair. Electrification is one of the options available to reduce emissions associated with offshore operations.



4. Andrew

The Andrew area includes the Andrew, Arundel, Cyrus, Farragon and Kinnoull fields, which all produce through the Andrew platform in the central North Sea. Production started in 1994. As the Andrew platform approaches cessation of production, bp is operating the platform under a late life business model that seeks to ensure safe and reliable operations through the platform's final years.

5. Eastern Trough Area Project (ETAP)

ETAP, in the central North Sea, is considered one of the largest and most commercially complex oil and gas developments in the North Sea; multiple fields with varying ownership sharing a central processing facility (CPF).

bp operates all the ETAP fields; Machar, Madoes, Mirren, Monan, Marnock, Mungo and Seagull, which began production in 2023.

A normally unattended installation (NUI) over Mungo stands around 20 kilometers east of the ETAP CPF. Apart from Mungo, which has surface wellheads on the NUI, all other ETAP fields are connected to the CPF via subsea infrastructure.

bp is pursuing opportunities to sustain production at ETAP, including developing the Murlach field which received regulatory approval in 2023, while exploring options to decarbonize the ETAP CPF to reduce operational emissions.

Foinaven (not operational)

The Foinaven field is located 190 kilometers west of Shetland in water depths of up to 500 meters. It was the first deepwater development on the UKCS and the first west of Shetland. In April 2021, bp announced it would be retiring the Petrojarl Foinaven FPSO from operations as the vessel had reached the end of its design life and it was safely removed in 2022.

Non-operated interests

bp holds non-operated interests in the TotalEnergies Culzean development and the Ithaca Energy Vorlich field, both in the central North Sea.

Environmental management

The North Sea oil and gas sector is subject to strict environmental regulation. We work closely with regulators to continuously review what we do, how we do it and how we can do it better. Our operating management system, which includes our environmental management system, is a set of integrated procedures and processes designed to drive continuous improvement in our operations, including regulatory compliance and environmental performance. Our North Sea operations were independently attested against the requirements of ISO14001:2015 in September 2022, which concluded:

- The operating management system is in conformance with the requirements of ISO 14001:2015 and has addressed each of the individual management system elements.
- The operating management system is in place and is being implemented throughout the North Sea organization.

Our environmental & carbon sustainable goals

bp is embedding sustainability in the way we do business and across our strategy. Our sustainability frame sets out our aims for getting to net zero, improving people's lives and caring for our planet.

We aim to achieve this by:

- Transitioning to a net zero company by 2050 or sooner.
- Striving for compliant, conformant and sustainable operations through robust compliance management, responsible use of natural resources, strong relationships with local communities and care for others.
- Managing risk through an efficient and dynamic system, which uses digital, technology and an agile mindset to embed learning.

In 2023, we completed several activities in support of our North Sea environmental goals, including:

- Execution of sustainable emissions reduction initiatives resulting in the reduction of over 40,000 tonnes of CO2 equivalent (CO2e) emissions.
- Introduction of emissions reduction tools and implementation of carbon performance metrics.
- Deploying methane measurement technology and solutions across our operated North Sea portfolio.
- Execution of an emergency response containment and recovery exercise in Shetland.
- Successfully completed SOSREP oil spill exercise.
- Completing post decommissioning environmental survey at North West Hutton.
- Development of a regional Sustainability Plan outlining activity sets in support of the company's Sustainability Aims.
- Contributing 184 hours of volunteering in support of The River Dee Trust Save the Spring efforts, and donation for the trust to fund a Program Manager for the next five years.
- Assessed the labour rights and modern slavery risk in our business and implemented a plan to manage this.

2024 environmental objectives and key results

Area	Objective
Compliance and conformance	Maintain environmental regulatory compliance, and conformance with our internal requirements, to retain bp's North Sea license to operate.
Sustainability	Support implementation of the sustainability plan within the region. Sustain carbon plan and support delivery of emissions reductions across the region.
Development, efficiency & enhancement opportunities	Improve efficiency of environmental and social delivery

Unpermitted releases

bp seeks to avoid unpermitted releases to the environment. Releases are monitored, recorded, and investigated, with the intention of preventing reoccurrences. All known releases are reported to the regulator.

In 2023, we reported 43 uncontrolled releases from offshore operations in the North Sea to the regulator (figure 1). Twelve were chemical and 31 were hydrocarbon releases, with a total mass of 3.8 tonnes released to the marine environment. Of these, a 2.4 tonnes release was due to a coolant release from Clair Phase 1 on the cooling medium returns line caused by pipework contacting the pipe support. Pipework was repaired during facility outage.

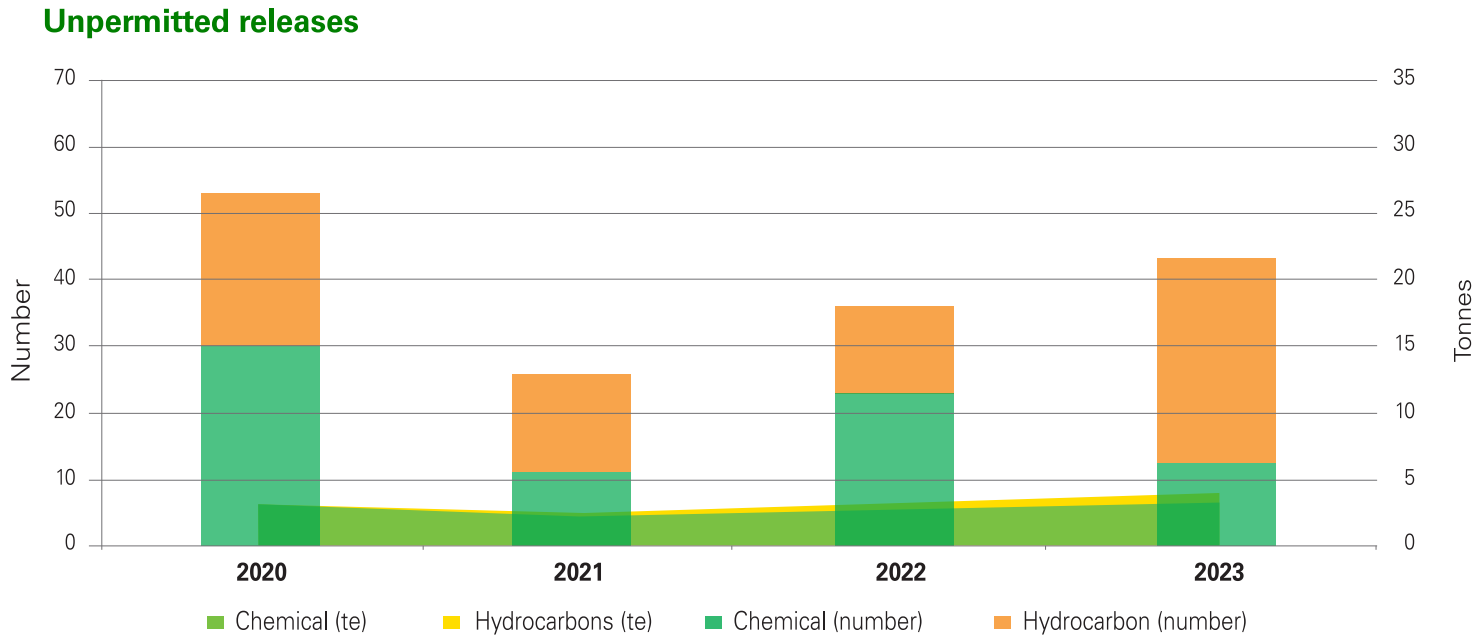


Figure 1: Total number of unpermitted releases of hydrocarbons and chemicals between 2020 and 2023.

Atmospheric emissions

Atmospheric emissions occur in operations, mainly through combustion of fuel gas to generate power and through flaring and venting. They are tracked and reported as per internal and regulatory requirements. We work to manage our emissions to air principally by focusing on plant reliability, energy efficiency and the use of technology, such as flare gas recovery systems.

Greenhouse gas emissions[1] (Aim 1)

The intent of Aim 1 in bp's sustainability framework is to get to net zero across our entire operations on an absolute basis by 2050 or sooner. bp is targeting a 20% reduction in its total Aim 1 operational emissions by 2025 against a 2019 baseline (GHG CO_2e). The bp North Sea region closed 2023 with an overall 29% reduction in those emissions against our 2019 baseline (figure 2).

A 5% increase in bp North Sea's total GHG emissions was reported in 2023 when compared to the previous year. This was associated with recommencement of drilling operations on Clair and Clair Ridge and drilling activities on two mobile drilling units. We also transitioned to the use of the Intergovernmental Panel on Climate Change Assessment Report 5's 100 year Global Warming Potential (GWP) of 28 when converting methane into CO_2e for all our operations, compared to a GWP100 of 25 being used for reporting purposes until 2022.

Our GHG emissions intensity[2] overall performance in the North Sea is provided in figure 3. Emissions intensity increases were observed on Clair Phase 1 associated with recommencement of drilling operations and on Glen Lyon due to unexpected plant instability resulting in higher diesel consumption.

[1] GHG emissions are reported in CO_2 equivalent (CO_2e) which is calculated as the sum of CO_2 emissions and methane emissions based on their relative global warming potential.

[2] GHG emissions intensity is calculated as a ratio of the GHG emissions (tonnes) divided by the production output (thousands boe).

Greenhouse gas emissions

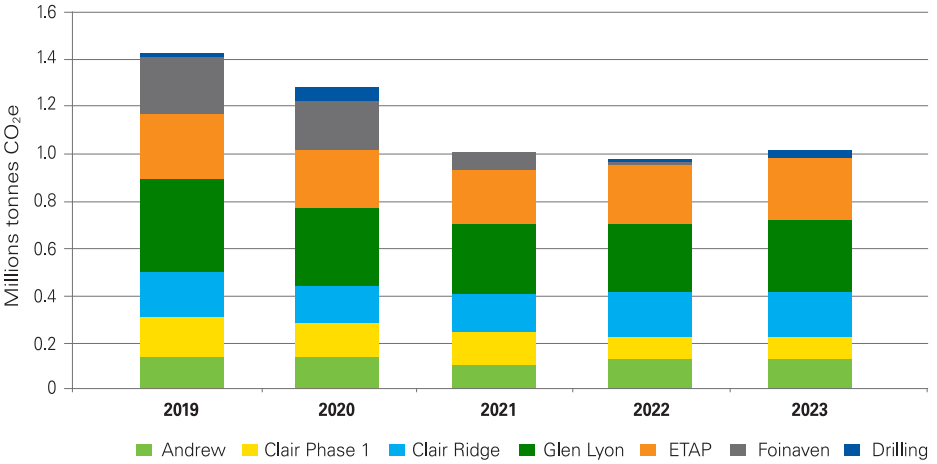


Figure 2: Total greenhouse gas emissions between 2019 and 2023.

Greenhouse gas intensity

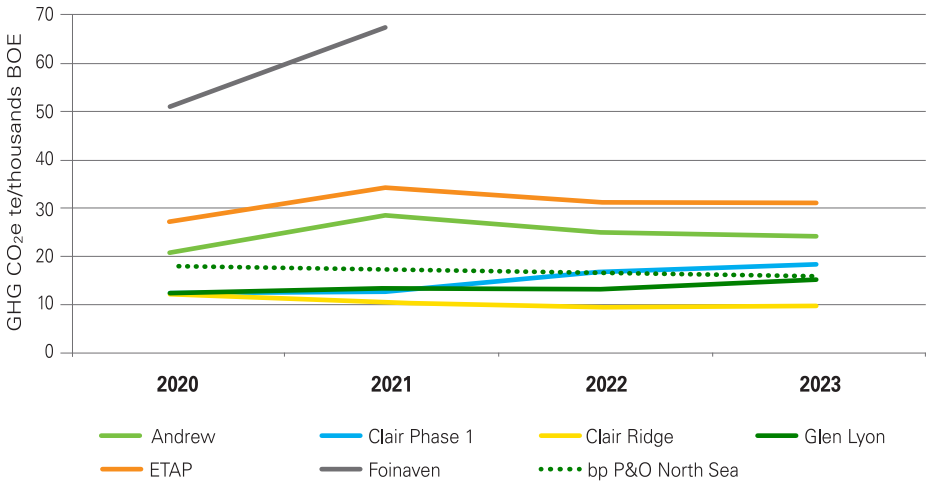


Figure 3: GHG intensity (tonnes of CO_2 equivalent per 1,000 boe) between 2020 and 2023.

Flaring

The option to flare gas from offshore installations is essential for safety reasons. bp seeks to minimize flaring from operations to reduce emissions, maximize gas for export and comply with consented flaring limits.

In 2023, less than 32,000 tonnes of gas was routed to flare (figure 4) in our North Sea operations, a 77% decrease from our North Sea 2019 baseline. This reduction has been achieved by the delivery of flare gas and vapour recovery projects, increasing compression train reliability, well temperature reduction and optimizing shut down / start up processes.

Total production gas flared

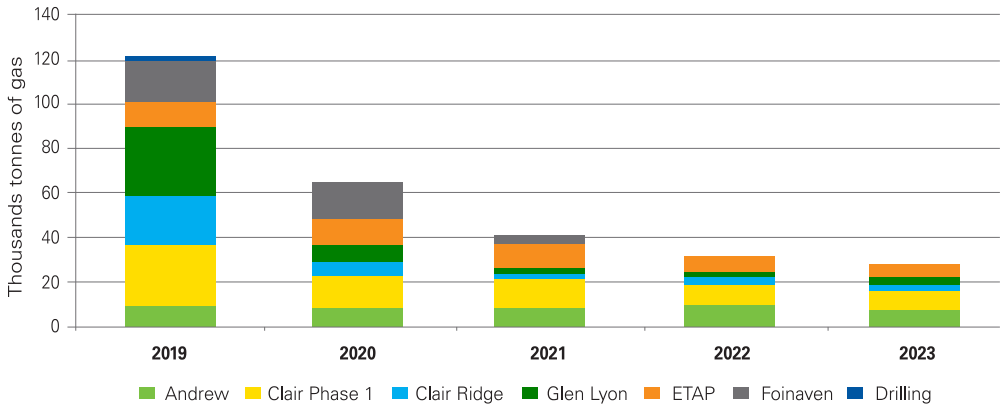


Figure 4: Total production gas flared between 2020and 2023.

> In line with the industry aim to meet the World Bank Zero Routine Flaring initiative, the North Sea region has plans in place to eliminate routine flaring on all bp-operated production facilities by 2030.

Sustainable Emission Reductions

An important aspect of reducing operated emissions has been delivering Sustainable Emissions Reductions (SERs), which are interventions designed to permanently reduce GHG emissions. The SER is quantified by comparing current emissions with those that would have occurred in the absence of the intervention. In 2023 bp North Sea region delivered SERs of over 40,000 tonnes CO_2e through various interventions, such as spinning reserve reduction, plant optimization and efficiency measures.

Sustainable Emissions Reductions (tonnes CO_2e)				
Asset	**2020**	**2021**	**2022**	**2023**
Andrew	6,681	3,115	11,889	2,588
Clair Phase 1	1,375	4,875	5,181	x
Clair Ridge	1,625	325	1,797	4,770
ETAP	20,750	7,250	1,951	15,588
Foinaven	x	700	x	x
Glen Lyon		16,743	9,697	17,953
Total	41,181	33,008	30,515	40,899

Table 1: North Sea SERs delivered between 2020 and 2023.

Carbon performance management

bp has in place a robust carbon performance management plan to support progress towards our Aim 1 targets. This comprises three key processes:

1. **Installed emissions capacity**
2. **Emissions forecasting**
3. **Carbon bridge**

Installed emissions capacity (IEC)

IEC is the lowest agreed rate of absolute emissions achievable using the resources currently available to the production installation, when under optimum operating conditions. The IEC approach sets carbon dioxide (CO2) targets derived from power demand for the planned production delivery, whilst emissions from flare and venting are calculated using the minimum design volumes.

bp uses the IEC process across its North Sea installations to support decision making, identify areas for improvement and drive alignment on GHG emissions as part of daily production management.

Forecasting

The forecasting of GHG emissions uses a bottom-up approach which provides an accurate and standardized process across our operated North Sea portfolio. By understanding energy required and flaring activity to meet associated production plans, each facility is able to build a more accurate forecast of emissions. This is useful, not only in planning and strategy, but also performance management.

Carbon bridge

A Carbon bridge shows overall carbon performance in the same format as production and water injection and is another tool used in bp North Sea operations. The bridge format is used to provide a tool to guide discussions on carbon management and help inform decision-makers.

Methane emissions (Aim 4)

Common sources of methane emissions in oil and gas operations are power generation, fugitive emissions[3], venting[4] and un-combusted flared gas. As an industry, methane emissions have historically been calculated and reported as opposed to direct measurements.

During 2023 we have completed the implementation of our planned methane measurement approach across our upstream oil and gas assets, with the introduction of software for flare destruction efficiency and predictive emissions monitoring on gas turbines.

We have completed drone and aircraft-mounted sensors surveys to verify reported methane emissions in all our North Sea assets. Data from the surveys is extracted to create a two-dimensional map of methane emissions for each installation and compared to the 'bottom-up' measurements to ensure that all methane sources have been accounted for in the measurements and calculations.

> bp has been given the honour of Gold Status by the United Nations Environmental Programme (UNEP) in recognition of our plans covering methane measurement and reduction from our assets for the second year running.

> In line with bp's Aim 4, our North Sea operating sites completed the installation of new software packages which will improve methane measurements associated with gas turbines and flare systems.

[3] Fugitive emissions typically occur at very low activity levels but carry a much higher emissions factor compared, for example, to fuel or flare gas.

[4] Venting refers to the routing of hydrocarbon gas to an unignited flare tip (also called cold venting) or direct escape to atmosphere from process equipment (i.e. from storage tanks).

Produced water

Fluids produced from oil producing wells often contain large quantities of water as well as hydrocarbons. During processing, hydrocarbons are separated for export and the water, containing trace amounts of oil, is either reinjected into the reservoir or discharged to sea in accordance with the installation's design and oil discharge permit.

bp aims to minimize its oil discharge to the environment by reinjecting water into the reservoirs. 78% of the total water produced by our North Sea installations during 2023 was reinjected into the reservoirs (figure 5).

Produced water

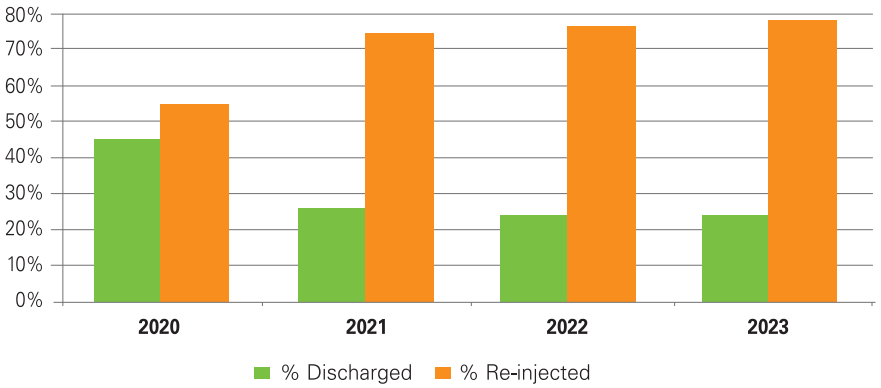


Figure 5: Total produced water reinjected and discharged ratio between 2020 and 2023.

Average oil concentration in produced water

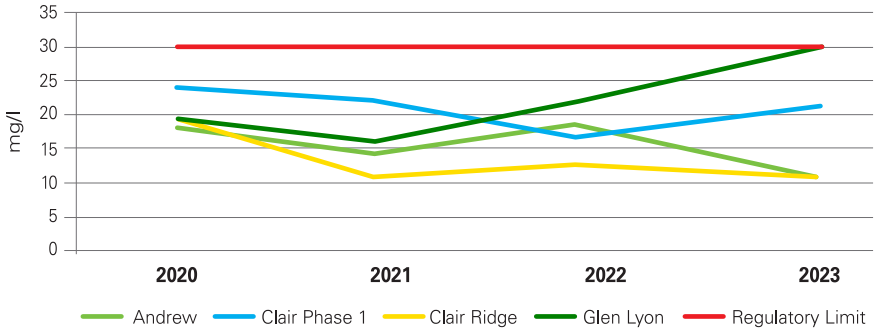


Figure 6: Annual average oil in produced water discharge between 2020 and 2023

Our installations' annual average concentration of oil discharged with produced water remained below 30 milligrams per litre during 2023, as shown in figure 6. ETAP reinjects 100% of its produced water.

Although Glen Lyon's average oil concentration in produced water increased during the year, the total volume of produced water reinjected exceeded 99.5% (figure 7).

Total oil discharged in Produced water

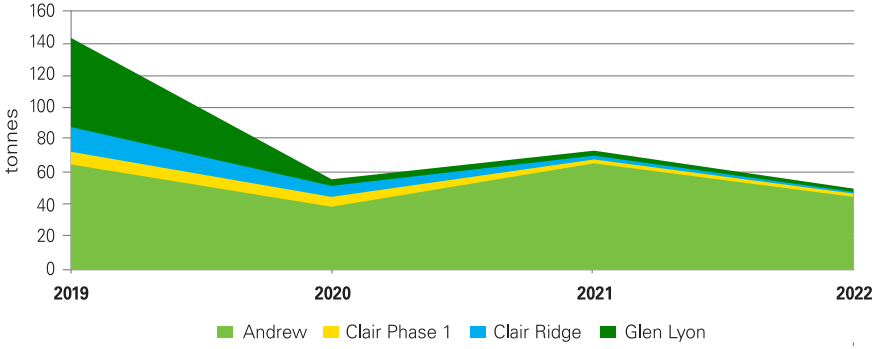


Figure 7: Total oil discharged in produced water between 2020 and 2023.

Chemicals

Chemicals are used during offshore operations to improve the flow of fluids, facilitate the separation of materials, prevent degradation and fouling of equipment and in control systems. Subsea operations also use chemicals for flushing of pipelines and subsea infrastructure to remove hydrocarbons before maintenance and inspection activities. Their usage and discharge are permitted by the regulator (figure 8).

Of the chemicals discharged from bp production and subsea operations during 2023, 62% were PLONOR (posing little or no risk to the marine environment) and 18% were flagged with a substitution warning (SUB[5]), as defined by the regulator. Glen Lyon chemical discharges are higher than our other installations due to the nature of the subsea tiebacks and the large volumes of produced fluids requiring treatment.

bp has been working with our chemical suppliers to assess further reduction in the use and discharge of chemicals that carry a substitution warning. This has resulted in the removal of four chemicals with substitution warnings from our production chemical permits in 2023.

Production and subseas chemicals used

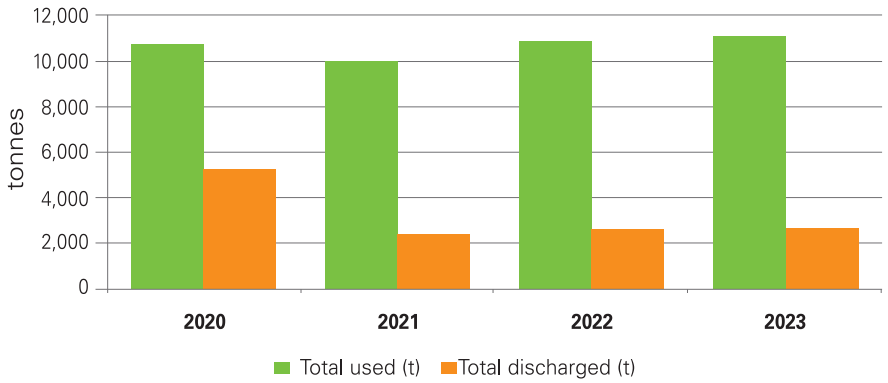


Figure 8: Total permitted production and subsea chemical use and discharge between 2020 and 2023.

Chemicals discharged

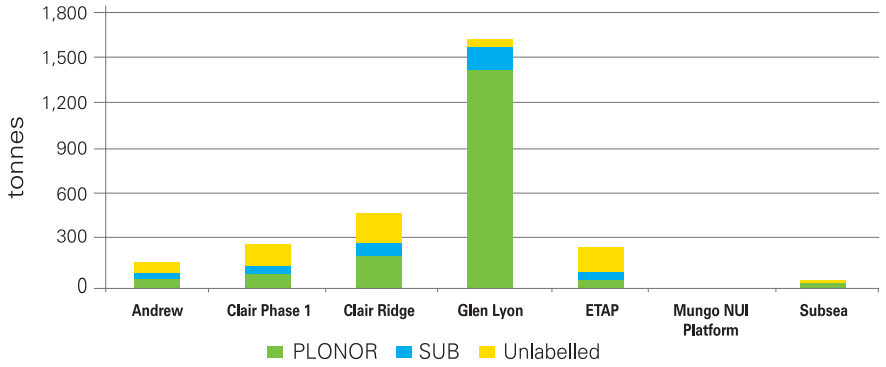


Figure 9: Total permitted production chemicals discharged during 2023.

[5] Offshore operations in the UK are required to comply with an OSPAR harmonised pre-screening scheme and comply with REACH recommendation to replace chemical substances identified as candidates for substitution (SUB). Substances are flagged with a substitution warning based on their toxicity, bioaccumulation, and biodegradability.

Operational waste

Waste from offshore production installations is sent to shore for treatment and disposal. During 2023, 60% of our offshore waste was either reused, recycled, or used in waste to energy and 13% was sent to landfill (figure 10). Drilling waste is covered in Section 9.

The large quantity of treated waste is attributed to waste liquids and sludges, including those fluids generated from tank washing activities. This waste is sent for treatment where the material is physically and chemically treated to remove contamination and then discharged to sewers.

Special waste includes paints, hazardous chemicals, oils, batteries, aerosols, heavy metals, wax from pigging operations and oily waste. The increase in landfill special waste in 2023 (Figure 11) was associated with contaminated chemicals, sent to landfill as no alternative disposal route is currently available for this type of waste. This was a one-off event and steps have been put in place to prevent a similar event from reoccurring.

Operational waste (tonnes)

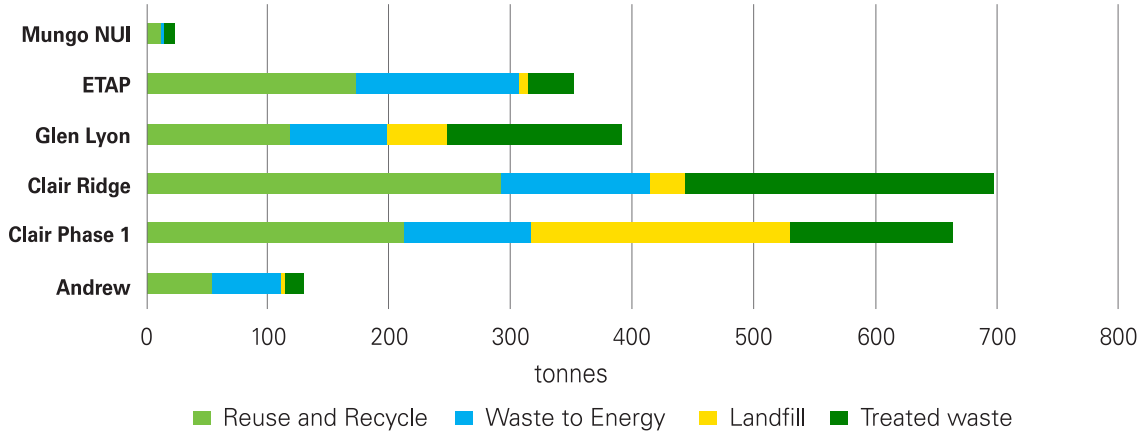


Figure 10: Total waste reported during 2023.

Special waste (tonnes/year)

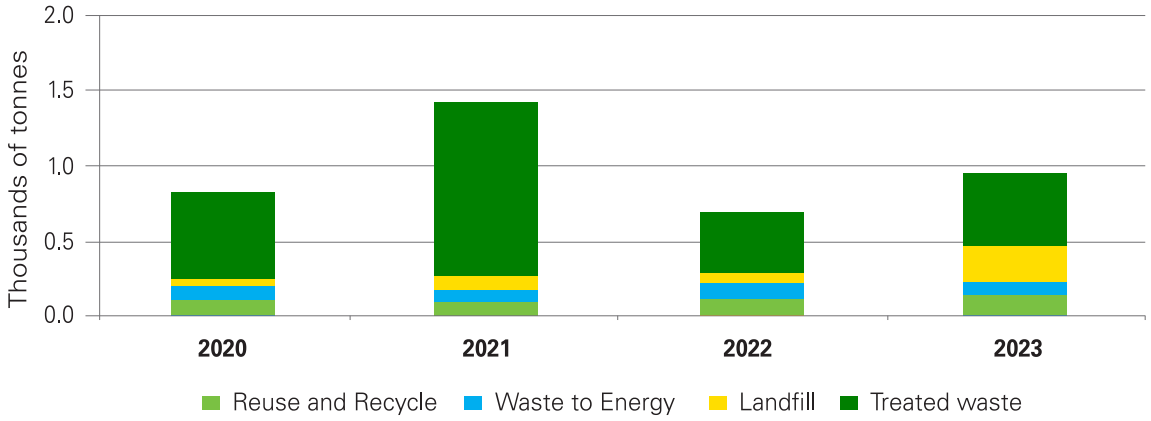


Figure 11: Special waste reported between 2019 and 2022.

Non-special waste includes segregated recyclables (paper, packaging, wood etc.), general waste (i.e. accommodation waste) and uncontaminated scrap metals. Quantities of non-special waste generated by bp operated installations are shown in figure 12.

General waste (tonnes/year)

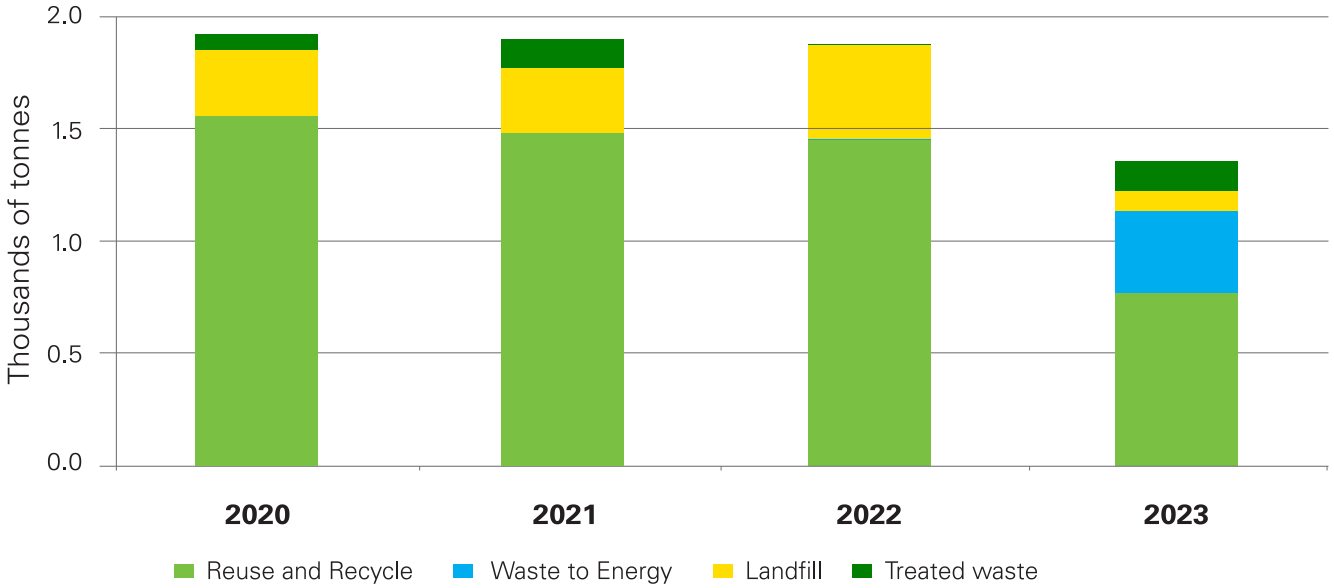


Figure 12: General waste reported between 2020 and 2023.

"During 2023 we have implemented a Zero General Waste to Landfill initiative in partnership with our waste contractor. General waste is diverted away from landfill into waste to energy plants, reducing landfill emissions and reliance on primary fuels."

Drilling and well intervention summary

During 2023, bp drilled six wells from our installations and contracted mobile drilling units, plugged and abandoned two wells, with a further seven well interventions completed within our North Sea portfolio. Drilling chemicals usage and discharge are provided in figure 13. Of the total chemicals discharged, 97% by weight were classed as PLONOR.

Cuttings produced when using water-based muds were discharged to the marine environment as permitted by the regulator, whilst cuttings from sections drilled with oil-based muds were either reinjected or returned to shore for treatment.

Waste generated by mobile drilling units is provided in figure 14, and includes special wastes such as hazardous completion, workover and drilling fluid additives.

Drilling cuttings and chemicals

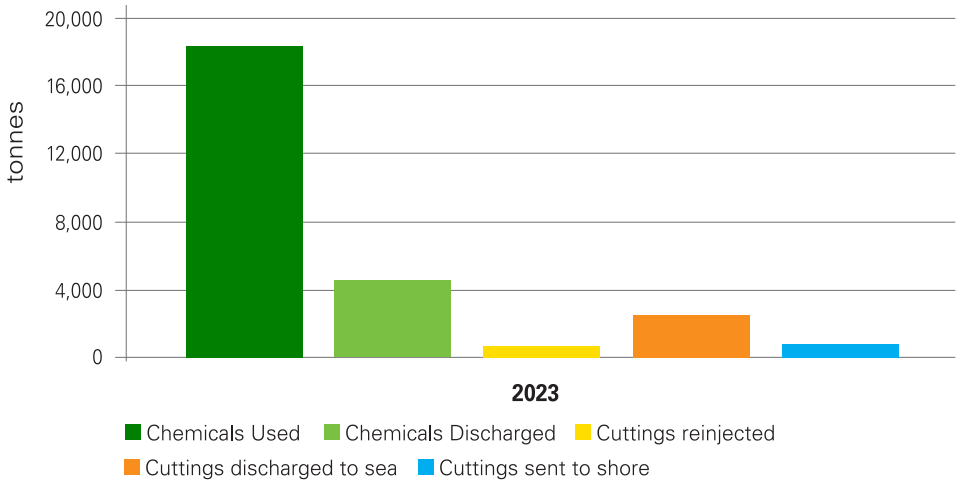


Figure 13: Drill cuttings (reinjected, discharged and disposed to landfill) and drilling chemicals used and discharged in 2022.

Drilling waste

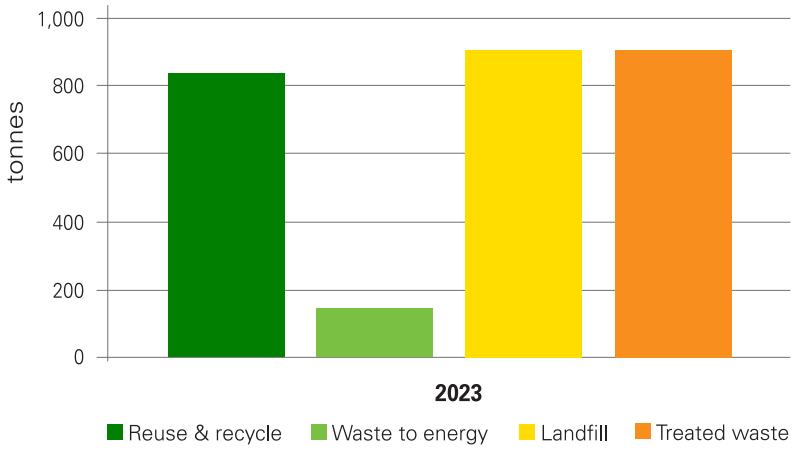


Figure 14: Total waste from drilling operations reported in 2023.

bp North Sea UK HSE Policy

bp's commitment to **health, safety** and **environmental** (HSE) performance

Our HSE goals are simply stated:

no accidents, no harm to people and **no damage to the environment.**

We strive to be a safety leader in our industry, a world-class operator, a good corporate citizen and a great employer. Nothing is more important to us than the health, safety and security of our workforce and the communities in which we operate, and behaving responsibly towards our shared environment. We must be vigilant, disciplined and always looking out for one another.

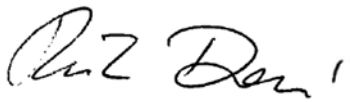
We are committed to:

- complying with applicable laws and company policies and procedures
- systematically managing our operating activities and risks
- reporting our HSE performance
- learning from internal and external HSE events

In the North Sea our mission is to achieve zero life changing injuries, zero serious process safety events and have the lowest possible environmental impact, emissions, and methane intensity. We therefore expect all staff and contractors to stop work when there is an unsafe act or condition, non-compliance with legislation or when unable to meet bp requirements.

Everyone who works for bp has a part to play in meeting our HSE commitment. Our Safety Leadership Principles are an important guide on how we can achieve this. Together we:

1. Genuinely care about each other
2. Will not compromise our focus on safety
3. Encourage and recognize speak up
4. Understand how work actually happens
5. Learn why mistakes occur and respond supportively



Doris Reiter
SVP North Sea

19 October 2022 (updated 3 yearly)

bp
1 Wellheads Avenue, Dyce, Aberdeen, AB21 7PB

www.bp.com