

Nexen Petroleum U.K. Limited

# Environmental Statement 2017



Environmental Statement 2017

# Foreword

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## ***It is my pleasure to present to you Nexen's 2017 Environmental Statement.***

**Nexen is committed to protecting the environment and ensuring promotion of 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 2017 operations
- Nexen's 2017 objectives and their progress
- A brief overview of our key 2018 objectives

In 2017, Nexen had another busy year with a number of notable milestones, including:

- Successful incident free delivery of the extended Scott maintenance turnaround (TAR).
- Completion of Phase 2 and 4 of the Etrick & Blackbird Decommissioning ahead of schedule and under budget.
- First West of Shetland drilling of the Craster well by the West Phoenix drilling rig.
- Successful OSPAR 2003/5 EMS independent verification with no comments.

Our volume of total spills was also significantly reduced; although we did submit a number of PON1s and non-compliances within the reporting year.

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.

For Nexen, sustainable energy development is about engaging stakeholders and managing the company's environmental footprint. Nexen strives to make continuous improvements to reduce the environmental impact of production, drilling and exploration.

Looking forward in 2018 Nexen aims to reduce the number and volume of spills, and overall environmental impact through challenging environmental targets in key performance indicators, implementing environmental improvement activities and workforce engagement.

I hope that you will find this Environmental Statement both informative and indicative of the continued commitment that Nexen has to minimising our footprint on the North Sea Environment.

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

Environmental Statement 2017

# Contents

*A New Energy*

## **Introduction**

## **Health, Safety, Environment & Social Responsibility**

## **Asset Information**

**Scott**

**Buzzard**

**Ettrick Field**

**Golden Eagle**

## **Drilling Operations**

## **Environmental Programmes**

**Environmental Management System**

**Environment Representatives (E-REP)**

**Environment Integration Programme (EIP)**

## **Atmospheric Emissions**

**Production CO<sub>2</sub> Emissions**

## **Oil in Produced Water Discharge**

## **Chemicals**

**Production Chemicals**

**Drilling - Including Well Intervention and Pipeline Chemicals**

## **Waste**

**Production Waste**

**Drilling Waste**

## **Legal Compliance**

**Unplanned Releases**

**Regulatory Non-Compliances**

## **Environmental Objectives 2017**

**Environmental Goals 2018**

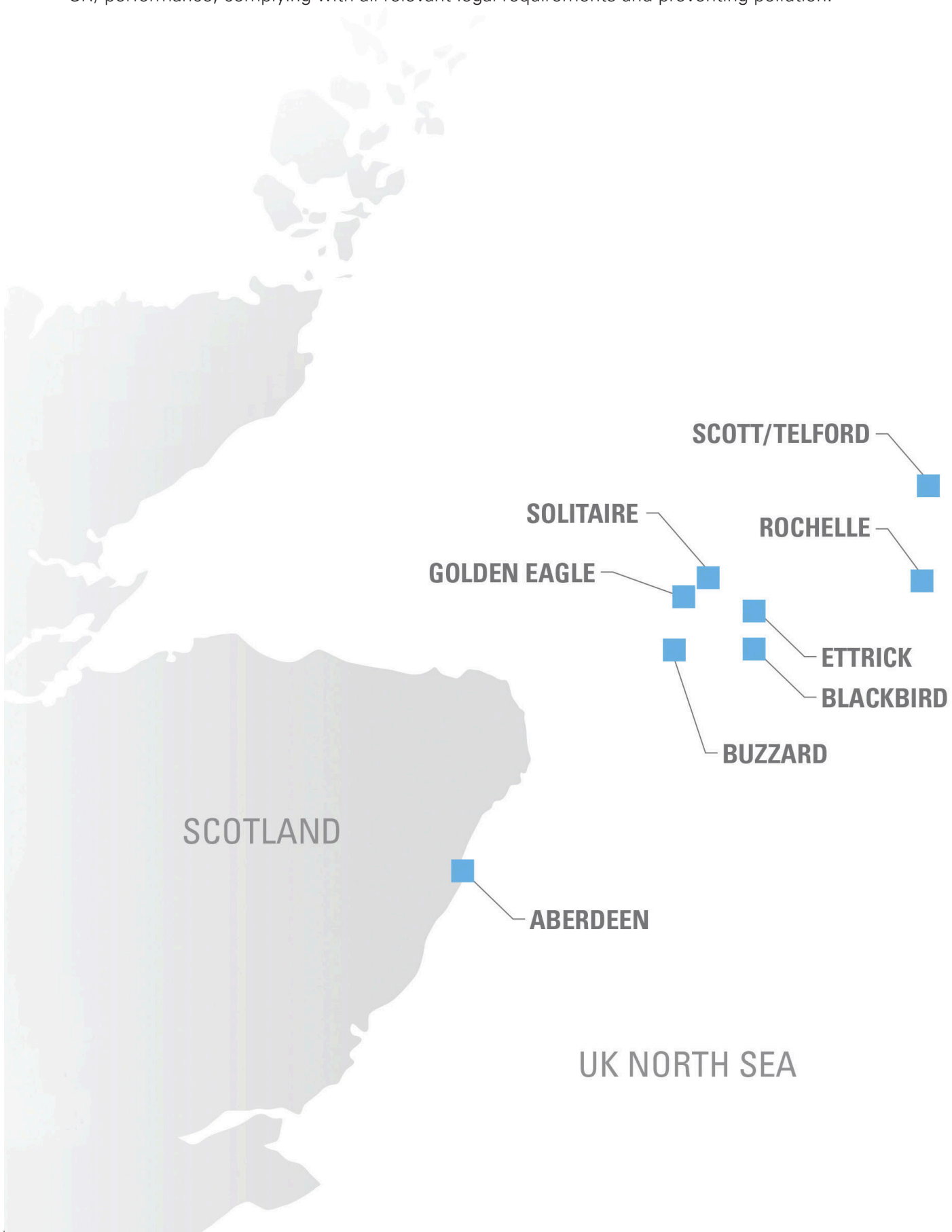
Environmental Statement 2017

# Introduction

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Nexen Petroleum U.K. Limited, which will be referred to as 'Nexen' in this document, is a wholly-owned subsidiary of CNOOC Limited and 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 Ireland, offshore West Africa, the United States and Western Canada. Throughout this statement Nexen refers to UK operations only.

Nexen was one of the largest oil producers in the UK North Sea in 2017 producing oil and natural gas from nine UKCS fields through three production platforms, including the Buzzard, Golden Eagle, and Scott installations. 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.



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# Health, Safety, Environment & Social Responsibility

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

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## 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.

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

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.

**Mike Backus**  
VP Operations

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# Asset Information

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# Scott



**Location** 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** 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 Apache operated Scottish Area Gas Evacuation (SAGE) system to St Fergus in north-east Scotland.

# Buzzard



**Location** 55 kilometres north east of Aberdeen

**Block Number** Block 20/06a

**Discovery Date** The Buzzard field was discovered in May 2001 and came on stream in January 2007.

**Water Depth** 98 Metres

**Tie Back** N/A

**Infrastructure** The Buzzard installation consists of four platforms (wellhead, production, H<sub>2</sub>S sweetening and UQ) supported by steel jackets which are interconnected by three bridges.

**Export** Oil is exported from the Buzzard installation via a subsea pipeline into the Ineos operated FPS to the Kinneil reception terminal on the Firth of Forth. Gas is exported via the Frigg system to St Fergus in north-east Scotland.

# Ettrick Field



**Location** 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. Cessation of Production (COP) and Decommissioning commenced in June 2016.

**Water Depth** 115 Metres

**Tie Back** Blackbird Development

**Infrastructure** The oil and gas from the Ettrick and Blackbird Fields was produced via the Aoka Mizu, a Floating Production Storage and Offloading (FPSO) vessel from 2009 until cessation of production (COP) on 1<sup>st</sup> June 2016. The field is currently undergoing a decommissioning and plug and abandonment programme.

**Export** N/A

# Golden Eagle



**Location** 66 kilometres north east of Aberdeen

**Block Number** Block 20/1S

**Discovery Date** The Golden Eagle and Peregrine fields were discovered 2007-2009. First oil was produced in late October 2014.

**Water Depth** 104 Metres

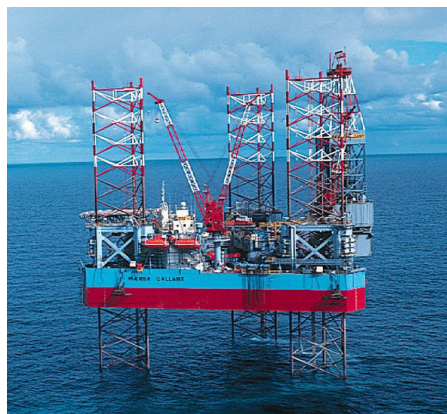
**Tie Back** Solitaire and Peregrine

**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

## Maersk Gallant



<b>Rig Name</b>	<b>Maersk Gallant</b>
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Type	Jack-Up
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Wells Drilled in 2017	■ Glengorm 22/26d
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## West Phoenix



<b>Rig Name</b>	<b>West Phoenix</b>
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Type	Semi-Submersible
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Wells Drilled in 2017	■ Craster 205/15
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# Environmental Programmes

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## **Environmental Management System**

Nexen has implemented an Environmental Management System (EMS) aligned with ISO 14001:2004. The EMS is independently verified as required by the Oslo/Paris Convention (OSPAR) Recommendation 2003/5, to promote the use and implementation of Environmental Management Systems on the UKCS.

EMS OSPAR verification took place during May 2017 and an OSPAR verification statement with zero comments was reported to the Department for Business, Energy and Industrial Strategy (BEIS).

## **Environment Representatives (E-REP)**

Nexen E-Reps continue to provide valuable support in offshore workforce engagement during various activities and initiatives, including:

- Roll out of procedures
- Reduction of waste
- Spill reduction and environmental hazard identification programs
- Area inspections

## **Environment Integration Programme (EIP)**

EIP projects focused on the following specific objectives:

- Reducing the number of Petroleum Operations Notice No.1 (PON1)
- Continued development of an Environmental Critical Element (ECE) management strategy
- Continued development and long term sustainability of Nexen's Environmental Management System (EMS)

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# Atmospheric Emissions

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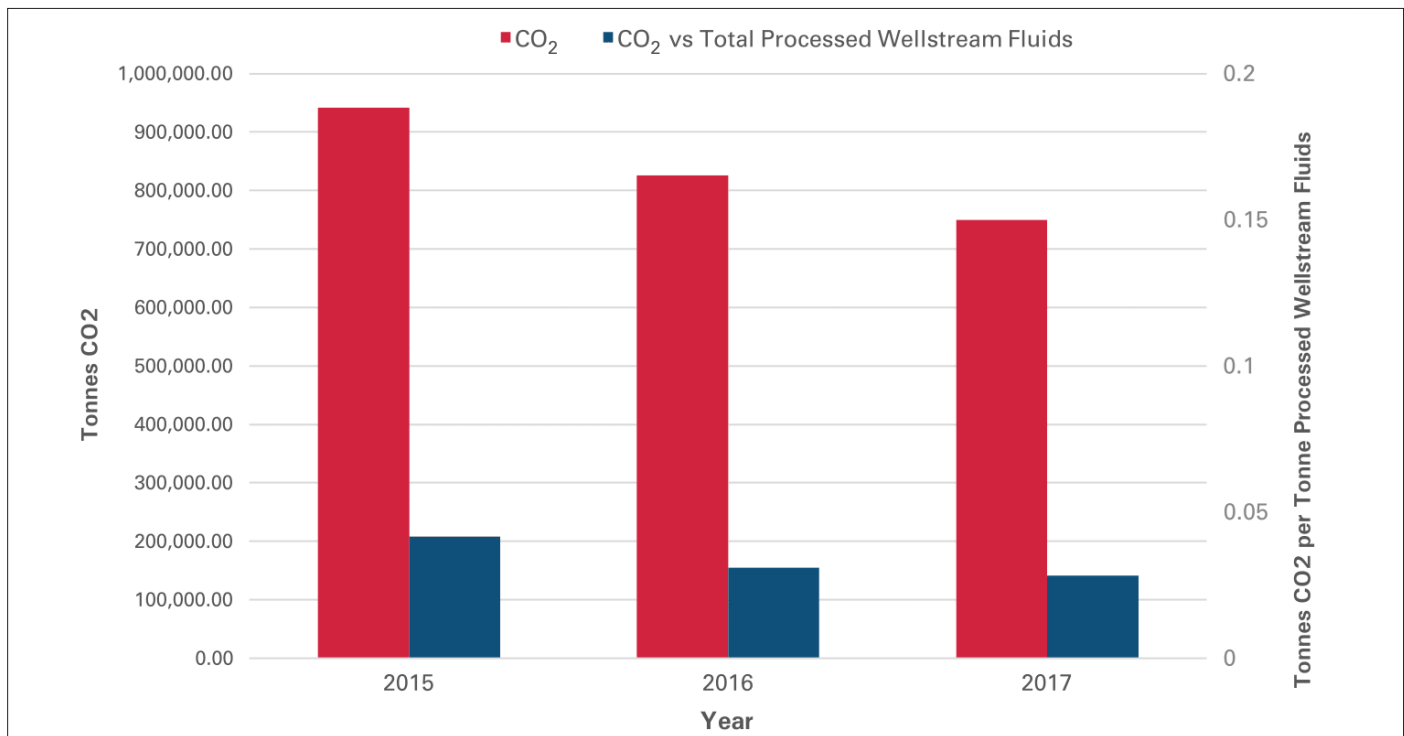


## Production CO<sub>2</sub> Emissions

The chart below shows a continued decrease in combined CO<sub>2</sub> emissions from 825,288 tonnes in 2016 to 749,621 tonnes in 2017.

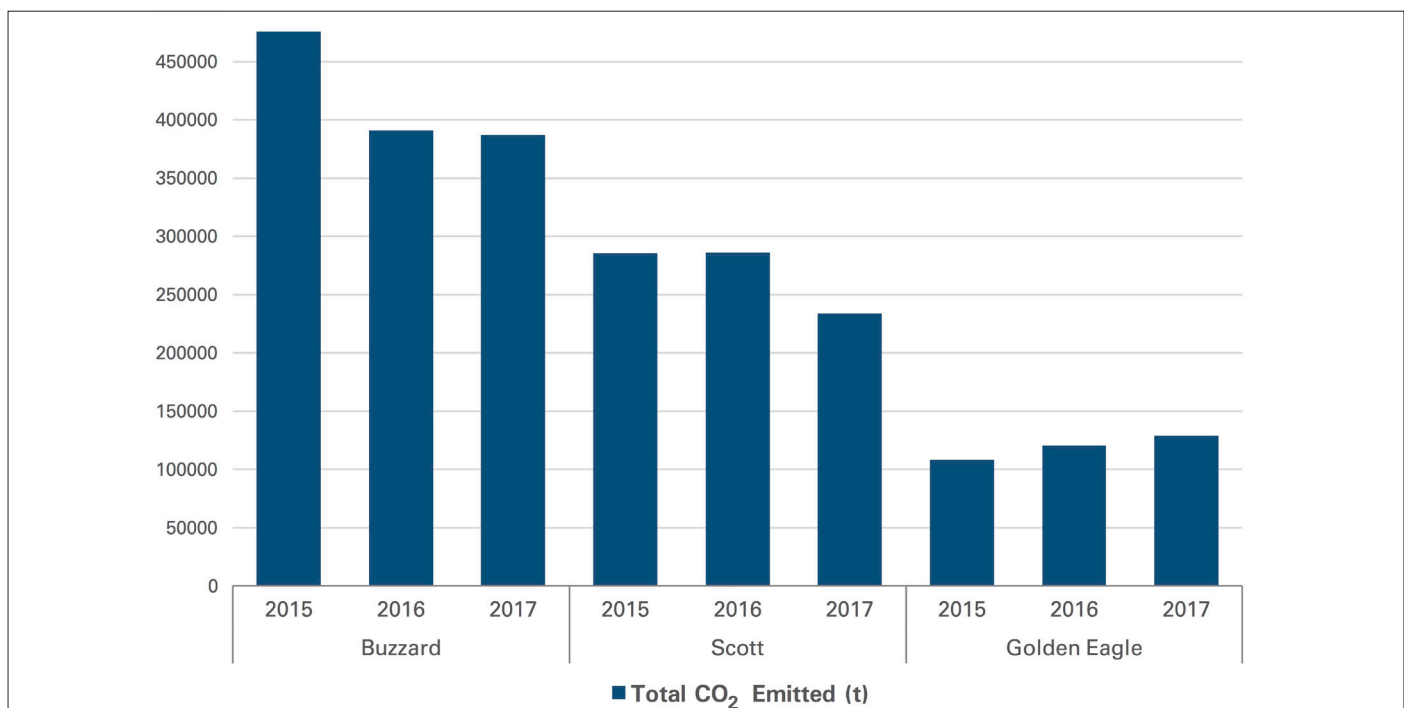
The COP on 1<sup>st</sup> June 2016 of the Etrick and Blackbird fields resulted in 28,000 tonnes less CO<sub>2</sub> reported for 2017 compared with 2016. In addition, an extended maintenance program on Scott during 2017, combined with a shutdown in December 2017 for an unplanned FPS outage has resulted in a reduction of approximately 50,000 tonnes of CO<sub>2</sub>.

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



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

The chart below shows individual installation performance on CO<sub>2</sub> emissions in 2017. Stable production and high uptime in both Golden Eagle and Buzzard accounts for consistent levels of CO<sub>2</sub> attributed to these platforms in comparison with 2016.



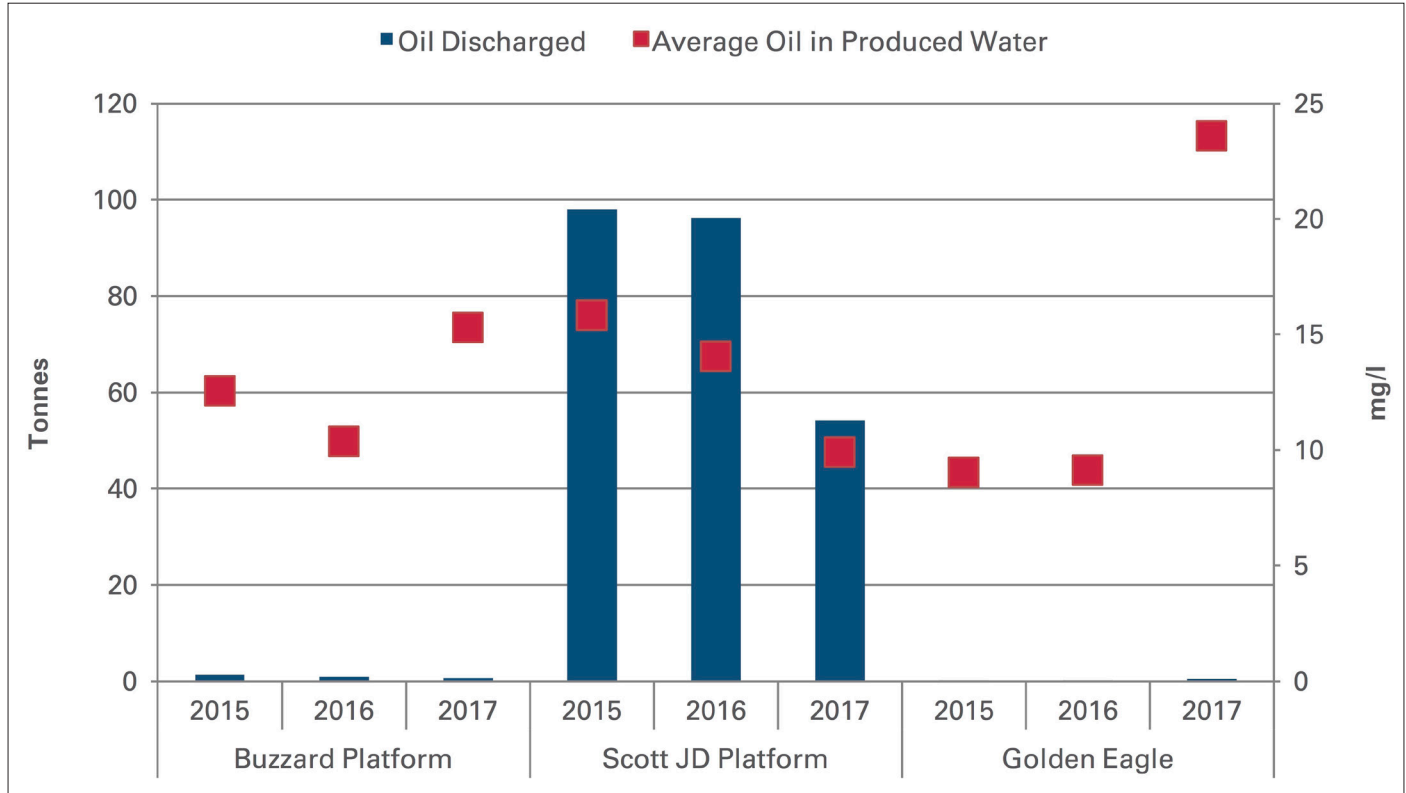
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# Oil in Produced Water Discharge

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The mass of oil discharged decreased from 99 tonnes in 2016 to 55 tonnes in 2017. This reduction can be attributed to an increase in water re-injection on Buzzard and reduction in the average oil in produced water concentration on Scott.

Produced Water re-injection is an important process as it helps improve 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.



Environmental Statement 2017

# Chemicals

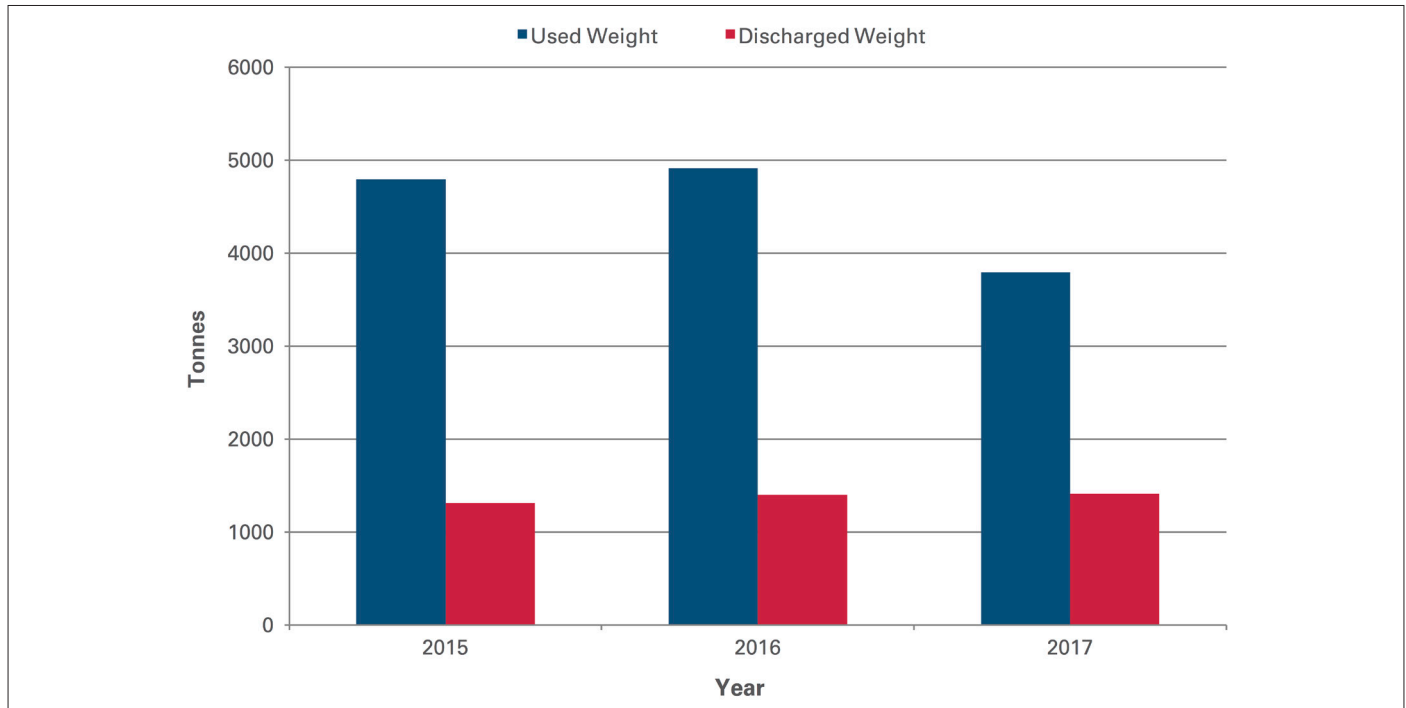
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## Production Chemicals

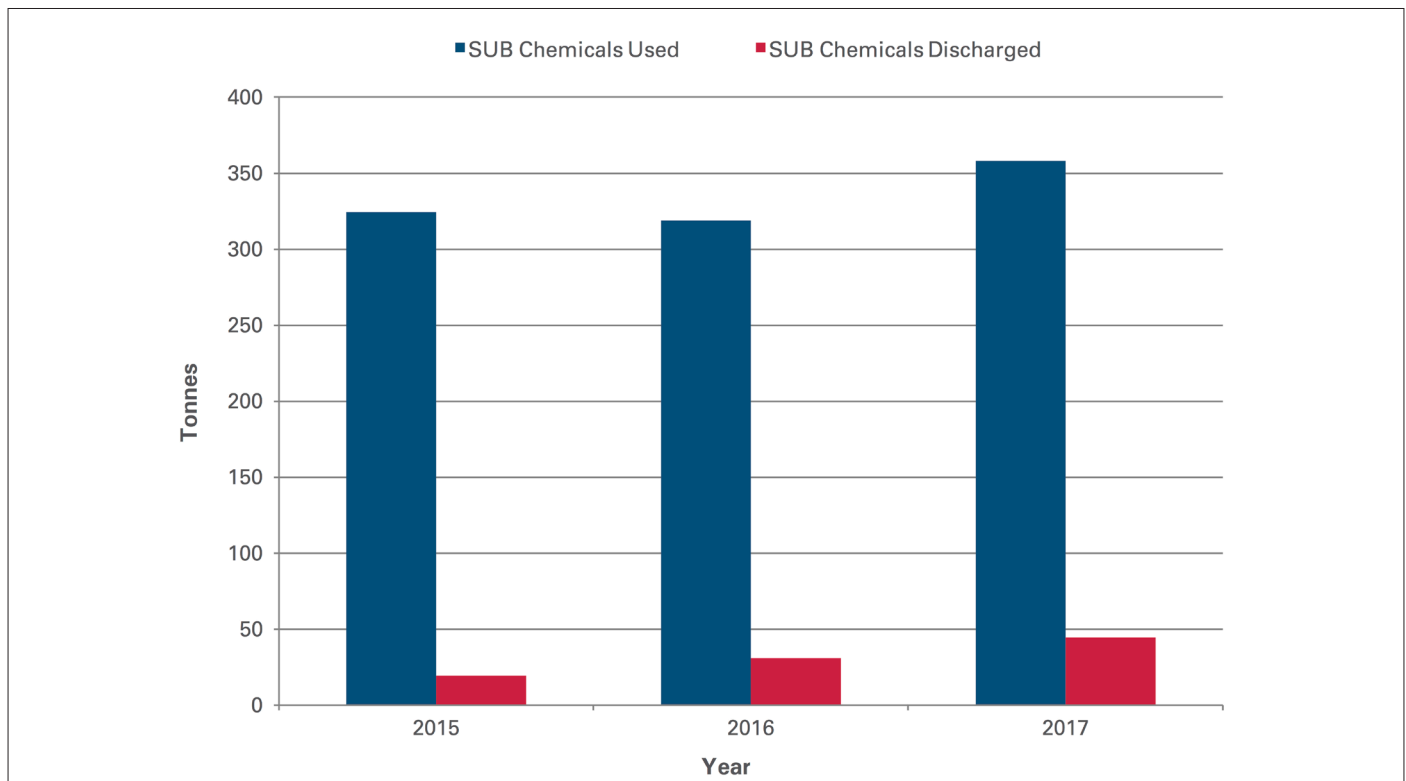
During 2017, approximately 3,798 tonnes of chemicals were used during production operations. Volumes of chemicals used have decreased compared to 2016 as production on Golden Eagle stabilised. Overall the chemical use per barrel of oil produced has reduced in 2017.

Usage of production chemicals with substitution (SUB) warnings increased slightly with the total usage in 2017 at 358 tonnes compared to 319 tonnes in 2016. Similarly, discharge of substitution warning carrying chemicals increased from 31 tonnes in 2016 to 45 tonnes in 2017. These increases can largely be attributed to the temporary change in status of a hydraulic fluid used on Scott, though that SUB warning has since been removed.

### Production Chemical Usage



### Production Chemical Usage with Substitution Warnings

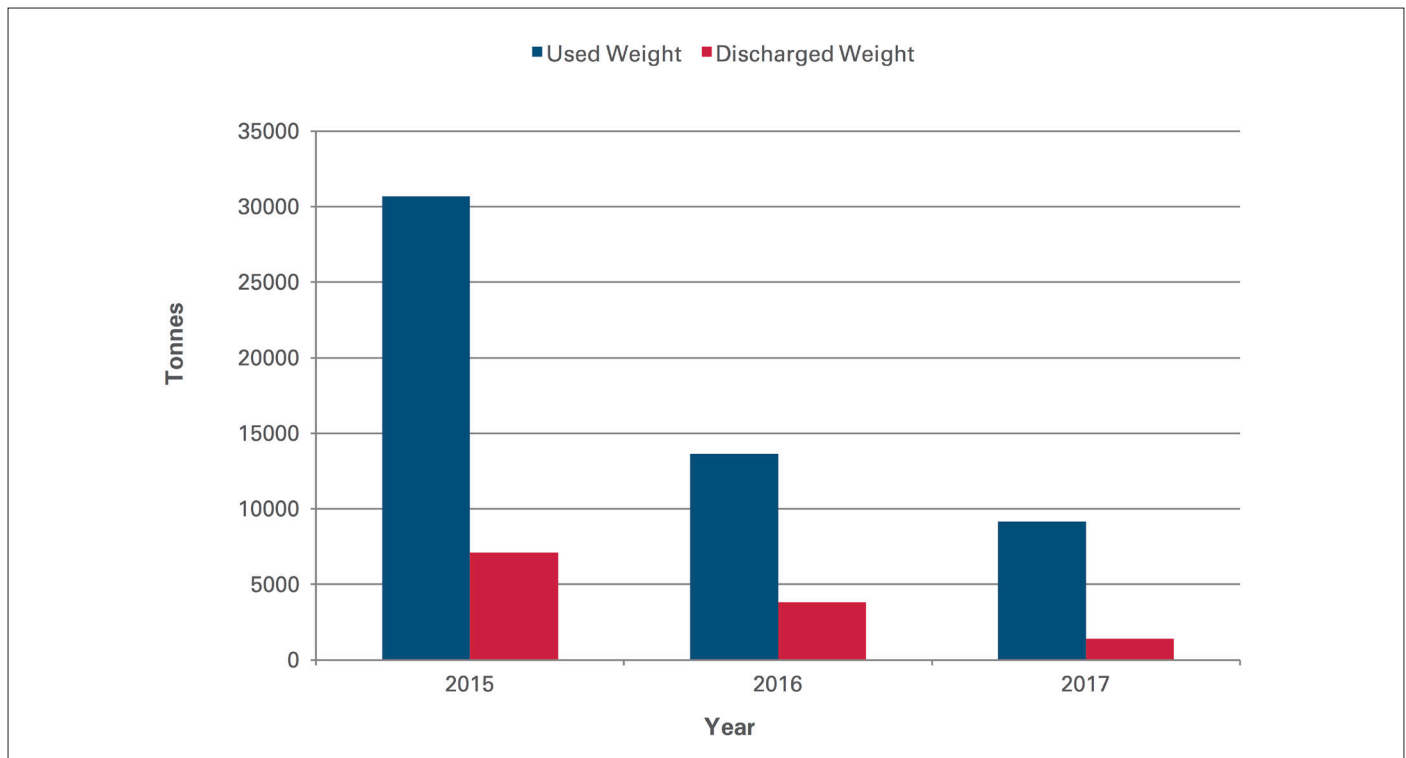


# Drilling - Including Well Intervention and Pipeline Chemicals

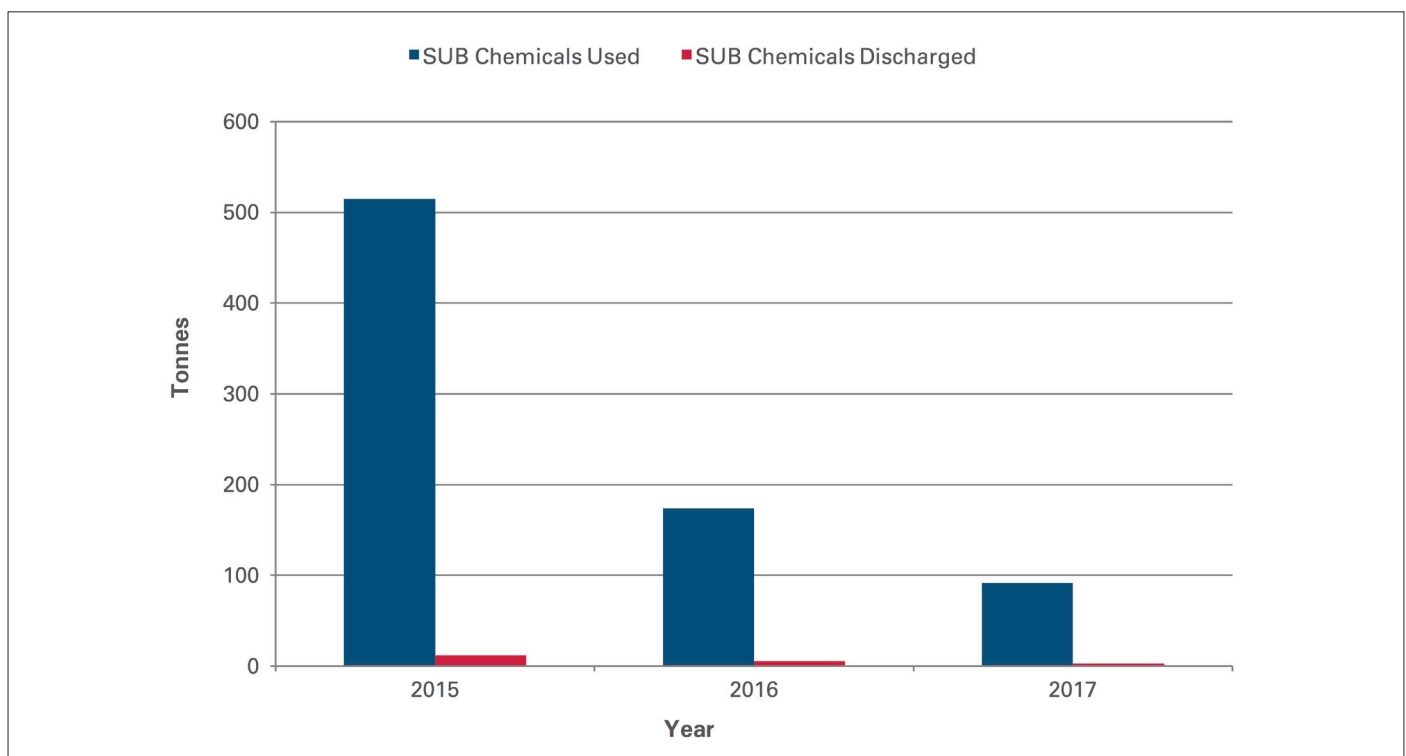
Chemical usage decreased from 13,648 tonnes in 2016 to 9,151 tonnes in 2017, as a result of a reduced drilling program and the variation in the amount of chemical used depending on the depth and complexity of the wells being drilled.

The use of SUB labelled chemicals for drilling also decreased from 174 tonnes in 2016 to 92 tonnes in 2017. Overall discharge of chemicals with sub warnings also decreased from 6 tonnes in 2016 to 3 tonnes in 2017 further highlighting Nexen's commitment to reduce the number of SUB chemicals discharged to sea.

## Drilling Chemical Usage



## Drilling Chemicals Usage with Substitution Warning



Environmental Statement 2017

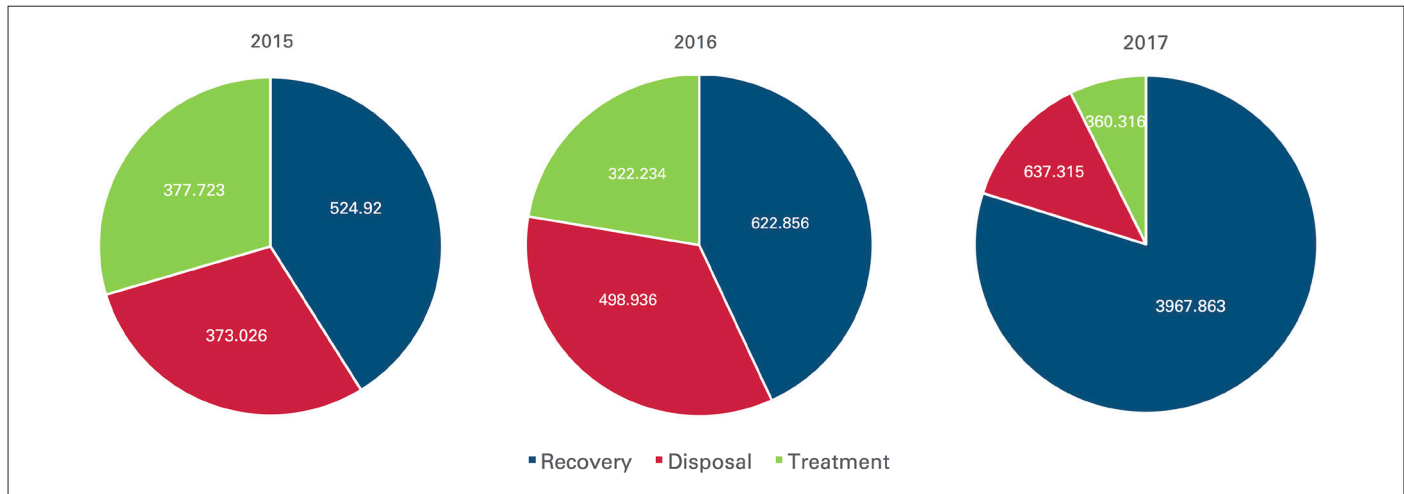
# Waste

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## Production Waste

In 2017, 4,965 tonnes of waste was generated across all installations and the Etrick Blackbird Decommissioning programme. This figure represents an increase of 3,521 tonnes compared to the cross installation total of 1,444 tonnes in 2016. The increase can largely be attributed to the removal of subsea infrastructures during the Etrick Blackbird decommissioning. The very high percentage of waste to recycling/recovery includes diversion of 394 tonnes of concrete mattresses from landfill to be re-used as part of the Peterhead Harbour Reclamation project.

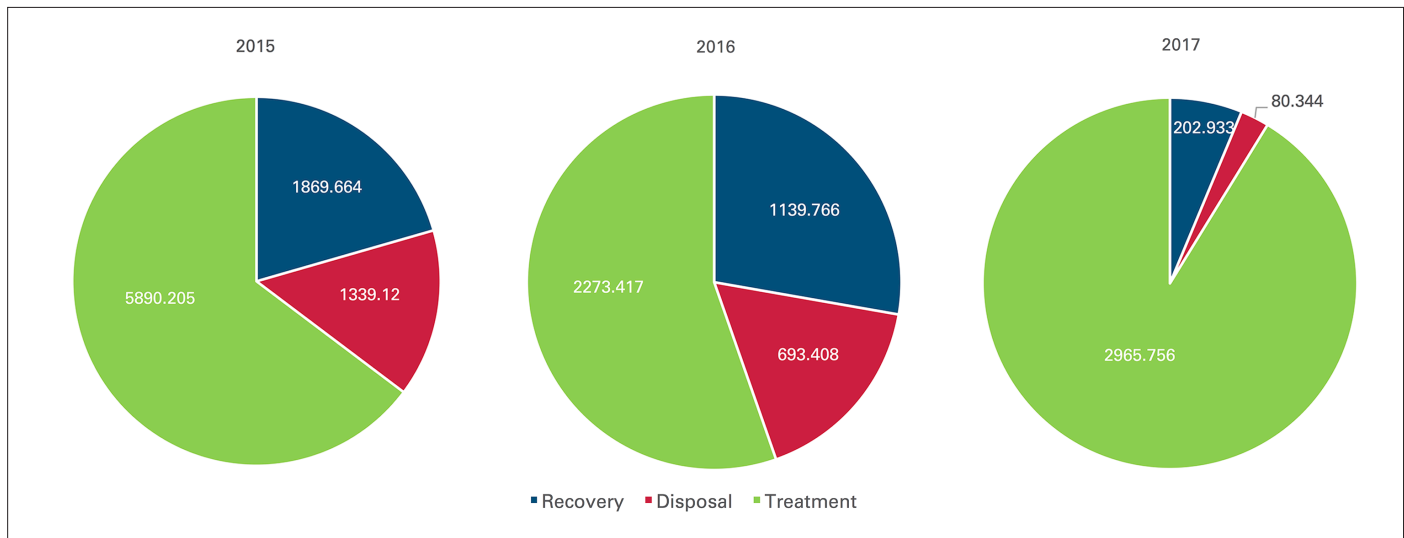
### Production Waste Disposal Routes – By Year



## Drilling Waste

Drilling waste generated (excluding cuttings) in 2017 was 3,249 tonnes. This is a decrease of 858 tonnes compared to waste generated during drilling activities in 2016. The overall decrease in drilling waste is largely as a result of a less intensive drilling program throughout 2017.

### Drilling Waste Generated (Excluding Cuttings)





Environmental Statement 2017

# Legal Compliance

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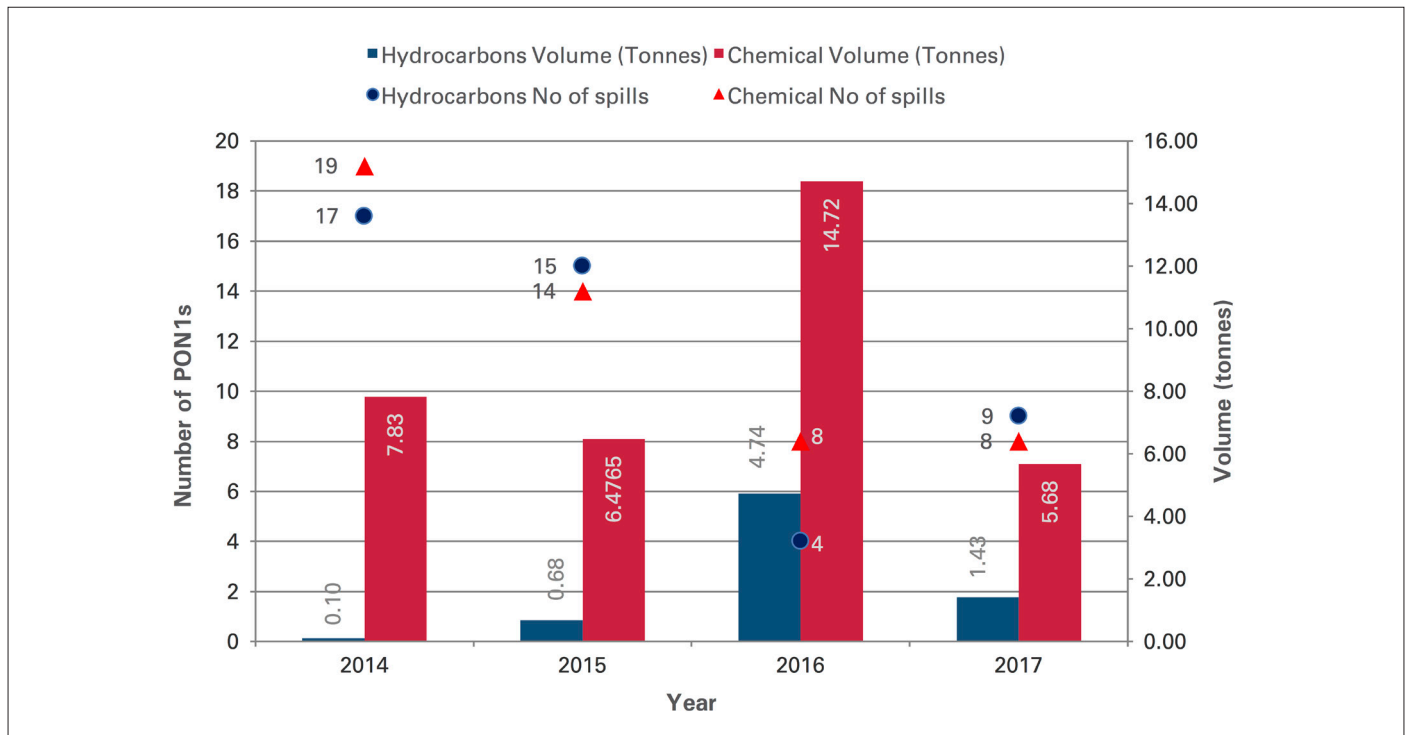
## 2017 Unplanned Releases

During 2017, there were 17 unplanned releases, an increase from the 12 unplanned releases in 2016. Whilst the total number of spills increased during 2017 the spill volume for both hydrocarbon and chemicals spills decreased from 19 tonnes in 2016 to 7 tonnes in 2017.

A total of 9 releases resulted in 1 tonne of oil being released to sea. A single diesel spill event accounts for the majority of this total.

A further 8 unplanned releases resulted in 6 tonnes of chemicals being released to sea. Primarily, the volume was made up of a subsea release of a water based hydraulic fluid on Golden Eagle, accounting for 5 tonnes of the total.

### PON1 Summary: 2014 - 2017





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# Environmental Objectives

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2016 Objective	Programme	Performance
Ettrick Blackbird Decommissioning	Support the Ettrick Decommissioning team throughout the 2017 worksopes and planning for future worksopes.	Completion of all planned subsea infrastructure removal ahead of schedule and below budget. Only one minor hydraulic fluid leak and subsequent PON1 report from an ROV. 96% of waste recovered.
Environmental Risks and Risk Assessment Matrix	Development, raise awareness and roll out Nexen's Environmental, Risks and Risks Assessment matrix and supporting documentation in association with H&S.	Assessment and acceptance as part of the successful OSPAR EMS verification. Assessment and acceptance as part of the 2017 ETS verification activity. Addition to approved ETS permits.
Contractor Interfaces	Improve and manage contractor interfaces to minimise environmental risk and improve environmental performance.	Environmental attendance and participation at all Nexen HSE Contractor Forums in 2017 including 4 Environmental Specific Forums. Effective engagement and close working with Waste and Subsea contractors during Ettrick Blackbird Decommissioning Operations to minimise the risk of events offshore and at quayside during operations.
Procedural Compliance	Focus on roll out of procedures, work instructions and references/guides to improve procedural compliance.	Completion and roll out of the Nexen Environmental Compliance handbook. 98% completion of the UK Management System (UKMS) document review plan including procedure roll out. Production of 33 compliance management procedures not included in the plan.

## Environmental Goals 2018

The following goals have been set for 2018 as part of our EMS:

1. Support the Ettrick Decommissioning team throughout the 2018 Plug and Abandonment program and future decommissioning work scopes.
2. Spill reduction and prevention through communication and actioning lessons learned from previous events and focus on high spill risk activities, equipment and contractors.
3. Maintain and improve compliance to minimise the risk of non-compliances through review and implementation of new Regulatory and industry guidance, workforce involvement and offshore compliance checks.
4. Successful delivery of EU ETS and LCP/PPC compliance activities ahead of regulatory deadlines.

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