

Nexen Petroleum U.K. Limited

# Environmental Statement 2015



# Foreword





**It is my pleasure to present to you Nexen's 2015 Environmental Statement. Nexen is committed to protecting the environment and ensuring that we are promoting best practice in the oil and gas industry.**

#### **Included in this Environmental Statement is:**

- A description of the facilities operated by Nexen and the activities carried out
- A summary of our Environmental Management System
- Environmental emissions and discharges figures from our 2015 operations
- Nexen's 2015 objectives and their progress.
- A brief overview of our key 2016 objectives

2015 has seen another excellent year for Nexen in terms of Environmental Performance with both the number of spills and the volume spilled decreasing against 2013 and 2014 figures. Nexen strives to make continuous improvements to reduce the impact of production, drilling and exploration to the environment. Looking forward in 2016 we aim to reduce this even further by implementing additional environmental targets into our key performance indicators.

Nexen's UK based employees and contractors create value by producing oil in a safe and reliable manner, with a shared commitment to excellence. For Nexen, sustainable energy development is about engaging stakeholders, managing our environmental footprint and sharing the benefits of resource development with the communities where we operate.

The past 12 months has been a busy and productive period for Nexen and I feel proud and very appreciative of all the hard work of the Nexen team. The drive, commitment and motivation has enabled Nexen to improve performance and reach our final targets for 2015.

#### **For example:**

- The Scott installation celebrated its 600th million barrel of oil equivalent after 22 successful years in production and a 2 year period without lost time incident
- The Buzzard field passed a truly significant landmark by producing its 500 millionth barrel of oil equivalent after only 8 years in production
- The Golden Eagle installation celebrated its first production anniversary, and its first Lost Time Incident free year
- The ENSCO 120, contracted to Nexen, also celebrated a full year LTI free.

Finally, the company was also awarded first prize for the Oil and Gas Authority's inaugural Maximising Economic Recovery award, for organisations' pioneering new, more collaborative ways of working in the United Kingdom Continental Shelf (UKCS).

All of these achievements were only possible due to the consistent application of best practice by the Nexen teams, and our environmental performance is equally attributable to the dedication of our teams.

At Nexen, giving back to the communities where we live and work is deeply rooted in our values. Investing in communities is not just the way we do business; it's a point of pride for our employees and contractors. Through our "ReachOut" program, Nexen supports the community through direct donations, matching the contributions made by employees, and encouraging volunteer activities. In 2015, over £1 million was contributed to charitable organisations through a combined effort of company and employee donations

Here are just a few examples of how Nexen have supported local non-profit groups in 2015:

Nexen is also a Patron of The Prince's Trust, entering the final year of its three-year Patronage pledge of £100,000 which began in 2013. Over the last three years The Prince's Trust has supported over 140,000 young people with 76% achieving a positive outcome (employment, education or training). Nexen has been listed as a Patron of Prince's Trust due to our support of the charity's 'Get into Oil & Gas' Aberdeen team programme.

Also, Nexen has also supported The Outward Bound Trust since 2009, more recently with a donation of £100,000 over three years.

Finally at Nexen, we believe that supporting educational advancement is good for our business and the communities where we operate. In 2015, Nexen contributed £118,200 to fund undergraduate and master's level scholarships in the areas of engineering, science and business.

**As I said above, I am proud of the work that Nexen undertakes, and am happy to share all of this information with you. I hope that you will find this Environmental Statement both enlightening and informative.**

**Ray Riddoch**  
Nexen Petroleum U.K. Limited MD



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# Health, Safety, Environment & Social Responsibility

Nexen Petroleum U.K. Limited which will be referred to as 'Nexen' in this document is committed to the integration of responsible environmental management into all aspects of its operations. Nexen is committed to continually improving our Health, Safety, Environment and Social Responsibility (HSE & SR) performance, complying with all relevant legal requirements and preventing pollution.

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







## Nexen UK's Commitment to

# Health, Safety, Environment & Social Responsibility



This Policy Commitment underpins the requirements outlined in the Nexen Energy ULC Corporate HSE&SR Policy statement (A136), and applies to all activities carried out by and under the control of Nexen UK.

Within Nexen Petroleum UK, the UK Board owns and takes responsibility for our overall HSE&SR performance. 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 will 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 will strive to prevent accidents, injuries and cases of work related ill health, damage to equipment and the environment.

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

## Occupational Health and Personal Safety

Nexen UK will 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 will 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 will ensure that emergency response capability is in place and periodically tested for all Company operations and facilities.

We will 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.

Nexen UK will maintain 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

Nexen UK will apply the principles of Process Safety Management to maintain the integrity of our operations.

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

## Environmental Management

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

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


## Social Responsibility

Nexen is committed to behaving ethically and to contribute 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 Nexen UK will review and revise 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.



  
**Ray Riddoch**  
Nexen Petroleum (U.K.) Ltd MD

  
**Mike Backus**  
VP Operations



# Introduction





Nexen is a wholly –owned subsidiary of CNOOC Limited. Nexen operates in three principal businesses: conventional oil and gas, oil sands and shale gas. Nexen is an upstream oil and gas company responsibly developing energy resources in the UK North Sea, offshore West Africa, the United States and Western Canada. Throughout this statement Nexen refers to UK operations only.

Nexen was the largest oil producer in the UK North Sea in 2015 producing oil and natural gas from a number of fields, including the Buzzard field and facilities, Golden Eagle field, Ettrick/Blackbird fields and the Scott installation, which produces energy from the Scott, Telford and Rochelle fields. The Golden Eagle/Solitaire field is the latest addition to the Nexen portfolio and one of the biggest discoveries in the region in the past decade.

As global demand for hydrocarbons continues to increase, our commitment is to responsibly develop the energy needed by consumers and a growing economy. To do this, Nexen's focus is on strengthening our operational performance – increasing oil and natural gas production while also working to reduce impacts to air, water and land.

One of Nexen's key values is integrity, Nexen conduct business in an ethical manner and builds relationships based on collaboration, honesty and respect. This open and honest reporting relationship with our stakeholders is illustrated in this Environment Statement of the performance of our UK offshore operations during the period of January to December 2015. The report details performance data pertinent to Nexen's operated installations and drilling operations.



# Asset Information





## Scott

Location	Approximately 188 kilometres north east of Aberdeen.
Block Number	Block 15/22.
Discovery Date	The Scott field was discovered in 1987 and came on stream in 1993.
Water Depth	140 Metres.
Tie-Back	The Telford field development, located in Block 15/21a, consists of a number of subsea wells tied back to the Scott installation through an extensive subsea infrastructure. The Rochelle field is a gas condensate field located in blocks 15/26b, 15/26c (West Rochelle) and 15/27 (East Rochelle).
Infrastructure	The Scott installation consists of two steel jackets, linked by two bridges, supporting a Drilling/Production deck and a Utilities/Quarters (UQ) deck. This arrangement allows for all hydrocarbon processing facilities to be kept separate from the main accommodation. In addition to the production facilities, the installation supports both drilling and intervention activities.
Export	The installation process system processes well stream fluids from the Scott and Telford reservoirs and exports the separated oil and gas to shore. Gas condensate production from Rochelle is routed via the east subsea production manifold to a dedicated Rochelle production separator located on the Scott installation via a 30km flowline. Oil is exported via a subsea pipeline into the BP operated Forties Pipeline System to the Kinneil reception terminal on the Firth of Forth. Gas is exported via the Apache operated Scottish Area Gas Evacuation (SAGE) system to St Fergus in north-east Scotland.

## Buzzard

Location	Approximately 57 kilometres north east of Aberdeen.
Block Number	Block 20/06, Blocks 19/10 and 20/6, and Blocks 19/5a and 20/1S.
Discovery Date	The Buzzard field was discovered in May 2001 and came on stream in January 2007.
Water Depth	96.5 Metres.
Tie-Back	N/A
Infrastructure	Buzzard utilises a central production facility currently incorporating 4 jackets supporting separate wellhead, production, H2S sweetening and UQ all of which are bridge linked. Drilling is via placement of a jack-up over the wellhead.
Export	Oil is exported from the Buzzard through an 18-inch pipeline to the Forties Pipeline System, some 28 kilometres away. From there, oil is transported to Cruden Bay and then to BP Kinneil for further processing. Gas from Buzzard is exported through a 10-inch pipeline to Captain 'T' Point on the Frigg pipeline 29 kilometres away. From there, the gas goes to the St. Fergus Gas Terminal.



## Ettrick Field

Location	Approximately 120 kilometres north east of Aberdeen.
Block Number	Blocks 20/2a & 20/3a.
Discovery Date	The Ettrick Field was discovered in 1981 and came on-stream in July 2009.
Water Depth	115 Metres.
Tie-Back	Blackbird Development primarily located in Block 20/2a with the field extending to Blocks 20/3a and 20/3f.
Infrastructure	<p>The oil and gas from the Ettrick Field is produced via the Aoka Mizu a Floating Production Storage and Offloading (FPSO) vessel.</p> <p>Production fluids from the flow via two flexible flowlines back to the FPSO, entering through a turret system. Fluids are separated and conditioned for storage.</p>
Export	Gas is processed on the FPSO facilities to meet the SAGE entry specifications and is exported via the SAGE system to St Fergus where natural gas and natural gas liquids are separated and the natural gas is sent on to National Grid. The natural gas liquids are either sent on to the Shell Esso Gas and Associated Liquids (SEGAL) system or to the Forties Pipeline system for further processing into specification natural gas liquid products. Crude oil is extracted from processing well stream fluids on the FPSO and is stored in storage tanks on the vessel until offloaded to a shuttle tanker.



## Golden Eagle

Location	Approximately 70 kilometres north east of Aberdeen.
Block Number	Includes development of the Golden Eagle block 20/1S, Peregrine block 20/1N and Solitaire fields block 14/26a.
Discovery Date	The Golden Eagle and Peregrine fields were discovered 2007-2009. First oil produced in late October 2014. Located four km northeast of Golden Eagle.
Water Depth	105 Metres.
Tie-Back	Solitaire development located in block 14/26a.
Infrastructure	Golden Eagle comprises of a central production facility with a bridge linked separate wellhead platform.
Export	Oil is exported via a 14inch pipeline approximately 67km in length to join the existing Flotta Pipeline Systems. The oil line is tied into the Flotta system at Claymore. Gas is exported via a 6inch pipeline approximately 17km in length to join the existing SAGE gas pipeline. The tie-in to the SAGE system is at an existing tee located at the Ettrick Pipeline End Manifold.





## Noble Ton Van Langeveld/Paragon MSS1

<b>Rig Name</b>	<b>Noble Ton Van Langeveld/Paragon MSS1</b>
Type	Semi-submersible
Wells Drilled in 2015	<ul style="list-style-type: none"><li>■ Golden Eagle FPA (Peregrine)</li><li>■ Golden Eagle DPA</li><li>■ Golden Eagle JPA (Solitaire)</li><li>■ Golden Eagle DIA</li></ul>

## Ensco 120

<b>Rig Name</b>	<b>Ensco 120</b>
Type	Jack – up
Wells Drilled in 2015	<ul style="list-style-type: none"><li>■ Golden Eagle HIA</li><li>■ Golden Eagle HPB</li><li>■ Golden Eagle CPB</li><li>■ Golden Eagle BIA</li><li>■ Golden Eagle BPB</li><li>■ Golden Eagle BIB</li></ul>

## Blackford Dolphin

<b>Rig Name</b>	<b>Blackford Dolphin</b>
Type	Semi-submersible
Wells Drilled in 2015	<ul style="list-style-type: none"><li>■ Sparrowhawk</li><li>■ Manhattan</li></ul>

# Environmental Management System





Nexen has implemented an Environmental Management System (EMS) in line with requirements of ISO 14001:2004. 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.

The EMS OSPAR verification took place on the week of the 18th of May 2015. The verification lasted five days and included onshore and offshore assessments. Overall the verification was very successful. Firstly it confirmed that Nexen meets the legal requirement to have in place an EMS that is broadly aligned with ISO 14001. This will be reported to Department of Energy and Climate Change (DECC) in the form of an OSPAR verification statement. Secondly the number of weaknesses identified in the system was reduced from six open (with one major) to one open weakness and two minor observations.

## Environment Representatives (E-REP)

E-Reps - are an essential and valuable part of the way we conduct our business at Nexen. They play a vital role in environmental protection and improvement. Any individual working on or visiting a Nexen operated installation has the ability to positively influence our environmental culture and performance. Nexen fully support the role of the E-Rep and requires that any contractors or third party vendors engaged on Nexen's installations demonstrate full commitment towards the prevention of environmental harm.

Increased Environmental Awareness remained a key objective for Nexen throughout 2015. To realise this objective Nexen have continued to support the development of installations based E-Reps. The E-Rep programme continues to be an integral part of Nexen's environmental management by engaging the workforce and encouraging increased involvement across all of Nexen's installations.

E-Reps continue to be actively involved in a range of activities that are key to maintaining Nexen's commitment to improving environmental performance. In 2015 Nexen launched the E-Reps charter, with full support from both Onshore and Offshore Management. The E-rep community was engaged using various methods, with cross installation video conferences, specific E-rep events and a dedicated web group to support learning and knowledge sharing. The E-Reps were also actively involved in the roll-out of Nexen's new Bunding Standard across all installations and they continue to be involved in a wide range of activities including:

- Spill reduction
- Waste awareness and segregation
- Bunkering improvements

It is anticipated that these teams will continue to play a prominent role in environmental management in the future, further enhancing Nexen's commitment to environmental responsibility.

# Environment Integration Programme (EIP)

The purpose of the EIP is to instigate change to Nexen's way of working which improves the integration of environmental activity into all operational practices to achieve a step change in environmental performance.



**The EIP was developed to focus on the key themes of People, Process and Plant. A Steering Committee consisting of four senior managers regularly meet to review / guide project choices and assure delivery.**



**Nexen's EIP involves various projects focusing on key specific objectives:**

- Reducing the number of Petroleum Operations Notice No.1 (PON1)
- Improving the quality of Permitting submissions to DECC
- Introducing an Environmental Critical Element management strategy

Nexen has identified that the successful implementation of the EIP brings significant benefits to the organisation. Changes made to Nexen processes, that integrate the environment into the organisation, provide a long lasting and sustainable improvement to Nexen environmental performance.

## **EIP Success Story**

A key part of Nexen's PON1 reduction workstream in 2015 was to improve environmental performance and promote environmental best practice during day to day operations. To achieve this, a series of five Environmental E-Learning modules were deployed. These modules covered a variety of environmental topics including Waste Management, Oily Discharges to Sea, Atmospheric Emissions and Chemical Use and Discharge. During 2015, the E-Learning modules were deployed to almost 850 people offshore, across all of Nexen's installations. This included participation of personnel from 21 contractor companies.



# Atmospheric Emissions



## Production Atmospherics

Atmospheric emissions mainly arise from power generation and flaring associated with offshore hydrocarbon production activities. The main combustion emission from these sources is carbon dioxide (CO<sub>2</sub>), along with smaller emissions of oxides of nitrogen, nitrous oxide, sulphur dioxide, carbon monoxide, methane and volatile organic compounds.

The largest portion of carbon dioxide emissions offshore comes from combustion of fuels for energy production on-board the installations.

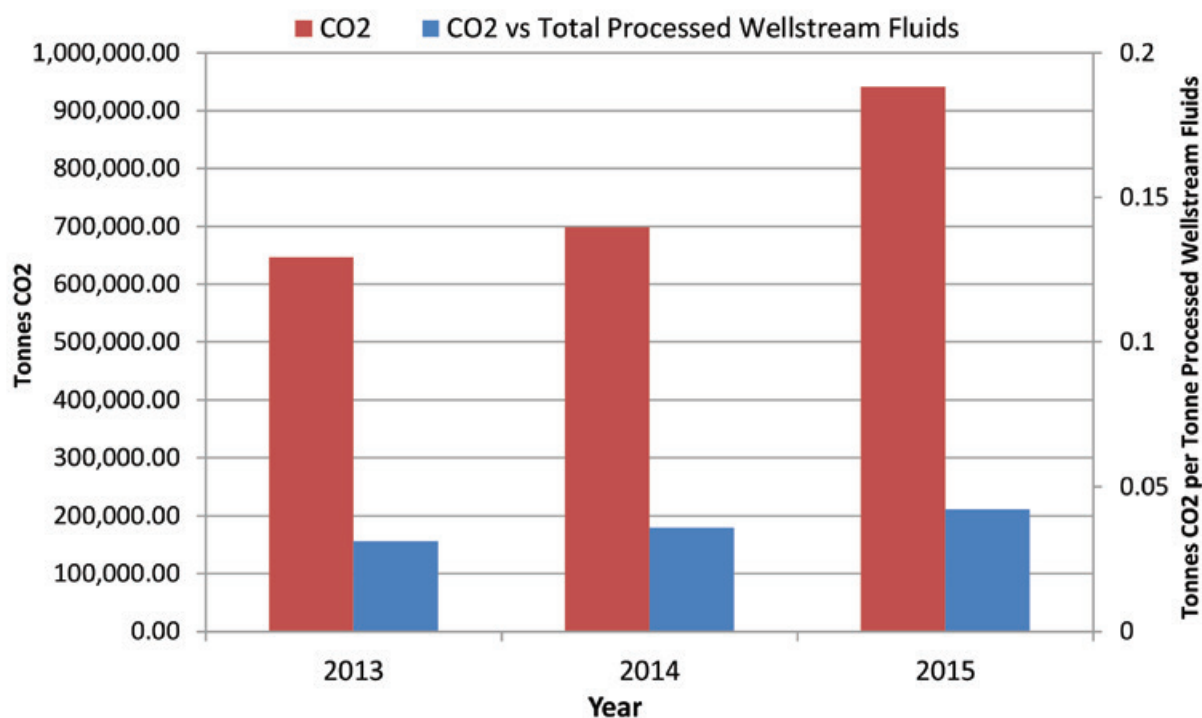
The chart below shows an increase in combined CO<sub>2</sub> emissions in 2015 from Nexen's operated installations rising from 699,533 tonnes to 941,195 tonnes.

The increase was mainly caused by increased production on Golden Eagle, resulting in greater demand on compressors and, on Buzzard, increased flaring activity as a result of shutdowns and acid gas emissions.

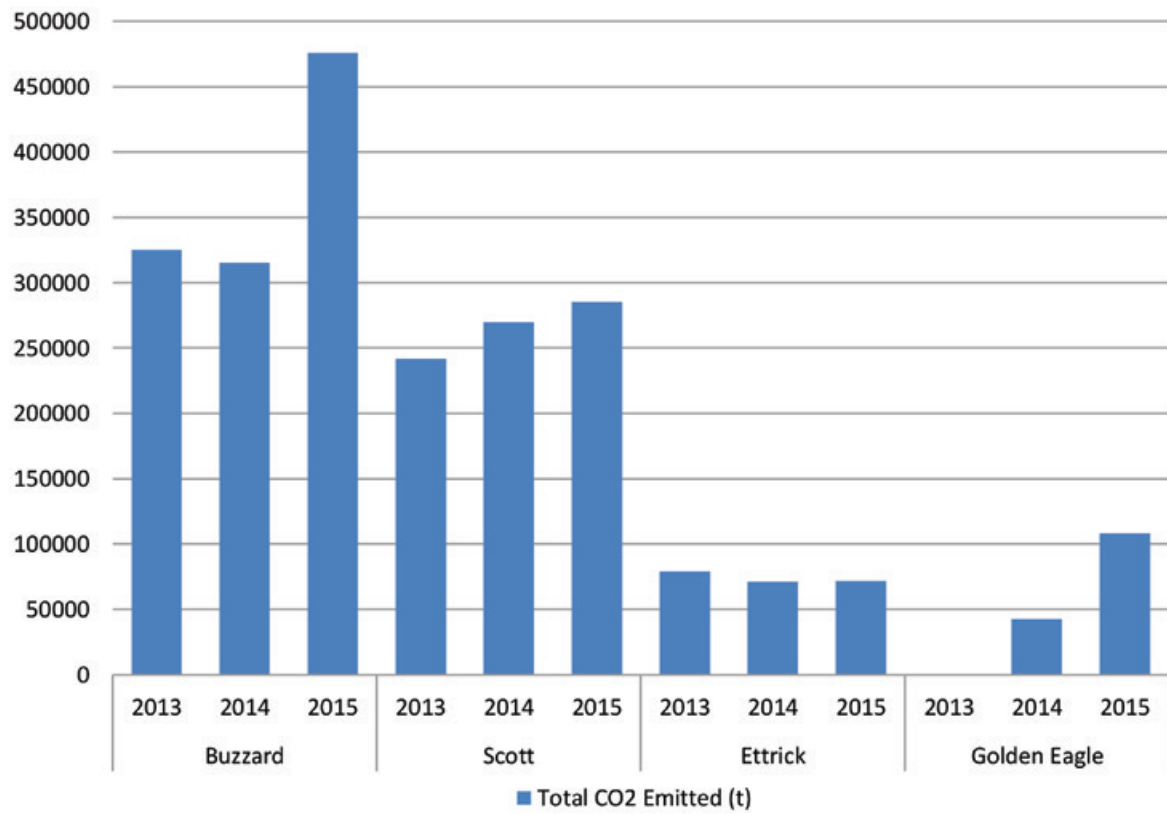
The second chart shows individual installation performance on CO<sub>2</sub> emissions in 2015. When compared against Buzzard, Golden Eagle's figures show the progress made on design and efficiency to greatly reduce CO<sub>2</sub> emissions and minimise Nexen's impact on the environment.

Scott shows a slight increase in CO<sub>2</sub> emissions due to the re-start of drilling operations, which brings an increase in power demand. In addition, gas plant issues and turbine issues throughout the year increased the use of diesel on both turbines and generators on Scott. This also results in higher CO<sub>2</sub> production than operating on fuel gas.

### CO<sub>2</sub> Emissions from Production Activities



## Individual Asset CO<sub>2</sub> Emissions





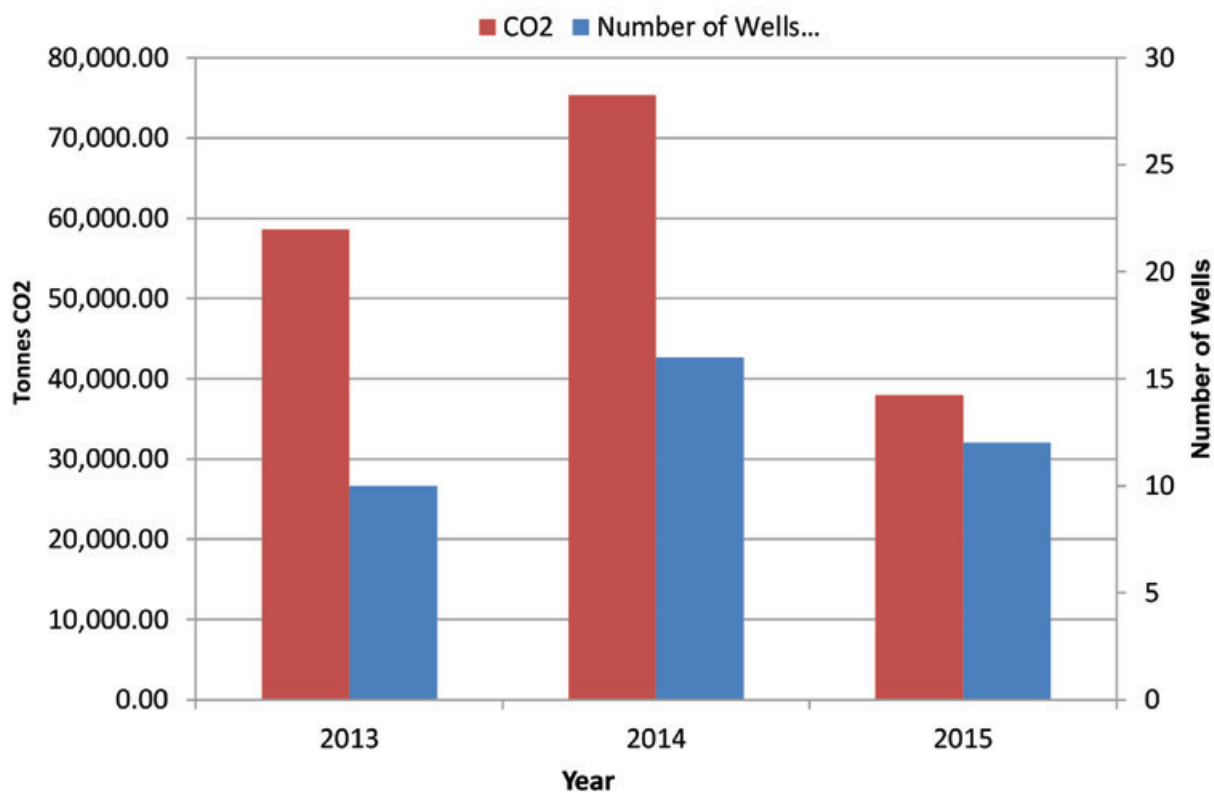
## Drilling Atmospherics

During the course of 2015, two exploration and appraisal wells and ten development wells were drilled using three modular drilling units. The data reported in this section encompasses emissions from all drilling activities.

CO<sub>2</sub> emissions associated with drilling activities decreased from 75,287 in 2014 to 37,969 in 2015. This decrease can be explained by a number of factors, for example,

- including the decrease in the number of wells drilled
- fewer drilling days
- rig upgrades
- the use of new technology such as thermo-mechanical cuttings cleaner, and
- the reduction of the number of drilling units used

**CO<sub>2</sub> Emissions from Drilling Activities**



# Produced Water



Oil and gas reservoirs have a natural water layer (called formation water) that lies under the hydrocarbons. At the surface, this formation water and any other water injected into the reservoir for pressure maintenance is separated from the hydrocarbons, treated to remove as much oil as possible, and discharged into the sea or re-injected into the reservoir.

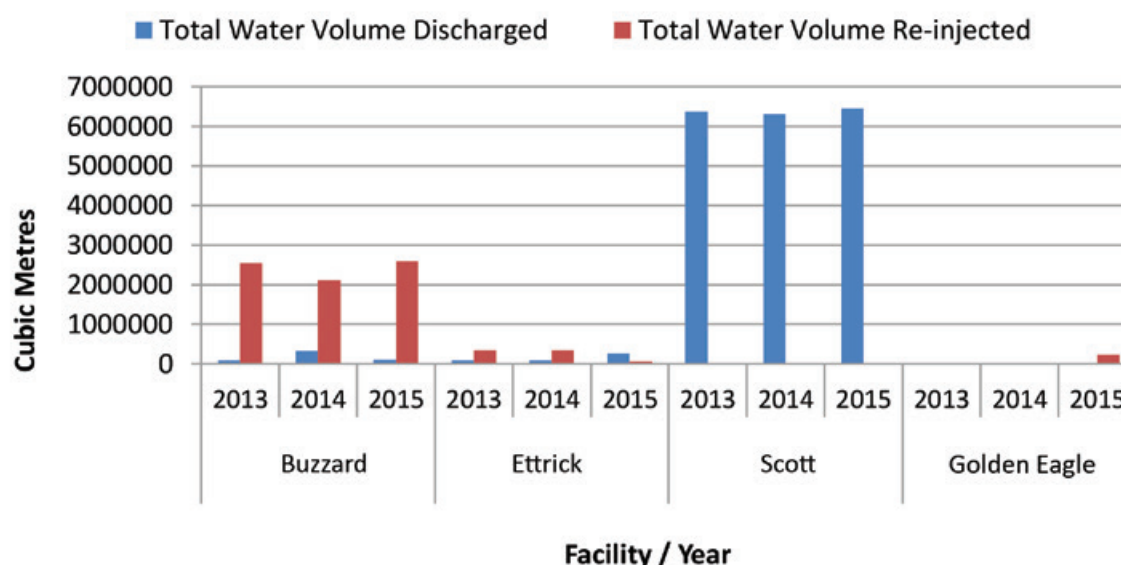
Combined volumes of produced water produced in 2015 from all four installations amounted to 6.8 million cubic meters which represents a slight increase from 6.7 million cubic meters in 2014. The majority of produced water discharged is from the Scott installation as there are no facilities for produced water re-injection.

During 2015, one of the great successes was the increased focus on water injection. This not only impacts production, but also increased produced water re-injected and subsequently reduced produced water being discharged.

This is especially visible on Buzzard and Golden Eagle, where produced water discharges were very low.

Due to the late life stage of the Ettrick reservoir it was not possible to inject produced water at the rates of previous years, as shown by the graph below.

### Produced Water Volumes

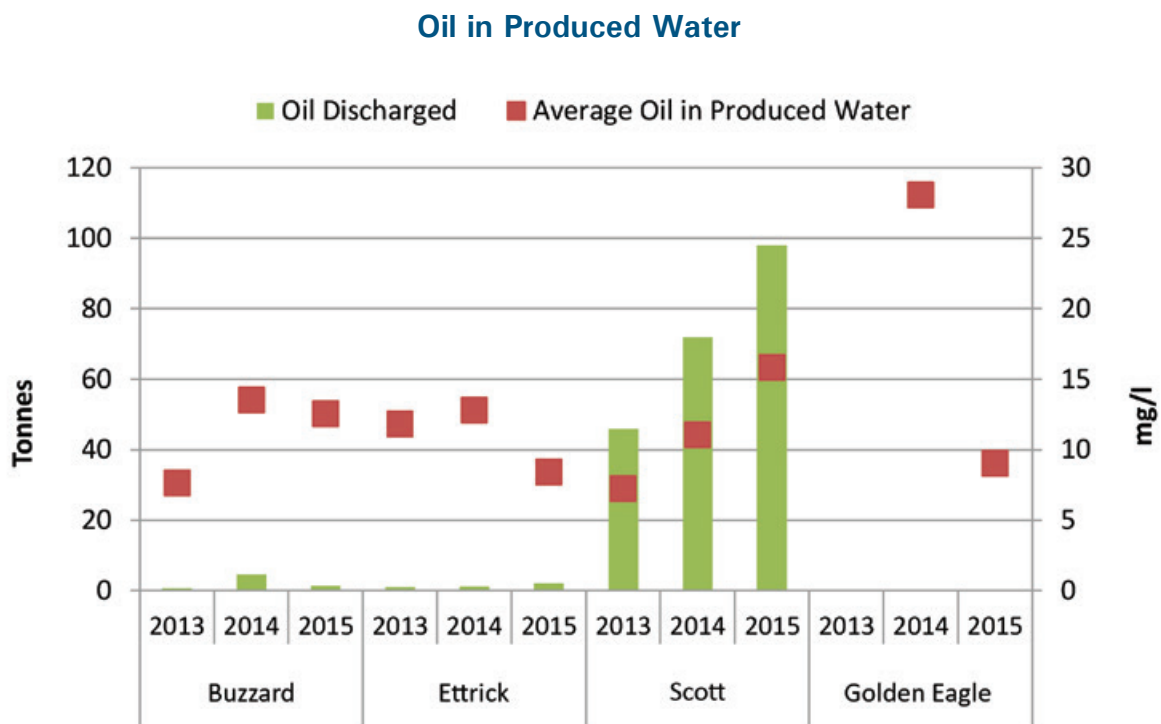




# Oil in Produced Water

Discharges of oil are regulated under The Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005.

The mass of oil discharged increased by 31.2% from 77.6 tonnes in 2014 to 101.8 tonnes in 2015. In contrast, the average oil in produced water content decreased from 16.36 mg/l in 2014 to 11.45 mg/l in 2015. This shows that the primary reason for increased mass of oil is due to the increasing quantities of water being discharged by the Scott and Ettrick installations. This is common for late life installations, where the amount of produced water from the reservoir is increasing.



# Chemicals

Chemicals are regulated under The Offshore Chemicals Regulations 2002 (OCR).



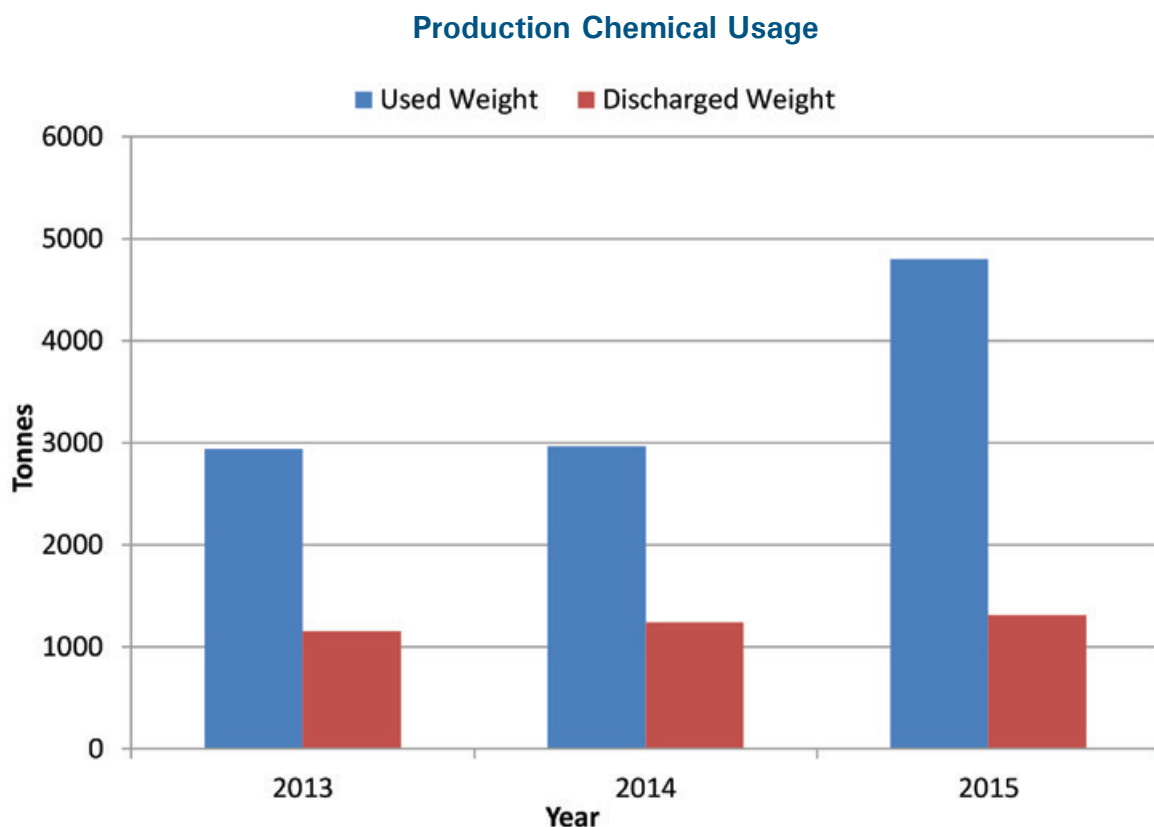
## Production Chemicals

A variety of chemicals are utilised in the production process as this maintains efficiency and safeguards the integrity of the processing and export facilities. Reservoir and production chemicals (apart from chemicals used in seawater injection) are either exported with the oil or discharged to sea with the produced water stream.

All chemicals, regardless of use or discharge, are subject to a full chemical hazard analysis and risk assessments prior to their discharges taking place. Where possible, the most advanced and benign chemicals suitable for the application are sourced.

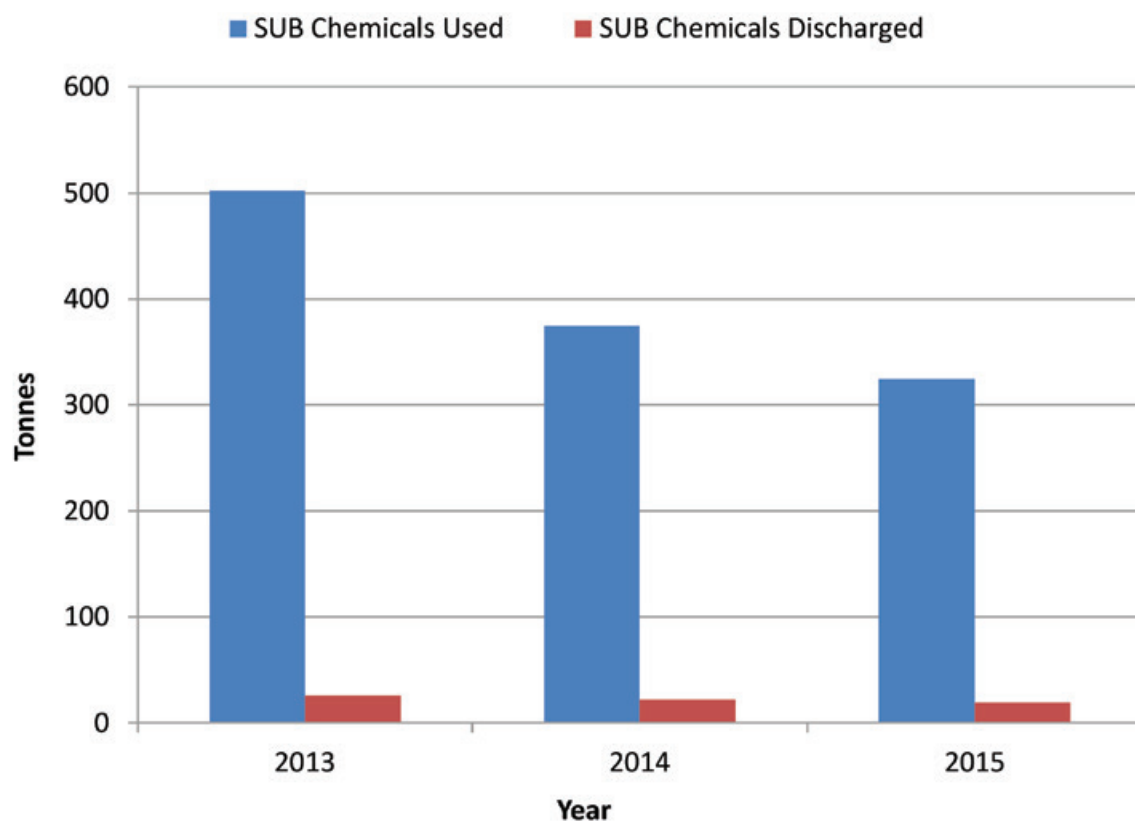
During 2015, approximately 4,798 tonnes of chemicals were used to assist production. Despite the overall increase in usage of production chemicals, the volume discharged has been reduced from 42% of total chemicals used in 2014 to 27% in 2015. Volumes of chemicals used have increased compared to 2014 in line with increased production plant throughputs, increased water injection and changing reservoir characteristics. The overall increase in the volume of production chemicals used and discharged in 2015 is also attributable to installation Golden Eagle coming on stream.

Usage of production chemicals with substitution warnings continues to follow a downward trend with the total usage in 2015 reduced to 324.37 tonnes compared to 374.66 tonnes in 2014. Nexen production chemistry department continue to remain focussed on reducing the reliance on chemicals with substitution labels by looking for and testing alternatives.





### Production Chemicals Usage with Substitution Warnings



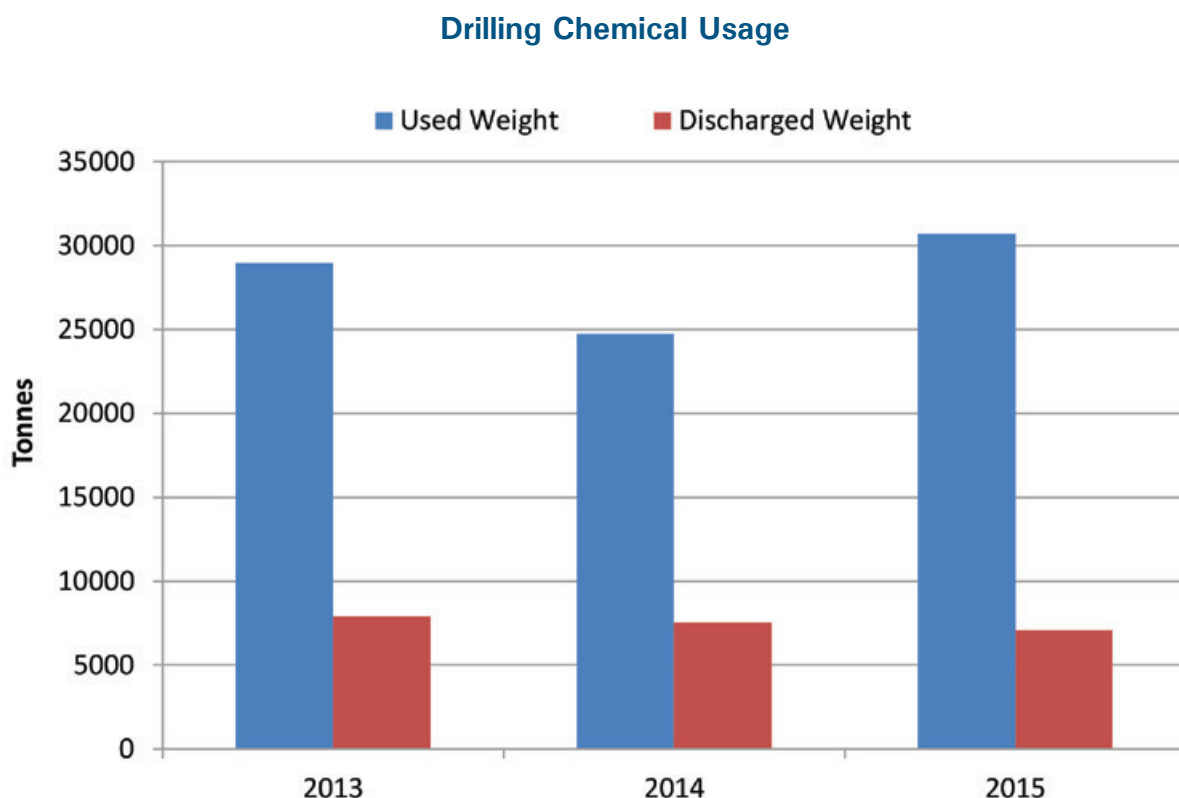
## Drilling Including - Well Intervention and Pipeline Chemicals

A variety of chemicals including drilling fluids, cements and rig chemicals are required for the safe drilling and construction of subsea wells.

Chemical usage increased to 30,703.64 tonnes in 2015 from 24,710 tonnes in 2014, as a result of the natural variation in the amount of chemical used between years, depending on the depth and complexity of the wells being drilled.

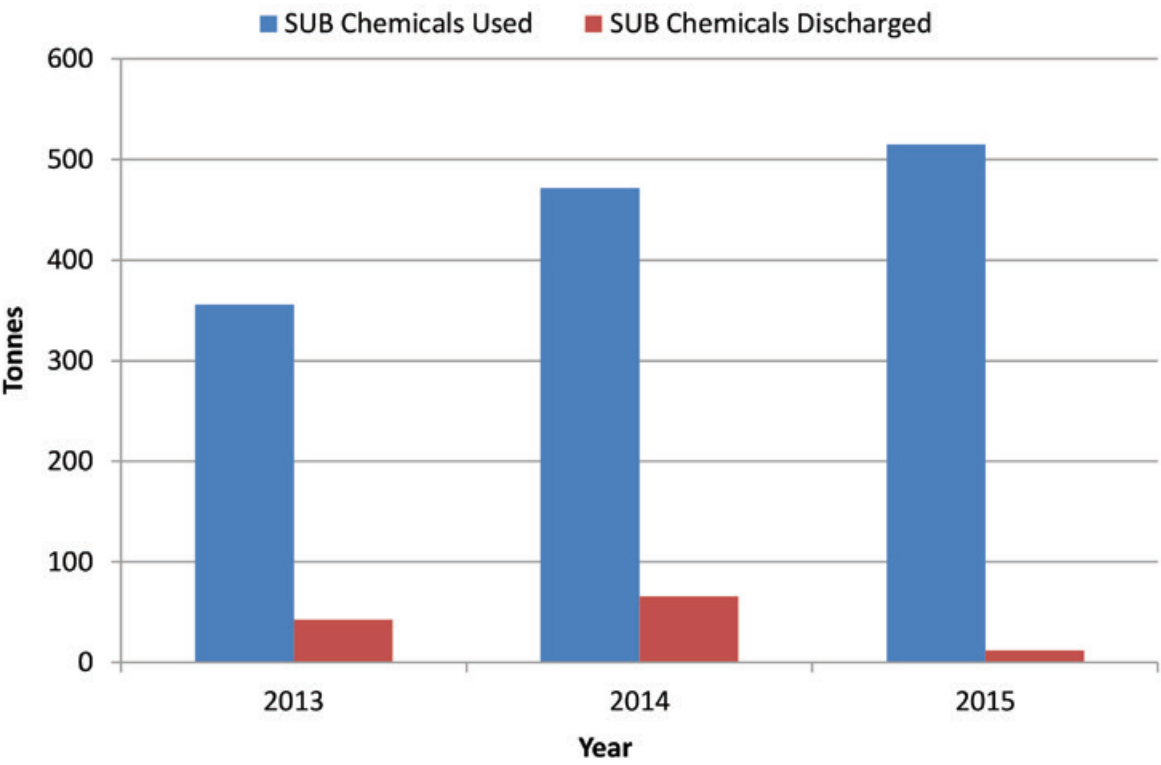
Substitution warning (SUB) labelled chemicals are occasionally added to permits where there are no viable alternatives to cover a specific operation or task. The selection and use of every SUB labelled chemical is justified and risk assessed on each permit application prior to use in the field. Nexen will continue to investigate alternatives to SUB labelled products used in drilling operations where possible to minimise environmental impact.

The use of SUB labelled chemicals increased from 471.462 tonnes in 2014 to 514.877 tonnes in 2015. Despite this increase in overall usage the volume of chemicals with sub warnings discharged decreased from 65.4 tonnes in 2014 to 11.96 tonnes in 2015. This is due in part to Nexen's commitment to reduce the number of SUB chemicals discharged to sea. Nexen remains focussed on reducing the reliance on chemicals with substitution labels by working with our suppliers to identify non-substitution alternatives.





Drilling Chemicals Usage with Substitution Warnings



# Waste



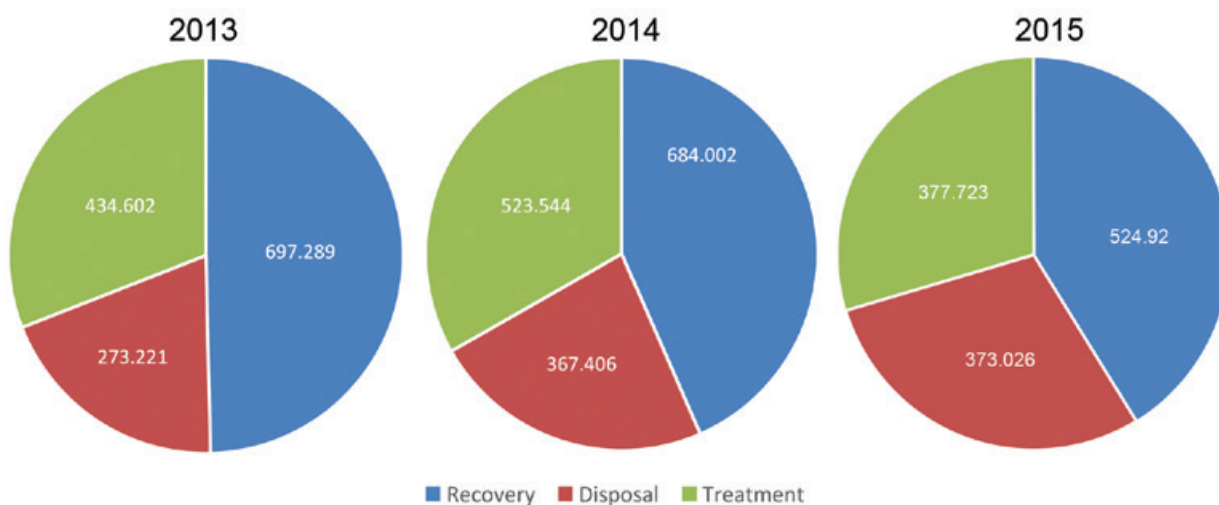
## Production Waste

Waste is generated from routine and planned operations offshore. There is a range of waste generated across Nexen's installations including waste chemicals, tank washings residues, waste oil, paper, scrap metal, glass and wood. Nexen are committed to reducing waste generated across all operations and ensure that the waste produced is managed correctly.

In 2015, 1275.7 tonnes of waste was generated across all installations. This figure represents a decrease of 299.2 tonnes, despite the Golden Eagle installation coming on stream, compared to the cross installation total of 1574.9 tonnes in 2014. This reduction is as a result of initiatives including working with suppliers to reduce the bulk of unnecessary packaging during transit offshore.

Waste is separated into three categories, for reporting purposes these are recovery, disposal and treatment. Recovered waste is waste which is reused, recycled or sent to waste-to-energy. Disposed waste is waste that is incinerated or sent to landfill. This waste includes general accommodation waste, treated slops (final solid residues) and miscellaneous special wastes. Treated waste typically includes sludge's, tank washings, and other liquids. The majority of this is water and, after being treated appropriately, is ultimately discharged to sewer in line with relevant consents. Other waste streams captured from these treatment processes are either recycled/re-used or sent to landfill.

### Production Waste Disposal Routes - By Year





## Drilling Waste

Waste generated on drilling rigs is segregated and returned to shore for appropriate disposal.

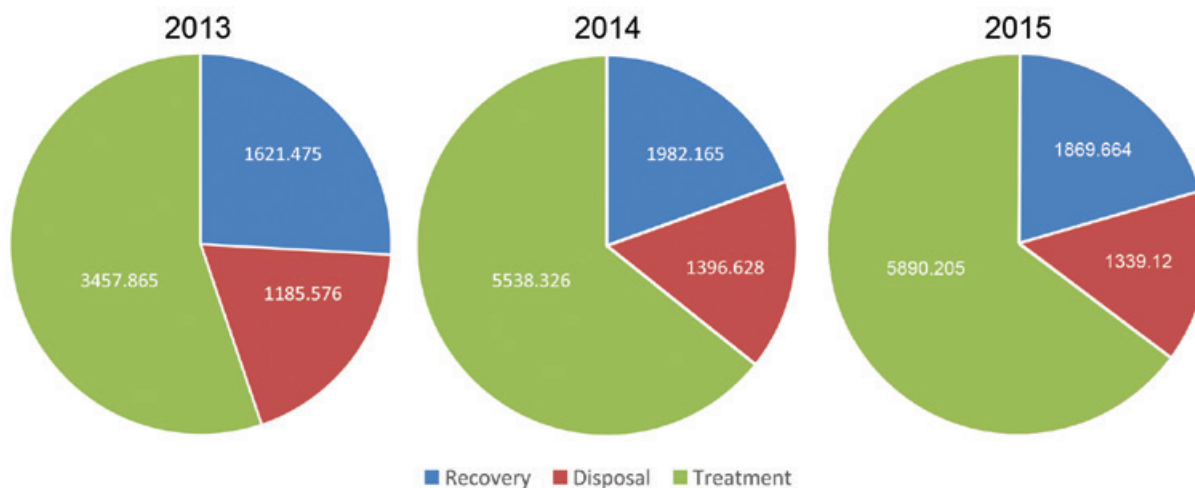
Drilling waste generated (excluding cuttings) in 2015 was 9099 tonnes this is an increase of 181.87 tonnes compared to waste generated during drilling activities in 2014. Whilst this shows an overall increase in drilling waste the composition of waste streams show that there was an increase in waste treatment and a decrease in disposal to landfill which is a positive trend. The majority of waste generated offshore is bulk liquid waste which undergoes treatment. The amount is highly variable and dependant on the complexities of each well drilled.

Oil-based mud cuttings can be disposed of in two ways. In the first instance they are brought onshore and treated to recover the oil, water and solid content for disposal. The residual solids (which accounts for the majority of the weight) are sent to landfill whilst oils are recycled and treated water discharged under consent.

The alternative method is to undertake this treatment offshore using a thermal cuttings treatment unit.

In 2015, 3,406 tonnes of cuttings were sent onshore for treatment and disposal. This represents a decrease from 2014 where 4,560 tonnes of cuttings was returned to shore for treatment in 2014. In 2015 the use of offshore thermal cuttings treatment units helped reduce the quantity of waste being generated and returned to shore for treatment.

### Drilling Waste Generated Excluding Cuttings



# Legal Compliance



## 2015 Unplanned Releases

Nexen makes every effort to prevent unplanned releases of chemicals or hydrocarbons. If an unplanned release of hydrocarbons or chemicals to sea does occur, regardless of size, it is reported to DECC using the PON1 reporting form.

Nexen has both systems and processes in place to reduce the potential for unplanned releases. These include, for example,

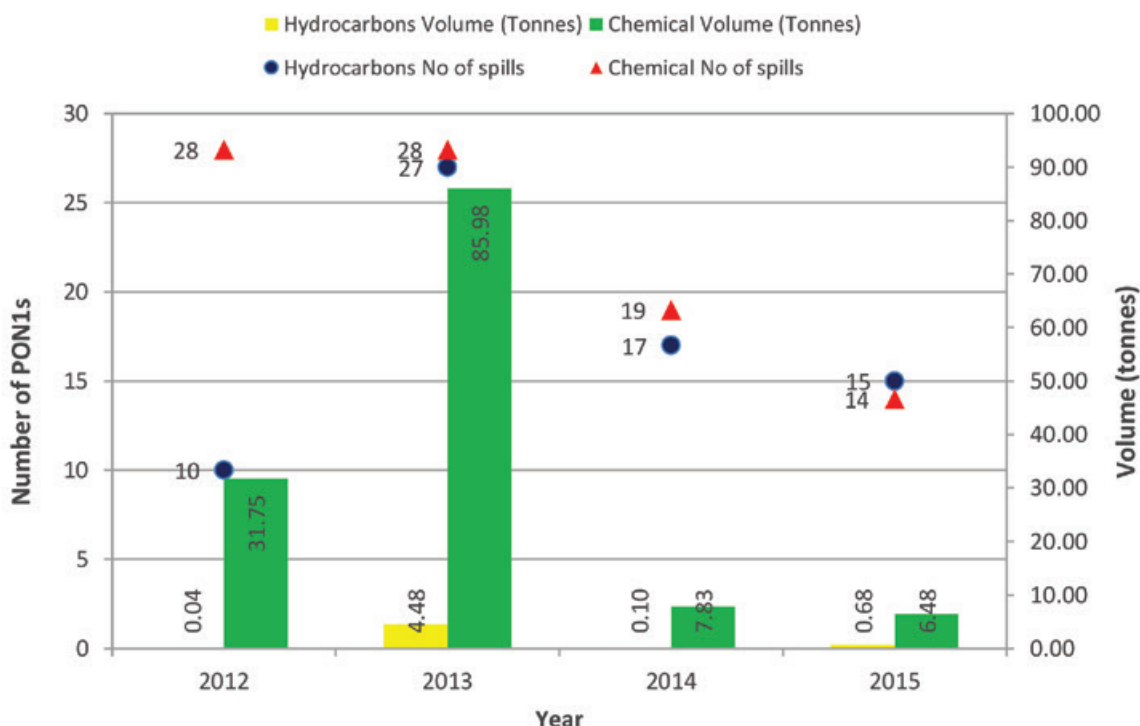
- asset integrity inspections and planned maintenance regimes to maintain the integrity of hydrocarbon and chemical containing equipment,
- area inspection and audit schedules to highlight potential areas of concern,
- provision of bunds (secondary containment) for temporary containers, and,
- training on spill kit use for dealing with deck spills and other minor events.

Nexen highlighted PON1 Reduction as an Environmental Objective for 2015, ongoing into 2016.

If an unplanned release occurs, approved Oil Pollution Emergency Plans are in place for all installations and exploration and development activities. These are tested on a regular basis in accordance with DECC requirements.

During 2015, there were 29 unplanned releases, a reduction from the 35 unplanned releases in 2014. A total of 15 releases resulted in a total of approximately 0.068 tonnes of oil being released to sea from Nexen Operations. A further 14 unplanned releases resulted in approximately 6.47 tonnes of chemicals being released to sea. Spill volume for both hydrocarbon and chemicals spills continues on a downward trend with a reduction from 7.93 tonnes in 2014 to 7.16 tonnes in 2015.

### PON1 Summary: 2012-2015





## Regulatory Non-Compliances

In addition to Nexen reporting unplanned oil and chemical spills associated with offshore activities, Nexen are also required to submit notification to DECC in the event of a non-compliance with the current legislative regime. This legislation includes the OCR, the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005 (OPPC), The Offshore Combustion Installations (Pollution Prevent and Control) Regulations 2013 (PPC) and The Offshore Petroleum Production and Pipe-Lines (Assessment of Environmental Effects) Regulations 1999 (EIA).

	OCR	OPPC	PPC	EIA	EUETS
<b>Scott (inc. Telford and Rochelle)</b>		10			
<b>Buzzard</b>		3			
<b>Ettrick</b>		1			
<b>Vessels</b>		1			
<b>Golden Eagle</b>		2			
<b>Drilling Rigs</b>	1				
<b>Onshore Support</b>					1

There were no PPC or EIA non-compliances in 2015, a reduction from 1 PPC and 1 EIA non-compliance in 2014. However there was an increase in OPPC non compliances in 2015, seven of which were due to complications experienced on the Scott installation when bringing a specific well online. The majority of these incidents happened at the start of 2015, with their frequency reducing towards the end of the year as processes were developed to mitigate the impact of the well on separation efficiency.

# Environmental Objectives



Annual environmental improvement objectives are set in relation to significant aspects and/or other operational requirements.

The 2015 environmental objectives are listed below. Each installation generates their own Health, Safety, Environment and Assurance (HSE&A) plans with deliverables on environmental objectives and targets.

2015 Objective	Programme	Performance
Successful EMS	Verification of Nexen's EMS required by OSPAR	Independently verified in May 2015. 5 of 6 previously identified non-compliances closed
Implementation of EIP	Undertake all of the requirements of the EIP	Numerous improvements executed as described in the EIP section above
Offshore Safety Directive	Deliver the environmental documentation to support the implementation of the Offshore Safety Directive requirements	All required workscopes were completed in 2015 to enable the submission of the Golden Eagle safety case in 2016

## Environmental Objectives 2016

The following goals have been set for 2016 as part of our EMS:

1. Support Scott in developing solutions to the produced water non compliances experienced in 2015.
2. Development of a Shoreline Response Plan to assist with the potential impacts from unplanned releases including the optimisation of offshore dispersant response.
3. Support the business with the sail away of the Aoka Mizu, ensuring environmental compliance and risk minimisation.



# Data Tables



# Emissions from Drilling Operations

Emissions Type	Recorded Emissions (Tonnes)	Total		
		2013	2014	2015
<b>Atmospheric emissions</b>	Total CO <sub>2</sub> emitted	58,619	75,287	37,969
<b>Waste excl. cuttings</b>	Recovery	1,621	1,982	1,869
	Disposal	1,186	1,396	1,339
	Treatment	3,458	5,538	5,890
	Recovery	3,033	4,560	3,406
<b>Backloaded cuttings</b>	Disposal	0	0	0
	Treatment	0	0	0
<b>Chemicals</b>	Used	28,9710	24,710	30,703.64
	Discharged	7,907	7,543	7,092.12
	SUB used	355	471	514.87
	SUB discharged	42	65	11.96

# Emissions from Production Activities

Emissions Type	Recorded Emissions	Unit	Scott		
			2013	2014	2015
Atmospheric emissions	Total CO <sub>2</sub> emitted	Tonnes	241,935	269,876.23	285,424.45
	Fuel Gas (CO <sub>2</sub> eg)	Tonnes	134,425	136,286	146,302
Produced Water	Produced Water discharged	Cubic meter	6,361,905	6,309,245	6,450,603
	Produced Water Re-injected	Cubic meter	0	0	0
	Oil discharged	Tonnes	45.98	71.95	98.089
	Average Oil concentration	Mg/L	7.23	11.04	15.82
Waste	Recovery	Tonnes	214.11	173.669	217.995
	Disposal	Tonnes	100.01	140.736	158.105
	Treatment	Tonnes	97.95	67.665	99.141
Chemicals	Used	Tonnes	1,124.186	1,239.266	1,028.212
	Discharged	Tonnes	742.737	817.952	684.744
	SUB used	Tonnes	63.93	67.33	57.58
	SUB discharged	Tonnes	15.49	20.36	18.03



Ettrick			Buzzard			Golden Eagle	
2013	2014	2015	2013	2014	2015	2014	2015
48,305	71,091.45	71,665.8	325,293	315,344.81	475,833.67	42,715.70	108,270.74
18,048	37,747	37,611	252,309	203,013	264,157	7,015	89,721
87,084	88,136	266,076	92,282	334,215	103,112	0	8,827
346,969	337,806	70,473	2,547,201	2,115,409	2,590,163	0	224,911
1.03	1.13	2.162	0.70	4.52	1.45	0	0.13
11.82	12.79	8.4	7.62	13.52	12.56	28.08	9.04
133.25	102.17	62.042	349.93	150.29	159.283	257.87	85.6
31.37	47.95	26.018	141.84	95.574	134.138	83.146	54.765
310.16	223.298	207.855	26.50	75.697	38.145	156.88	32.582
395.708	287.587	196.166	1,418.870	1,374.527	2,962.846	60.328	611.061
196.896	84.951	90.674	212.104	329.515	373.291	12.104	165.151
0.69	0.65	0.27	437.67	306.45	266.47	0.23	0.05
0.69	0.65	0.27	9.78	0.98	1.03	0.002	0.001





