



# North Sea Region report

UK environmental performance 2014





## Introduction

To fulfil the requirements of OSPAR Recommendation 2003/5 all operators of offshore installations on the UK Continental Shelf (UKCS) are required to produce an annual environmental statement which is made available to the public and the Department of Energy and Climate Change (DECC)<sup>1</sup>. This is BP's annual environmental statement for the UK North Sea Region in 2014, which includes offshore installations and onshore terminals operated by BP and also data which relates to installations owned and operated by third parties in the course of providing services to BP.

## Environmental impacts

We are committed to minimising our impact on the environment and, while environmental challenges and opportunities differ depending upon the lifecycle stage, our overarching goal of no damage to the environment remains the same.

The North Sea oil and gas sector is subject to strict environmental regulation, with which we strive to comply at all times. We work closely with regulators to constantly review what we do, how we do it, and how we can do it better. Our Operating Management System is designed to drive continuous improvement in our regulatory, compliance and environmental performance. This system is certified to the international environmental management standard ISO 14001; it is subject to regular internal and external audit and requires recertification every three years. In 2014, we focused on our flaring performance during operations and start-ups and worked with other operators and the regulator to identify and share best practices and explore potential opportunities to improve performance.

## Our goal

To cause no damage to the environment by:

- systematically identifying environmental impacts and seeking to avoid or minimise them;
- establishing annual objectives to improve environmental performance;
- putting plans in place to reduce environmental risks associated with our projects and operations;
- working to understand developments in future environmental legislation and ensuring our continued compliance.

## Note

The vast majority of emissions and spills reported in this Statement under the category "drilling" relate to operations undertaken by third parties such as drilling contractors from installations owned and operated by those third parties whilst providing services to BP.

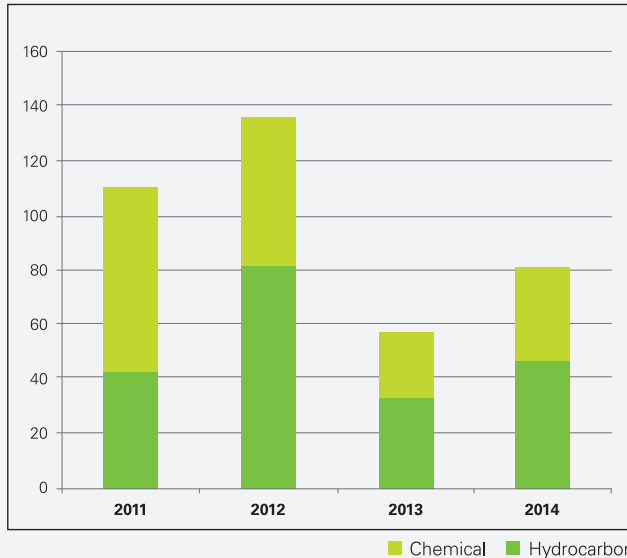
<sup>1</sup> DECC Guidance and Reporting Requirements: Environmental Management System Requirements in relation to OSPAR Recommendation 2003/5 to Promote the Use and Implementation of Environmental Management Systems by the Offshore Industry



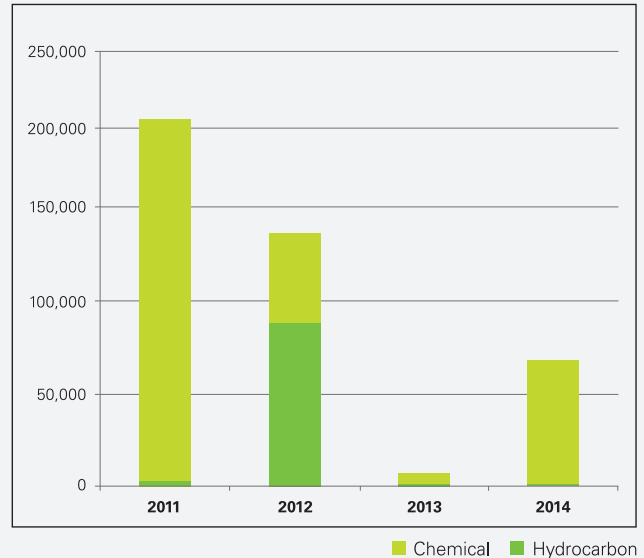
# 1. Spills

We use chemicals offshore to improve the flow of fluids, to facilitate the separation of materials, to prevent the fouling of process equipment and within control systems. The composition of these chemicals is extremely diverse. We minimise the risk of chemical and oil spills by maintaining equipment and following operating procedures.

**Number of spills of chemicals & hydrocarbons**



**Quantity of chemicals & hydrocarbons unrecovered (kg)**

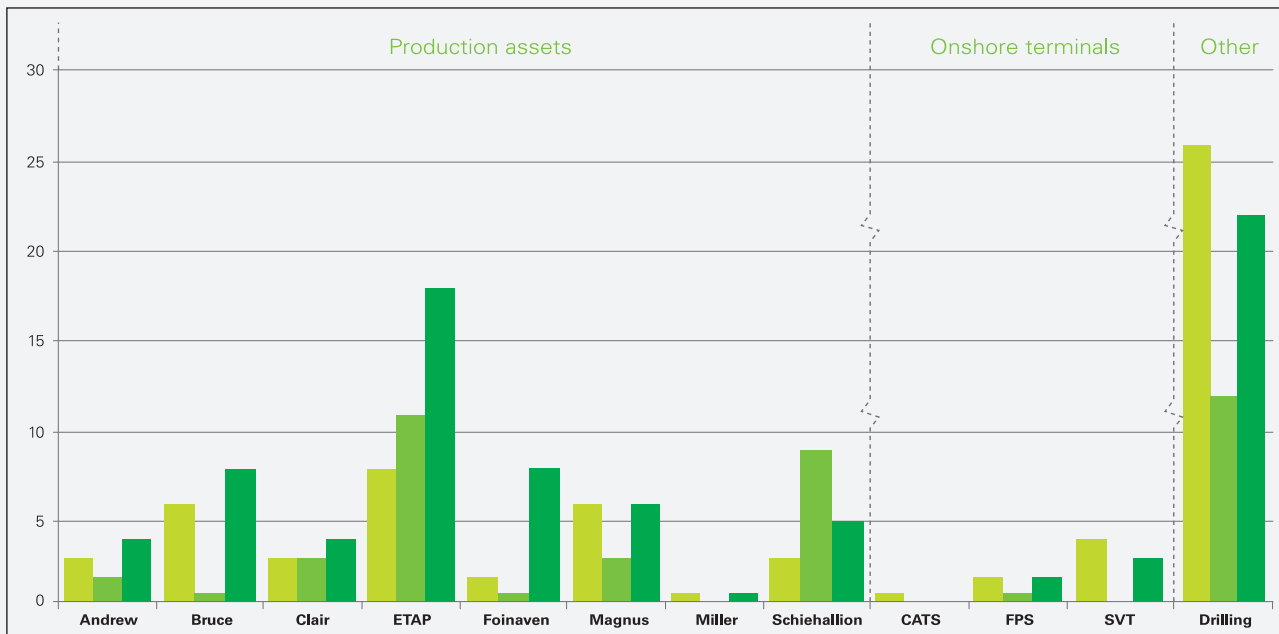


We monitor the number and volume of oil and chemical spills from our operations and those of third parties providing services to BP. The total number of spills and the total quantity of oil and chemicals unrecovered in 2014 was higher than in 2013, but lower than in 2011 and 2012. More than half of the spills were less than 10 kg and most of these spills consisted of low-toxicity hydraulic fluid. The total volume of spills increased compared to 2013 as a result of the occurrence of four spills greater than two tonnes in 2014, compared with zero in 2013. Two of the spills greater than two tonnes were of chemicals classified as those which “pose little or no risk to the environment”. Of the four spills referenced below, three were from installations owned and operated by third parties providing services to BP (the spill of 7 tonnes at Foinaven was in respect of subsea wells for which BP is the well operator).

Asset/Unit	Quantity Released (t)	Brief details
Foinaven FPSO	6	During transfer of calcium nitrate from supply vessel to FPSO, bunker hose parted from its coupling releasing chemical to sea. This is a PLONOR chemical which is biodegradable and non-bioaccumulative
Foinaven Subsea Well	7	Failure of subsea control module causing a release of hydraulic fluid
ENSCO 101 Mobile Drilling Rig	17	Release of water based drilling mud to sea following procedural failure with control of fluid circulation
Byford Dolphin Mobile Drilling Rig	29	Cement released due to an incorrect valve line up on the cement unit (PLONOR chemical)

## 1. Spills (cont'd)

Total number of hydrocarbon and chemical spills reported to the regulator

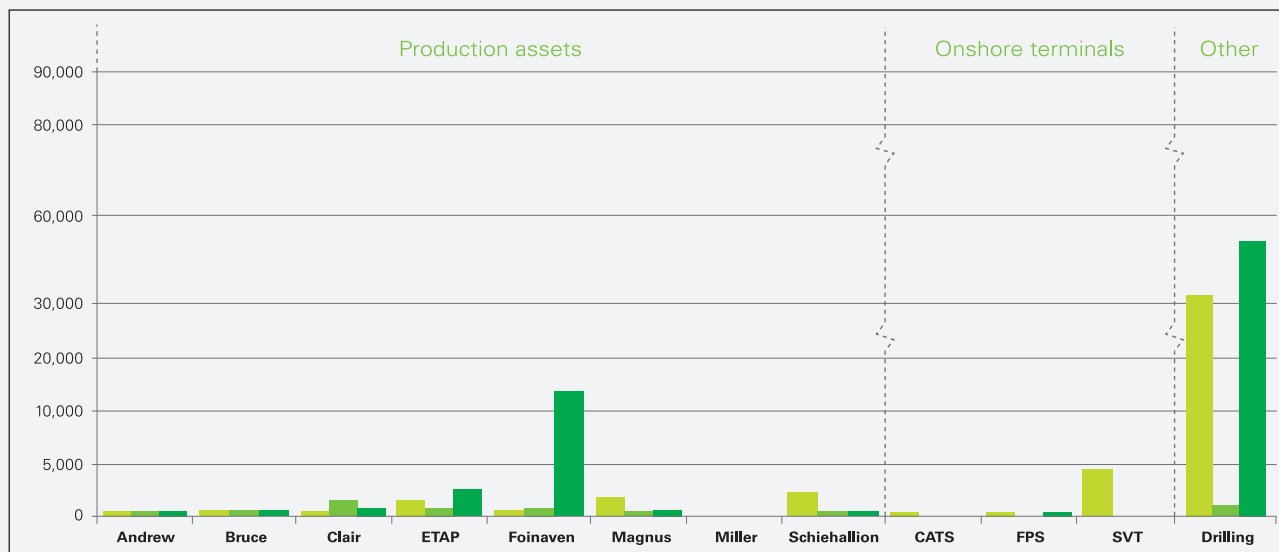


Includes offshore PON1 notifications submitted to DECC and onshore spills reported to the regulator.

■ 2012 ■ 2013 ■ 2014

There were four reportable spills at our onshore terminals in 2014. At FPS Kinneil Terminal a release of water/hydrocarbon material from an underground drain line collected in a surface water drainage ditch within the Terminal. The material was recovered from the ditch which has subsequently been remediated. At Sullom Voe Terminal there were three very small spills and 99% of material was recovered. Over half of the quantity spilled during drilling relates to the two spills from the ENSCO101 and Byford Dolphin mobile drilling rigs referenced in the previous table.

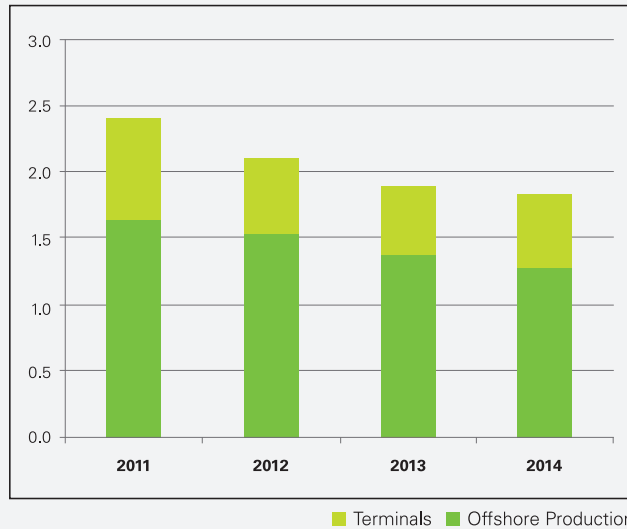
Total hydrocarbon and chemical unrecovered spills (kg)



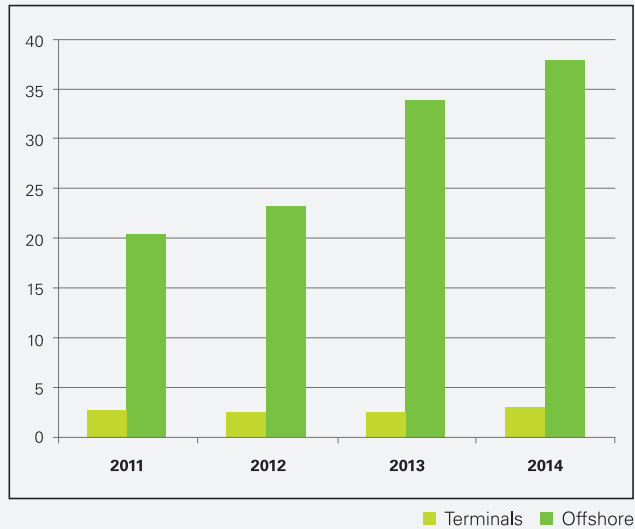
■ 2012 ■ 2013 ■ 2014

## 2. Atmospheric emissions

**Total greenhouse gas emissions** (millions of tonnes of CO<sub>2</sub> equivalent)



**Greenhouse gas emissions per unit of production** (tonnes of CO<sub>2</sub> equivalent per 1,000boe)



We report greenhouse gas (GHG) emissions on a carbon dioxide (CO<sub>2</sub>)-equivalent basis, including CO<sub>2</sub> and methane. Our GHG emissions decreased by about 56,000 tonnes in 2014, principally due to production fluctuations, asset divestment and the shutdown of the Schiehallion floating, production, storage and offloading (FPSO) vessel. The trend of decreasing emissions primarily reflects divestments undertaken since 2010.

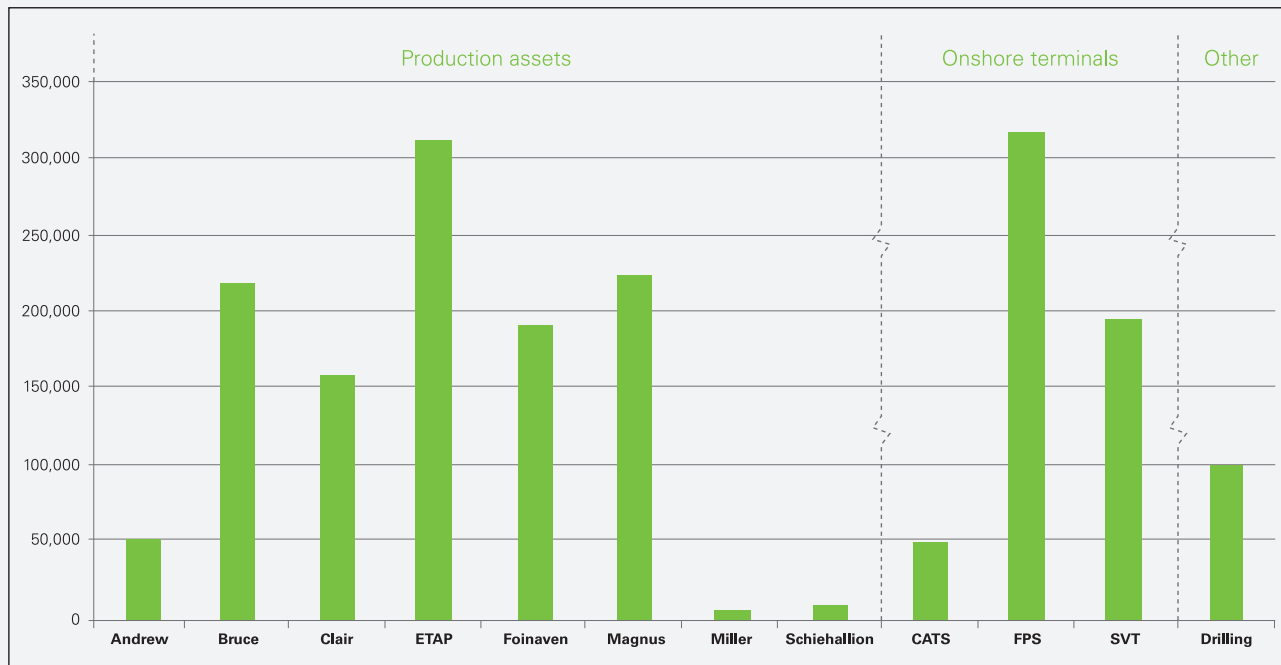
We also review GHG emissions per unit of production. Offshore, the GHG intensity in 2014 was 37.94 tonnes of CO<sub>2</sub> equivalent per 1,000 barrels of oil equivalent (teCO<sub>2</sub>e/mboe). This is around 12% higher than in 2013.

The principal reason for higher GHG intensity is that emissions occur during shut down and start up procedures, when there is little or no production. In 2014, there were emissions associated with the start-up of the Rhum subsea installation, and also the Andrew offshore installation, which recommenced operations after a lengthy shutdown, but production was limited. There were also planned and unplanned maintenance activities on other offshore installations that resulted in emissions but no corresponding production.

There is an underlying increase in GHG emissions intensity from offshore operations over time. This is typical for mature facilities, where over time the volume of oil produced declines, while the volume of produced water increases. Consequently, the overall volume of liquids processed increases, thereby requiring more energy and associated GHG emissions. In many cases, the remaining oil in mature reservoirs is more difficult to extract, requiring more energy-intensive enhanced recovery techniques, which also lead to increases in GHG emissions.

## 2. Atmospheric emissions (cont'd)

Greenhouse gas emissions by asset (tonnes of CO<sub>2</sub> equivalent)



ETAP has the highest greenhouse gas emissions of any asset due to it being a large offshore installation with high capacity turbines.

Turbines are the largest source of atmospheric emissions from offshore operations. In addition to this, there are significant emissions from flaring. We seek to manage flaring in our operations and encourage third parties providing services to BP to do likewise, to maximise resource conservation and ensure compliance within permitted limits. In 2014, around 225,000 tonnes of gas was flared, a decrease of about 2% versus 2013. The decrease in flaring in 2014 was principally due to reduced flaring at the third party operated Foinaven FPSO as it recovered from gas compression issues experienced in 2013. Flaring remains higher than normal at the Sullom Voe Terminal due to continued gas processing issues. Flaring from the Forties Pipeline System (FPS), while appearing relatively high in comparison to other assets, was at normal levels and within permitted limits.

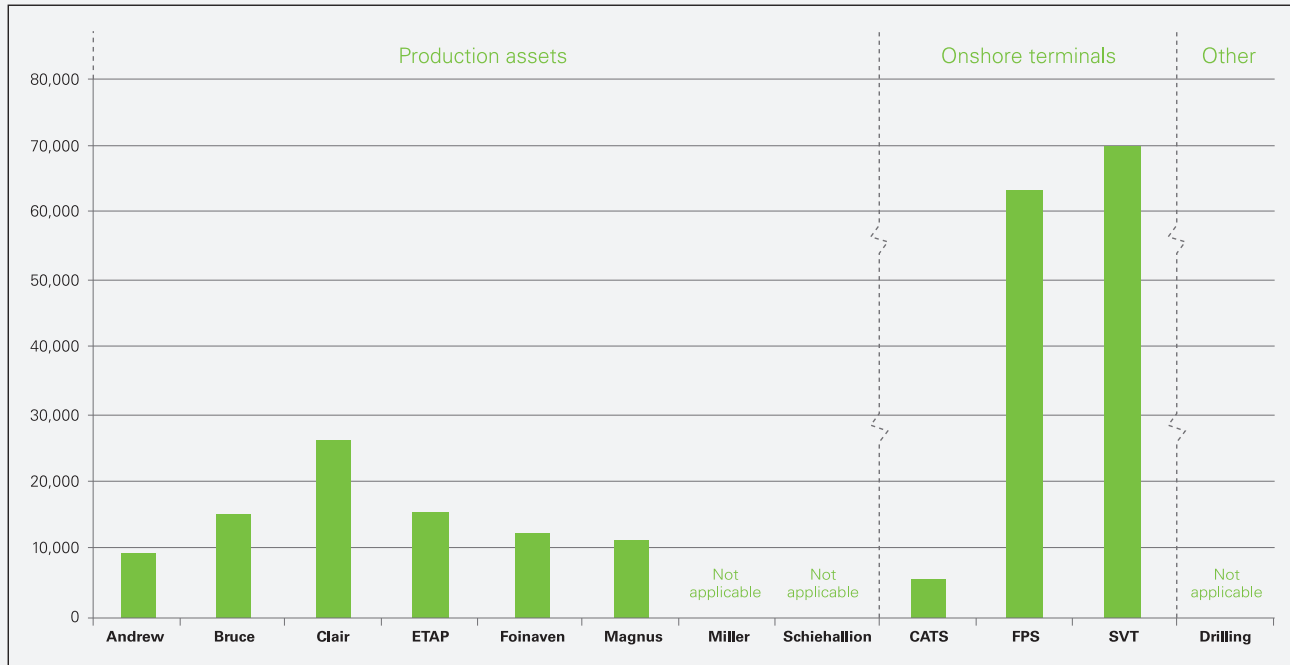
Onshore terminals, such as FPS and Sullom Voe Terminal process oil and gas from multiple offshore installations. FPS is the largest of these onshore terminals, processing oil and gas from more than 70 offshore installations. It therefore typically has higher flaring and atmospheric emissions levels than smaller terminals or individual offshore installations.

FPS has high levels of non-greenhouse gas emissions predominantly due to emissions of volatile organic compounds (VOCs) emitted during tanker loading of crude oil.

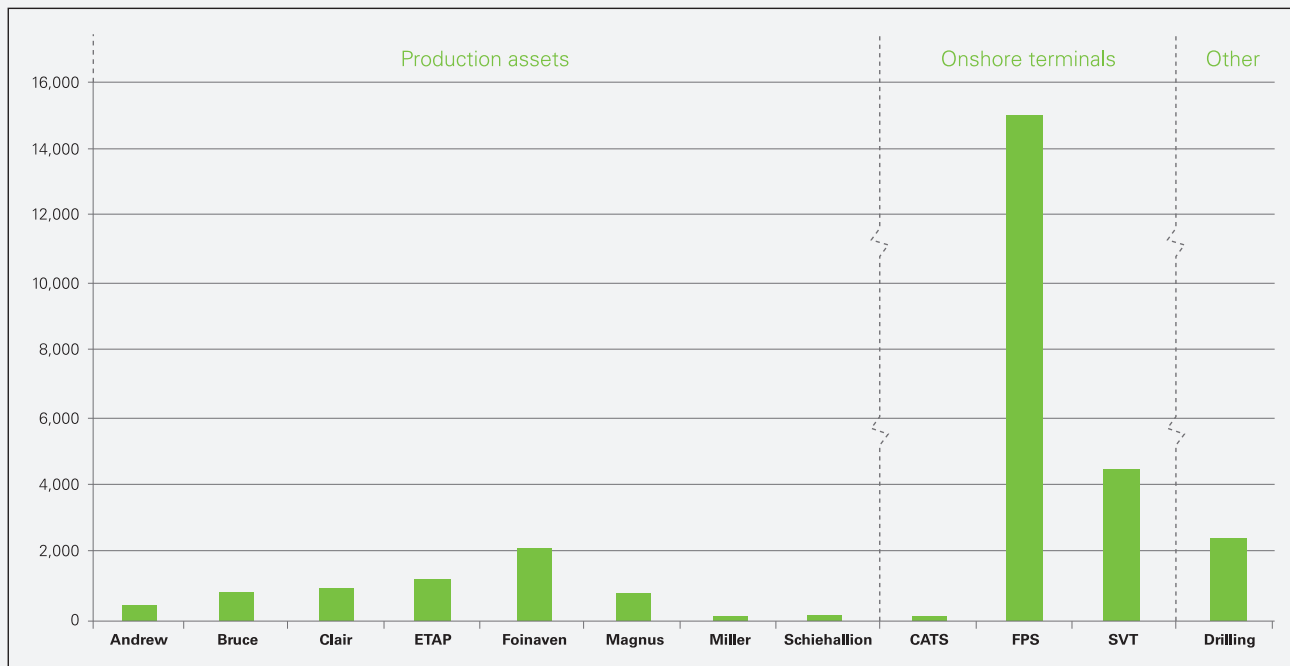


## 2. Atmospheric emissions (cont'd)

Total production gas flared (tonnes)



Total non-greenhouse gas emissions (tonnes)

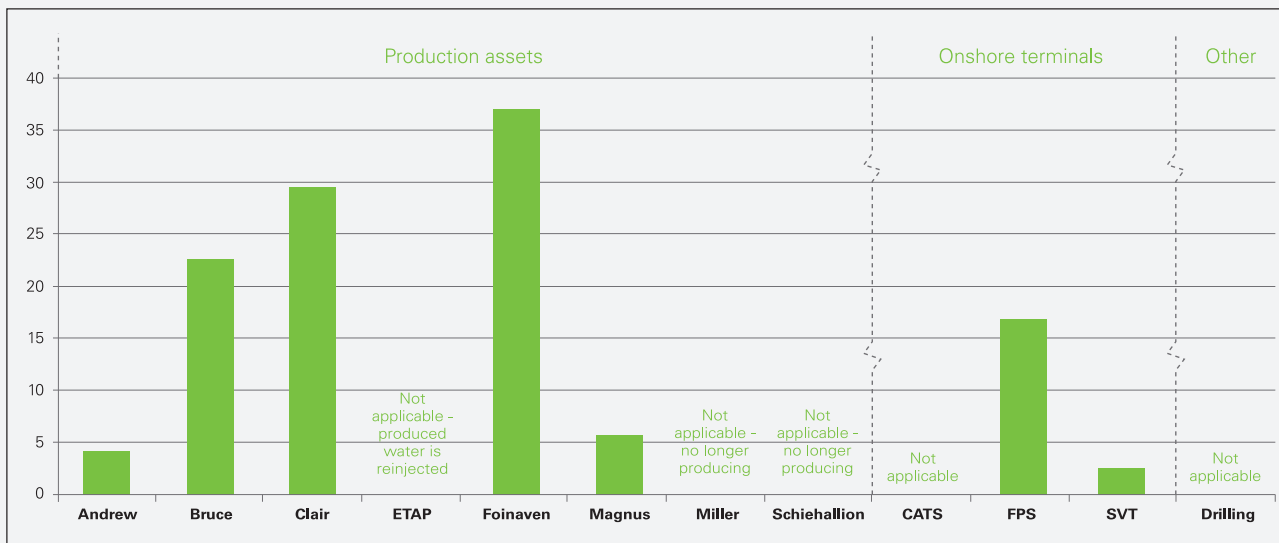


Non-greenhouse gas emissions includes carbon monoxide (CO), sulphur oxides (SOx), nitrogen oxides (NOx) and volatile organic compounds (VOC)/non-methane hydrocarbons (NMHC).

### 3. Permitted discharges

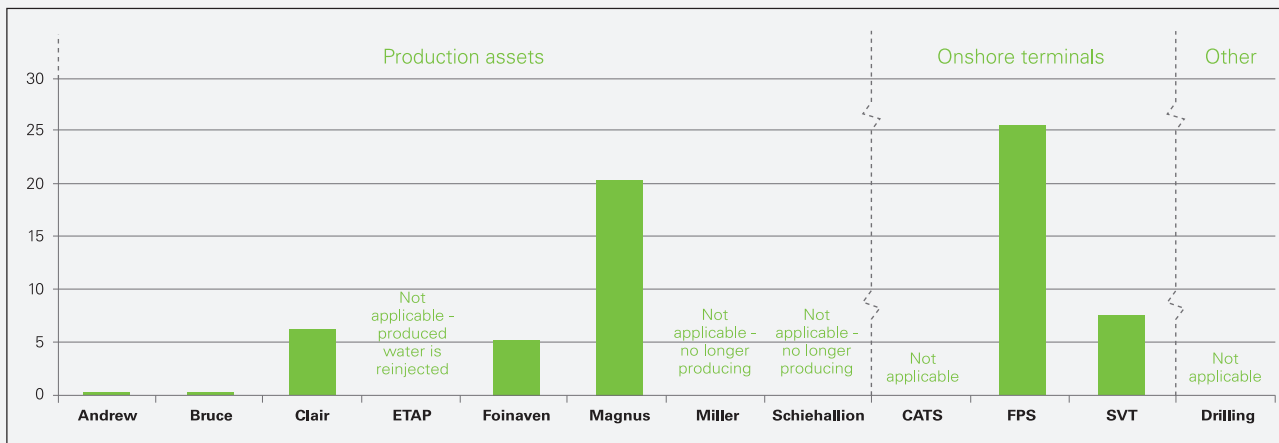
In order to minimise oil discharges, the majority of our offshore installations have been designed to reinject some or all produced water. In 2014, the North Sea Region re-injected 51% of produced water generated. On average, four tonnes of oil per offshore installation was discharged in 2014, all within permitted levels.

Annual average oil concentration in produced water discharged (mg/l)



All offshore installations and onshore terminals (with the exception of the third party operated Foinaven FPSO for limited periods), met the regulatory discharge limit of 30mg of oil per litre of produced water. On Foinaven, operational challenges with the processing plant resulted in poor separation of oil and water, however a programme of action has been agreed and is progressing successfully.

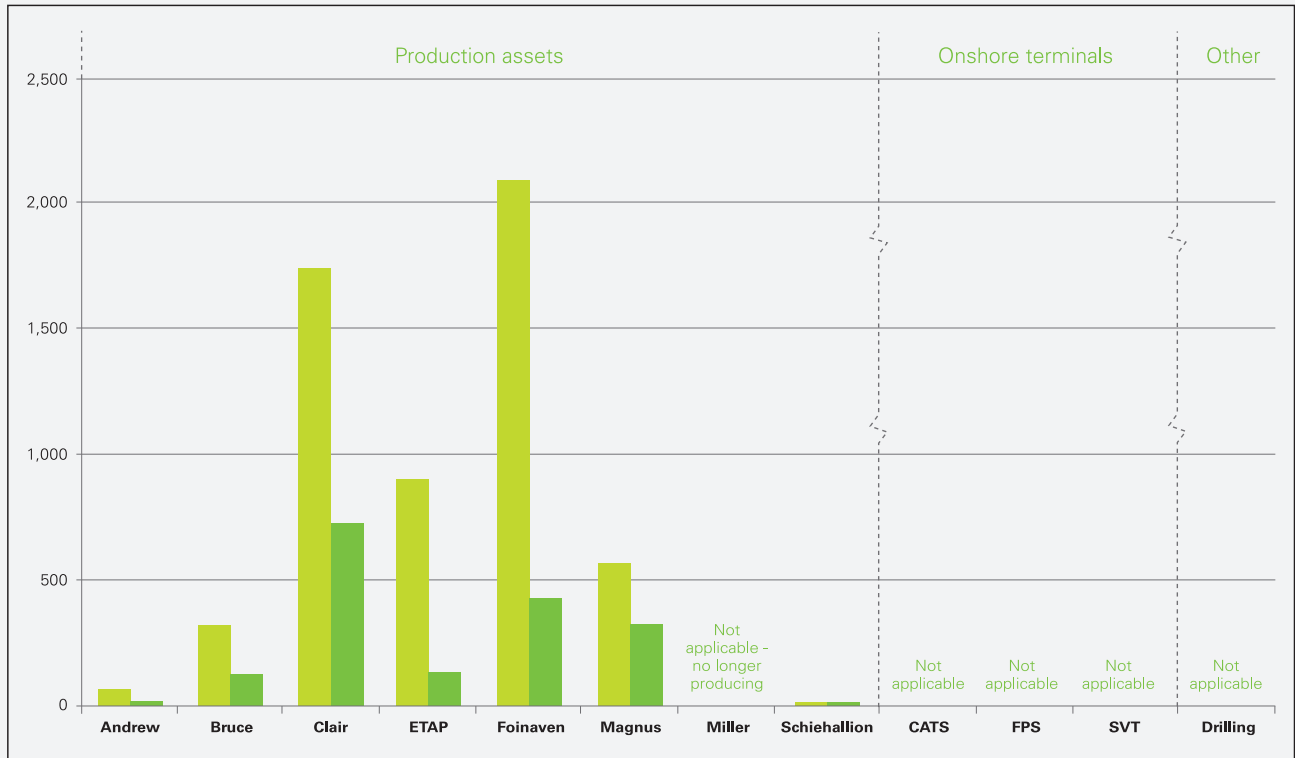
Total oil in produced water discharged (tonnes)



The overall discharge of oil in produced water in 2014 was 14% lower than in 2013. For offshore installations, the overall oil in produced water decreased by 25% from 2013 discharges. This is primarily due to a decrease in the amount of oil in produced water discharged by the Foinaven FPSO during 2014 as there were periods when Foinaven was not operating.

### 3. Permitted discharges (cont'd)

Total production chemicals used and discharged by offshore facilities (tonnes)

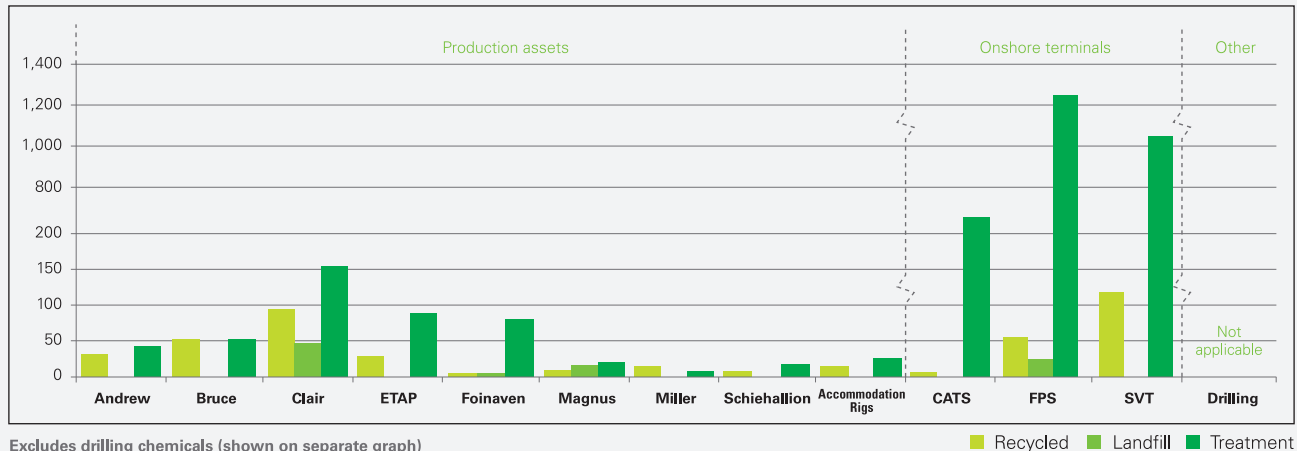


Excludes drilling chemicals (shown on separate graph)

■ Total Used ■ Total Discharged

## 4. Waste

### Special waste from operating facilities (tonnes)

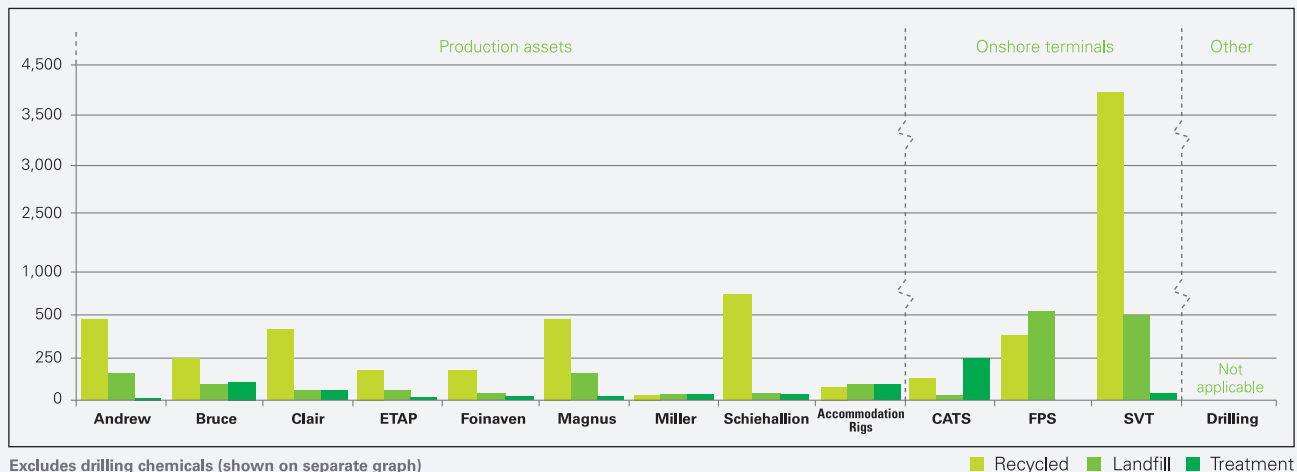


Waste from operations is segregated into as many streams as possible to maximise reuse and recycling. As a consequence, only 2% of special waste and 18% of non-special waste were sent to landfill in 2014.

Planned maintenance at FPS Kinneil contributed to higher quantities of special waste requiring treatment in 2014.

Sullom Voe Terminal has had higher than normal quantities of special waste due to onsite cleaning of tanks and the reception of waste from offshore facilities which has all required treatment.

### Non-special waste from operating facilities (tonnes)

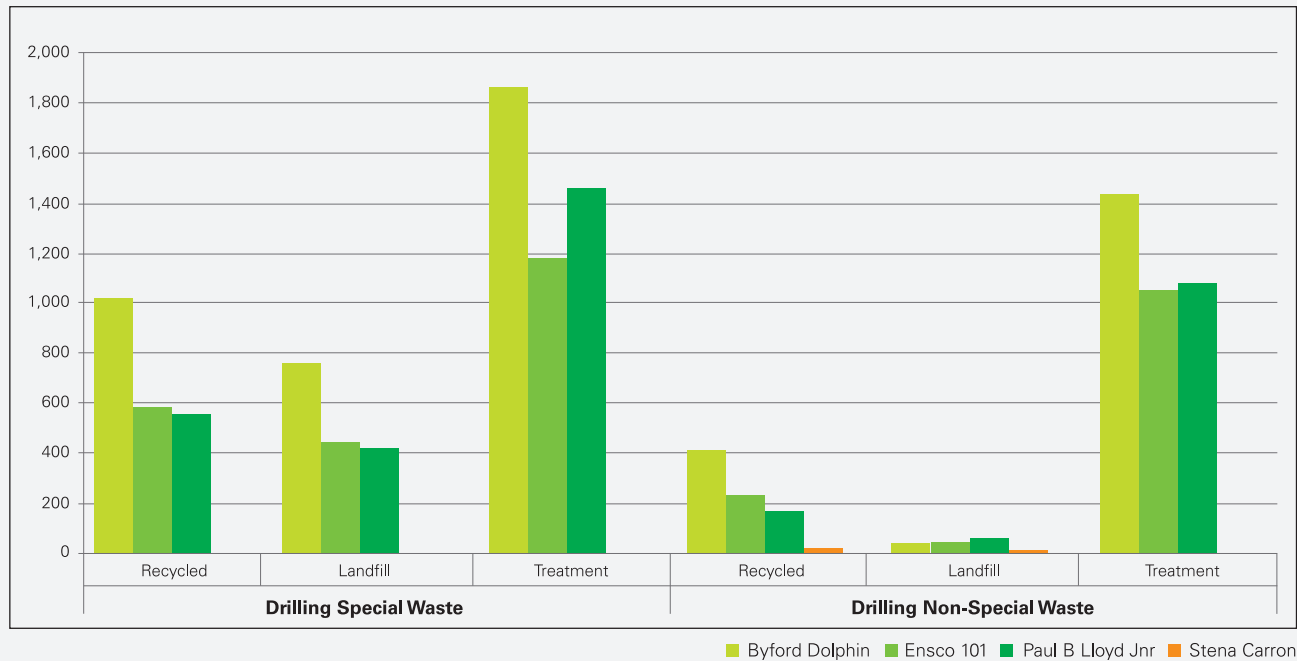


As part of the redevelopment of the Sullom Voe Terminal, there has been a significant amount of decommissioning and Terminal upgrade activity. This has generated higher than normal quantities of construction type non-special waste, such as concrete and scrap metal, much of which has been reused or recycled.

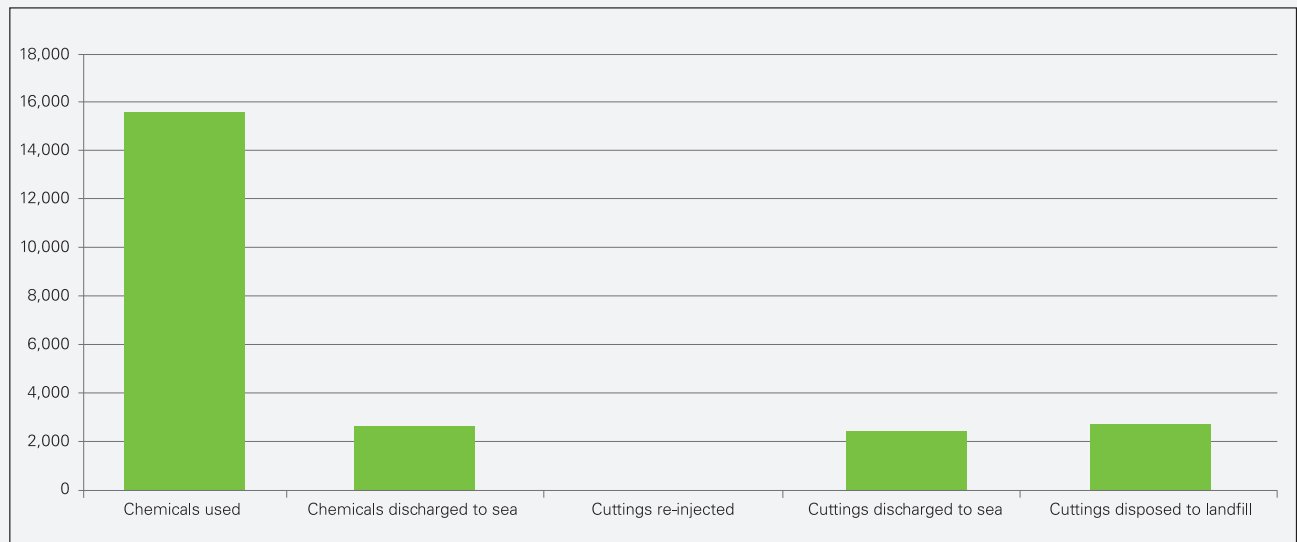
Overall, there was a very slight increase in the total quantity of waste going to landfill between 2013 and 2014, in line with a small rise in the total quantity of waste generated. The quantity of recycling increased by 5% from 2013 to 2014.

## 5. Drilling specific environmental performance

Operational drilling waste from UK mobile drilling rigs owned and operated by third parties (tonnes)



Drill cuttings and drilling chemicals (tonnes)



The drilling of three wells came to an end in 2014 and the permit returns were filed with the regulator. Approximately 394 tonnes of oil was recovered during treatment of drill cuttings and this was recycled or treated. Included within the 2014 drilling programme were a number of appraisal wells in the Greater Clair area, west of Shetland. Before this work commenced, the appropriate environmental permits were obtained and environmental and social sensitivity screening was undertaken.





### Useful websites

Department of Energy & Climate Change  
Environment Agency  
Scottish Environment Protection Agency  
Oil & Gas UK

[www.decc.gov.uk](http://www.decc.gov.uk)  
[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)  
[www.sepa.org.uk](http://www.sepa.org.uk)  
[www.oilandgasuk.co.uk](http://www.oilandgasuk.co.uk)

[www.bp.com/northsea](http://www.bp.com/northsea)

