



**EnQuest PLC**  
UKCS Environmental Statement 2017



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# WELCOME TO ENQUEST'S PUBLIC STATEMENT ON ENVIRONMENTAL MANAGEMENT AND PERFORMANCE FOR 2017

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**This statement has been prepared to fulfil the regulatory requirement under the OSPAR recommendation 2003/5 to produce an annual public environmental statement.**

It is an open and transparent representation of our environmental performance across our offshore operations for 2017.

The statement covers environmental performance, describes the extent to which we are meeting our environmental goals and outlines our future objectives.

All assets achieved yearly average oil in produced water concentrations within the 30 mg/l limit as set by the Regulator. Individually, the assets performed at the following levels:

**Thistle Alpha - 10.99 mg/l**

**Northern Producer - 27.45 mg/l**

**Heather Alpha - 27.62 mg/l**

**Magnus - 8.38 mg/l**

**EnQuest Producer - 20.59 mg/l**

**Kittiwake\* - 29.70 mg/l**

\* Transitioned to third-party operator in June 2017

Identifying ways to minimise the risk of unplanned spills remained a focus throughout 2017, with the number of unplanned spills to the marine environment totalling 22. Eight of these were oil releases, 13 were chemical releases and one was a permitted discharge notification.

In early 2018, we completed a successful external verification of our 2017 Greenhouse Gas Emissions as required under the Companies Act 2006 (Strategic and Directors' Reports) regulations 2013.

Total CO<sub>2</sub> equivalent emissions resulting from flaring and power generation totalled 731,891 tonnes in 2017.

As a mature province, the UKCS is a challenging place to work. Nevertheless, we are committed to improving the environmental performance of our assets.

# HSE&A Policy

Health, Safety, Environment & Assurance



EnQuest is one of the largest UK independent oil producers in the UK North Sea. We are committed to operating responsibly and will not compromise our health, safety or environmental standards to meet our business objectives.

Through respect for our people, our contractors, our customers, our stakeholders and the environment, we will operate to achieve our principal aim: **safe results, with no harm to people and respect for the environment.**

To achieve this we will manage our business such that we:

- Demonstrate strong leadership and visible commitment to HSE&A
- Comply with all applicable legislation and industry standards
- Maintain high-quality systems and processes
- Assess and manage risks
- Maintain safe and healthy workplaces
- Manage and mitigate our impact on the environment
- Provide trained and competent resources
- Encourage open and honest communication
- Ensure our contractors and suppliers comply with our policies and procedures
- Maintain the integrity of our assets over their life cycles
- Assess and manage change
- Plan and be prepared for potential emergencies
- Investigate and learn from incidents
- Strive for continual improvement in our performance

Should operational results and safety ever come into conflict, we all have a responsibility to choose safety over operational results. This includes the responsibility to stop a job whenever activities may conflict with this policy.

Amjad Bseisu  
Chief Executive Officer  
EnQuest PLC, January 2018

Bob Davenport  
Managing Director – North Sea  
EnQuest PLC, January 2018

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[www.enquest.com](http://www.enquest.com)

**We are an oil and gas production and development company:  
one of the largest UK independent oil producers in the UK North Sea.**

### Principal assets

At the end of 2017 we are the licensee, well, pipeline and installation operator for Heather, Thistle, Northern Producer and EnQuest Producer.

We became licensee, pipeline and well operator of the Magnus Platform and fields, operator of the Ninian oil export pipeline, Northern Leg Gas Pipeline and East of Shetland Gas Pipeline, and operator of the Sullom Voe Terminal on 1 December 2017.

We are the licensee, well and pipeline operator for the Greater Kittiwake Area. Petrofac became the installation operator of Kittiwake in June 2017.

We are the licensee, well and pipeline operator of the Kraken fields. Bumi Armada are installation operator of the Kraken FPSO.

EnQuest also has a non-operated interest in Alba oilfield.

### Delivering sustainable growth

We are proving that we can deliver sustainable growth through increasing production and reserves.

### Respect for the environment

As a responsible operator, we manage our operations to prevent incidents and minimise the environmental impact:

- Respect is paramount for our people, our environment and the safety of others;
- Effective management of Health, Safety and Environmental performance is a key objective across the business.

### Guiding all our activities is our principal aim:

**SAFE RESULTS, NO HARM TO PEOPLE  
AND RESPECT FOR THE ENVIRONMENT.**



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# OFFSHORE ACTIVITIES

## PRODUCTION AND DEVELOPMENT

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# Our activities

At the end of December 2017, we had interests in 25 UK production licences and were the operator of 23 of these licences.

FIG.1

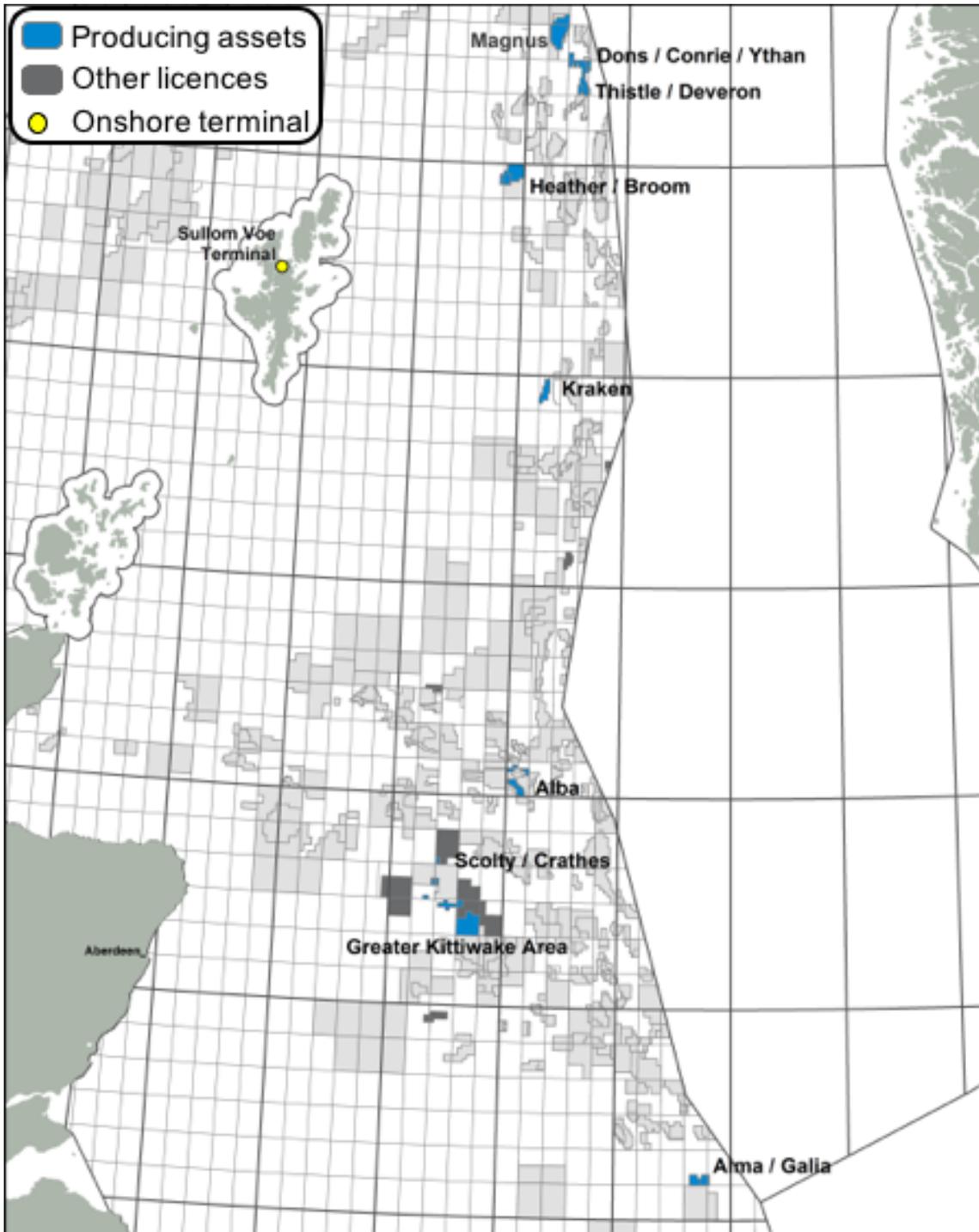


Figure 1 shows our present areas of production and development, along with discoveries and areas in which we hold a licence.

## 08 Thistle

The Thistle field was discovered in 1973. A single steel jacket platform was installed in 1976 and production began in February 1978 for BNOC/Britoil/BP. The licence operatorship subsequently changed to DNO in 2003, then to Lundin in 2004 before the demerging of Lundin's UK assets in 2010, when EnQuest became the operator.



## Northern Producer

In the Don field, oil was discovered in the sandstone of the Middle Jurassic Brent Group in 1973. The discovery was subsequently appraised by Shell/ESSO in 1976 and then developed by BP in the 1990s. EnQuest's redevelopment began with production in 2009. The development consists of four subsea tie-backs: Don South West, West Don, Conrie and Ythan.



## Heather/Broom

The Heather A platform has been in production since 1978. Today there are 15 producing wells and three water injection wells in operation. Heather entered a new phase of its life when EnQuest began a comprehensive redevelopment programme. An ongoing large-scale infrastructure enhancement programme paved the way for a drilling campaign. The first phase of drilling was completed in 2015 and included three new wells, a workover, the conversion of shut-in producers to injection and wellwork.



The Broom field is a subsea tieback to Heather. Production from Broom began in August 2004, targeting two oil accumulations, West Heather and North Terrace. The field features four gas lifted producing wells and two injectors.

## Magnus

The Magnus oilfield was discovered in March 1974 in the 4th licensing round. Oil was found 2,709 metres below the seabed in a water depth of 186 metres. The discovery by the semi-submersible drilling rig Sedco 703 was made in the younger sands of the Upper Jurassic. The field was named after the Viking saint of Orkney - Magnus.

Oil from the Magnus reservoir is recovered by 14 deviated platform wells. The produced oil flows to collector manifolds and is processed through two identical production trains.



### Alma/Galia

Alma/Galia represented EnQuest’s first new hub development and was a project of significant scale.

Located in the central North Sea, 310 kilometres south-east of Aberdeen in water depth of approximately 80 metres, the project revitalised the UK North Sea’s first producing field - Argyll - and consists of seven production wells tied back to the FPSO *EnQuest Producer*.



### Kittiwake

The Kittiwake field was discovered in 1981 and developed with a fixed steel jack platform. Production began in 1990 and reached a peak of almost 40,000 Boepd in 1994. Oil is exported to the Forties Pipeline System via a 10” oil export line to Forties Unity. Surplus gas is exported via a 4” export line to the nearby SEGAL gas pipeline. Further exploration in the Greater Kittiwake Area (GKA) discovered the Grouse, Mallard, Gadwall and Goosander fields. All these additional subsea developed fields were tied back to the Kittiwake platform. In February 2014, EnQuest acquired a 50% stake and operatorship of GKA which consists of the Kittiwake field and surrounding development/acreage. EnQuest also acquired a 100% interest in the Kittiwake to Forties oil export pipeline.



### Kraken

Kraken represents one of the cornerstones of EnQuest’s long-term production portfolio. Kraken has an anticipated production life of up to 25 years and first oil was achieved in 2017. Kraken is a large heavy oil accumulation in the UK North Sea, located in the East Shetland basin, to the west of the North Viking Graben; approximately 125 km east of Shetland.



### Transocean Leader

The Transocean Leader has been contracted to drill the Kraken Development. The Kraken field is a large heavy oil accumulation in the UK North Sea, located in the East Shetland basin, approximately 125 km east of Shetland. In 2017, the batch drilling programme continued at Drill Centre 2 and 3.



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# ENVIRONMENTAL MANAGEMENT SYSTEM

OUR AIM:  
**SAFE RESULTS, WITH NO HARM TO  
PEOPLE AND RESPECT FOR THE  
ENVIRONMENT**

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## We manage our environmental activities via our integrated Safety and Environmental Management System (SEMS).

As an operator of offshore oil and gas installations on the UKCS, we are required by the BEIS OPRED to have in place an Environmental Management System that:

- Achieves the environmental goals of the prevention and elimination of pollution from offshore sources and of the protection and conservation of the maritime area against other adverse effects of offshore activities;
- Maintains continual improvement in environmental performance; and
- Is in accordance with the principles of internationally recognised standards such as ISO 14001.

We have implemented an integrated Safety and Environmental Management System (SEMS) which is accessed via the Business Management System (BMS) on our intranet. The EMS element of the SEMS has been established and implemented to ensure company activities are conducted in such a way that minimises risks to the environment throughout company operations. It provides a framework for the achievement of objectives in order for us to manage risk in accordance with the requirements of company policies, applicable legislation, national/international standards and contractual or partnership commitments.

We have established an HSE&A Policy, which is a statement of intent from the Chief Executive Officer and is intended to communicate EnQuest's aims and expectations regarding environmental management to personnel and stakeholders (including contractors, clients and shareholders).

The Corporate Major Accident Prevention Policy (CMAPP) complements the HSE&A Policy and outlines the approach for managing major accident hazards.

Our HSE&A Principles are developed to support the achievement of the HSE&A Policy commitments across all company operations and form the basis for the development and application of HSE&A management systems, processes and procedures at all levels within our business.

As the EMS is subject to auditing and review, our goal of complying with statutory requirements is repeatedly tested. Furthermore, as we apply our EMS across all our operations, we are able to share and learn from best practice and achieve our goal of minimising risk of impact to the environment.

Our EMS is structured in line with the requirements of the international standard for environmental management and has been externally verified to meet the requirements of OSPAR Recommendation 2003/5.

HSE&A is our top priority and it is deeply embedded in our culture and values. It is integral to how we manage our business with regard to people, installations and the environment in which we operate.

Our HSE&A Policy underpins how our environmental goals are progressed throughout our business operations. We are fully committed to operating responsibly so that environmental risks are minimised.

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# ENVIRONMENTAL PERFORMANCE



Across all of our assets, the volume of liquid discharge produced (including the oil content of produced water, produced water volumes and chemicals discharged to sea) remain within all permitted allowance levels as agreed by the Regulator.

Our chemical selection complies with the required regulations, we strive to minimise the overall volume of chemicals used and where feasible use those with a lower environmental impact.

There were a total of nine substitution chemicals in use across our producing assets in 2017; three of these have no discharge to the marine environment. Five chemicals highlighted for substitution were removed from use on our assets in 2017.

We introduced a Greening Plan on producing assets to set targets for seeking alternative chemicals for products carrying a substitution warning label and replace where possible. We work closely with chemical suppliers to undertake research and development of new, more environmentally friendly chemicals. We also aim to reduce usage application rates and the volumes discharged where possible.

As a producer of waste, we have a duty of care to ensure that all waste is transferred and disposed of in accordance with the relevant legislation.

We made some significant improvements in the area of Offshore Naturally Occurring Radiation Material (NORM) waste cleaning as follows:

- Engagement with the Regulators was undertaken to establish two production assets as offshore cleaning hubs;
- Each of these assets now has the capability to receive equipment and material for offshore processing.

This allows for effective and efficient handling of materials to minimise onshore waste disposal.

CO<sub>2</sub> equivalent emissions resulting from the burning of fuel gas and diesel for the purpose of generating power totalled 425,932 tonnes, with the flaring of gas accounting for an additional 305,959 tonnes of CO<sub>2</sub>.

Minimising and preventing spills to the marine environment remained a focus during 2017. Throughout the year, there were eight unplanned spills of hydrocarbons and 13 unplanned chemical spills across EnQuest operations.

## 14 We regularly monitor and report our environmental performance in relation to these aspects in line with the requirements of EU and UK law.

### Liquid discharges

Oil and gas extraction has associated produced water. On EnQuest's offshore installations, hydrocarbons are separated from produced water as part of the production process. However, as traces of oil inevitably remain, the discharge of produced water is strictly controlled by the Offshore Petroleum Activities (Oil Pollution Prevention & Control) Regulations 2005 (as amended). These Regulations set a limit on the average oil content of the water discharged. Liquid discharge also consists of production chemicals discharged to water in the extraction process. Production chemicals have a number of functions. Any chemical used offshore during oil and gas production must be approved by the Centre for Environment, Fisheries and Aquaculture Science (Cefas). The use and discharge of production chemicals is controlled under the Offshore Chemical Regulations 2002 (as amended). In collaboration with our chemical suppliers, EnQuest strives to use chemicals with a lower environmental impact where feasible in our operations through the chemical management process.

### Spills

Given the nature of our activities, there is always a risk that unplanned spills may occur. All spills to sea, regardless of volume, must be reported to BEIS OPRED via a Petroleum Operations Notice (PON1).

At EnQuest we take our responsibilities to prevent spills to sea very seriously. We have processes in place to minimise

this risk. In addition to statutory reporting requirements, we internally record and investigate any releases of unpermitted chemical or oil. This helps improve our understanding of the root causes and identify actions to prevent similar incidents occurring in the future.

### Atmospheric emissions

We use energy in extracting, processing and exporting oil and gas. Atmospheric emissions generated by these activities are regulated by the Greenhouse Gases Emission Trading Scheme (ETS) and the Offshore Combustion Installation (Prevention and Control of Pollution) Regulations 2013. We seek to use energy efficiently within our facilities and continually look to identify opportunities that may reduce emissions from its operations. In addition, we report our annual greenhouse gas (GHG) emissions in our Directors' Report as per the Companies Act 2006 (Strategic and Directors' Reports) Regulations 2013 within the Annual Report and Accounts.

### Material waste

Our operations consume natural resources and other material which generate a range of wastes. We must ensure that the segregation, transportation and eventual disposal of waste are managed in accordance with legislative requirements. We work closely with our onshore waste management contractors to identify recycling routes for as much of its waste as possible and conducts regular audits to evaluate waste management practices.

# Liquid discharge

We aim to minimise the environmental impact of the discharge of produced water. Treatment plants at our assets remove the majority of hydrocarbons and solids present in the produced water stream. All our water is treated and monitored prior to discharge.

## Oil in water

As produced water contains traces of hydrocarbon, the Offshore Petroleum Activities (Oil Pollution, Prevention & Control) Regulations 2005 (as amended) set the monthly permitted average oil content of produced water at 30 mg/l.

Average oil concentration of produced water by asset

FIG.2



Data for Magnus is from 1 December, data for Kittiwake is up to June and data for Kraken is only included where EnQuest are the permit holder.

Figure 2 above shows average oil concentration of produced water across our assets for 2017. All assets have demonstrated yearly average oil concentrations that sit within the 30 mg/l limit.

# 16 Liquid discharge continued

**Produced water discharged to sea (m<sup>3</sup>)**

FIG.3a

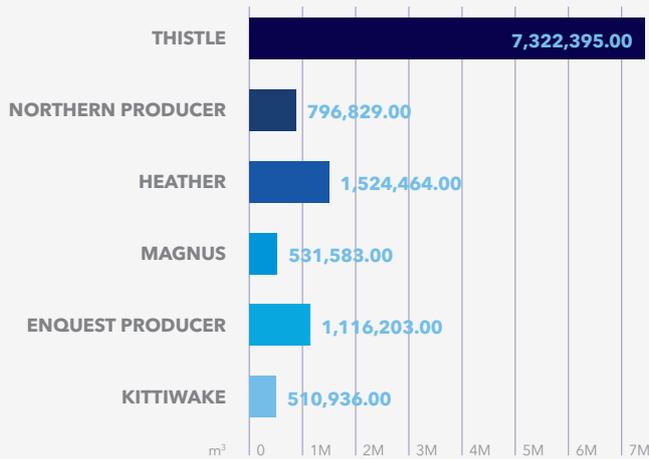


Figure 3a. above shows total volume of produced water discharged to sea during 2017.

**Oil in produced water discharged to sea (tonnes)**

FIG.3b

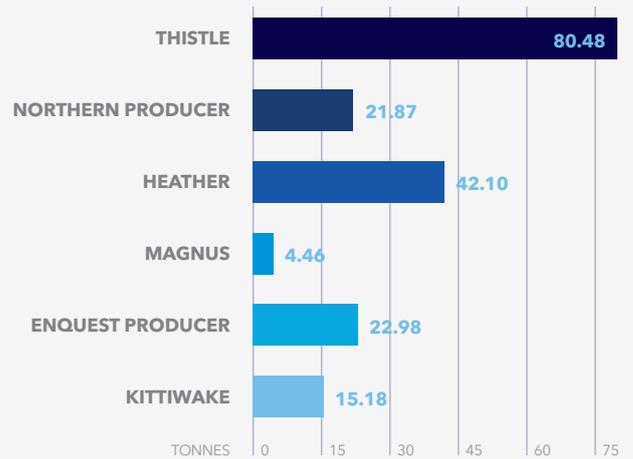


Figure 3b. above shows oil discharged to sea via the produced water stream during 2017.

**Total chemical use (kg)**

FIG.4a

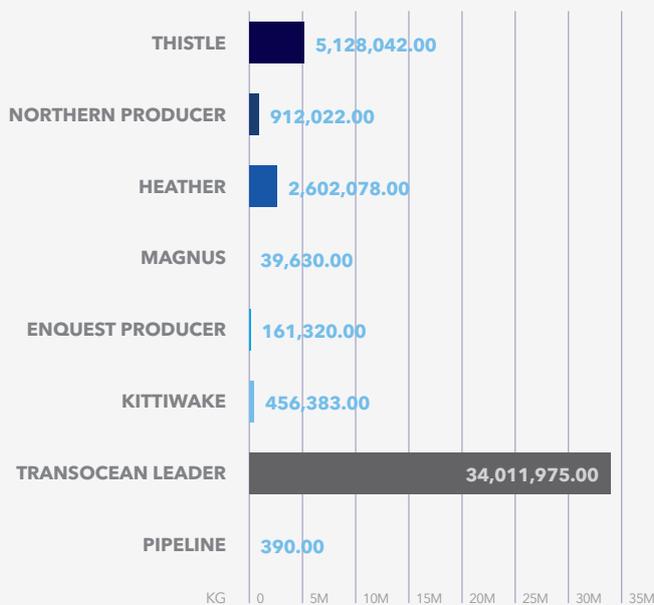


Figure 4a. above shows total chemical used during 2017.

**Total chemical discharge (kg)**

FIG.4b

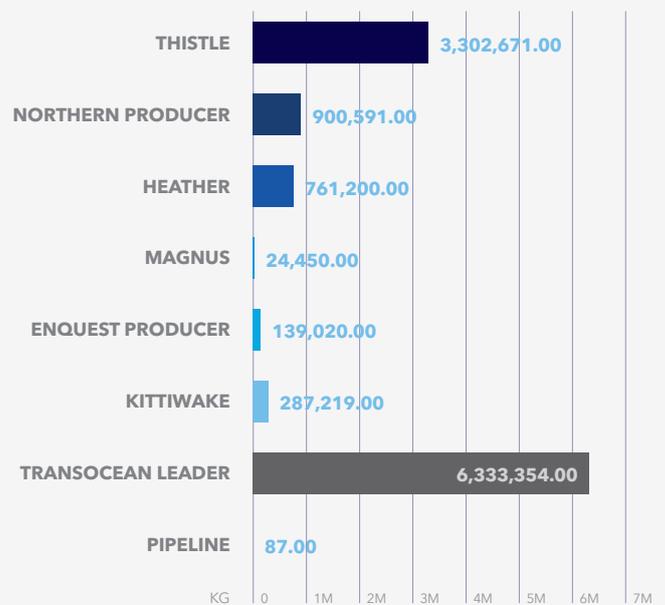


Figure 4b. above shows total mass of chemicals discharged to sea during 2017.

Data for Magnus is from 1 December, data for Kittiwake is up to June and data for Kraken is only included where EnQuest are the permit holder.

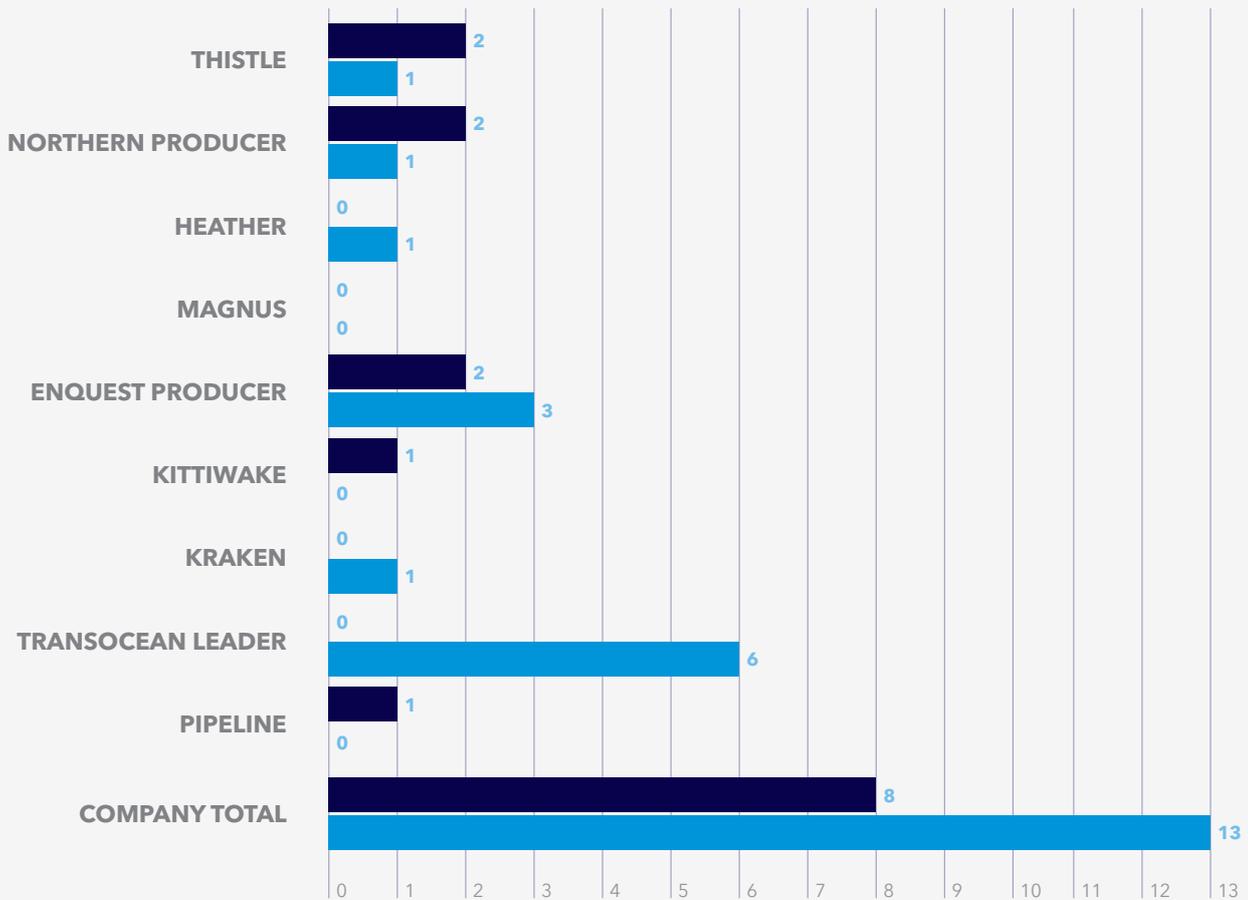
As spills at sea can have consequences for the marine environment, we work to minimise the risk with a focus on prevention. We have BEIS OPRED approved oil emergency pollution plans in place across all our assets and are a member of Oil Spill Response Limited, the world’s largest spill response organisation.

### Number of spills

All spills to the marine environment, regardless of volume, must be reported to BEIS OPRED via a Petroleum Operations Notice (PON1). Figure 5 (below) details the number of PON1s submitted to BEIS OPRED during 2017.

Number of spills during 2017

FIG.5



Excludes permitted discharge notification

Hydrocarbon Chemical

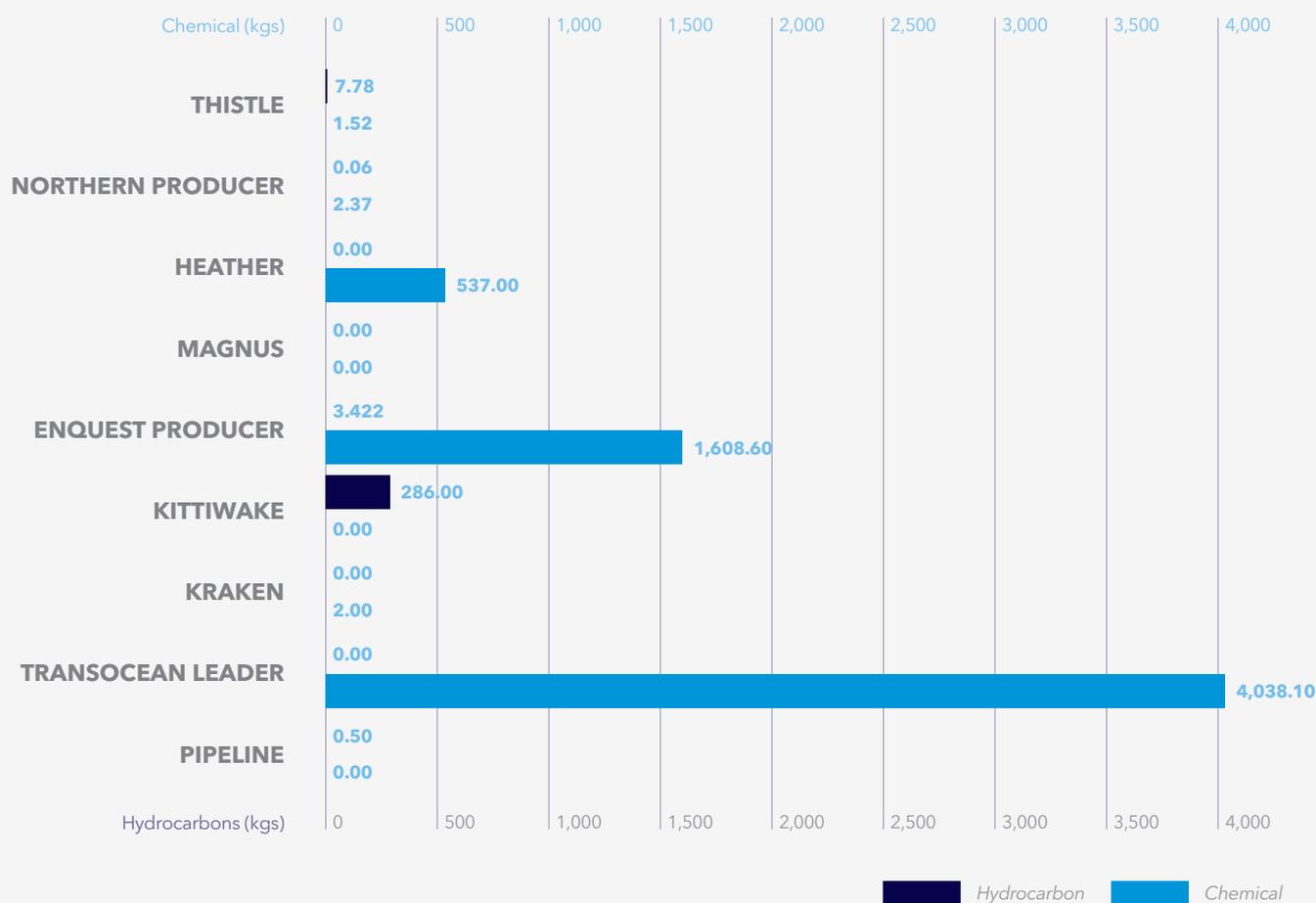
Data for Magnus is from 1 December, data for Kittiwake is up to June and data for Kraken is only included where EnQuest are the permit holder.

Figure 5 details the number of spills to sea originating from across our operations in 2017.

## 18 Spill quantities

### Mass of spills during 2017

FIG.6



Data for Magnus is from 1 December, data for Kittiwake is up to June and data for Kraken is only included where EnQuest are the permit holder.

Figure 6 details the total volume of hydrocarbon or chemical spills originating from across our operations in 2017.

Further information on Spills > 2 tonnes
<b>TransOcean Leader (Kraken Field)</b>
<b>Spill Quantity (kg)</b>
3,704 kg oil based drilling fluid
<b>Summary</b>
During staging up of the mud pumps, following a drilling connection, the slip joint packers lost pressure and de-energised allowing an unplanned discharge of approximately 18 barrels of Versapro RDF non-aqueous oil based mud to sea. This incident was fully investigated, the root cause was identified and remedial actions put in place.

The following spills occurred in 2016 but were not included in the 2016 Environmental Statement as they had not been closed out by BEIS OPRED at time of publishing.

Site	No. of Chemical Spills	No. of Oil Spills
EnQuest Producer	2	1
Heather	1	0
Northern Producer	1	0
Thistle	1	0

Site	Mass of Chemical Released (kg)	Mass of Oil Released (kg)
EnQuest Producer	2,704.66	16.73
Heather	486.00	0.00
Northern Producer	0.01	0.00
Thistle	1,605.00	0.00

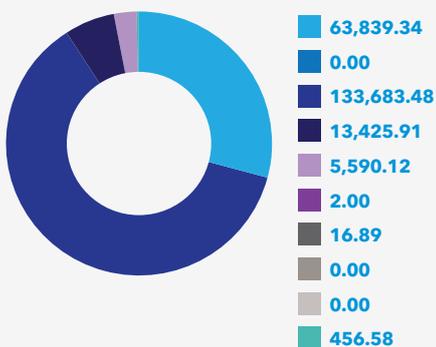
# Mandatory carbon reporting

Under the Companies Act 2006 (Strategic and Director's Reports) Regulations 2013, we were required to report our annual greenhouse gas (GHG) emissions in the Directors' report. EnQuest's 2017 GHG emissions were externally verified early in February 2018. The charts below provide detail of all our assets GHG emissions expressed as a CO<sub>2</sub> equivalent.

## GHG emissions by asset

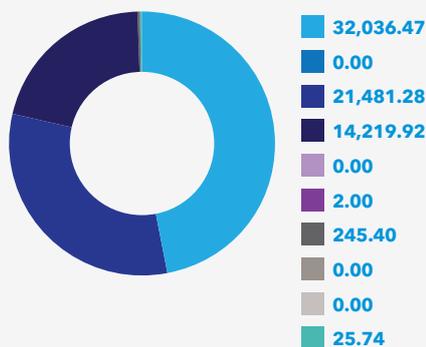
**Thistle (T)**

FIG.7a



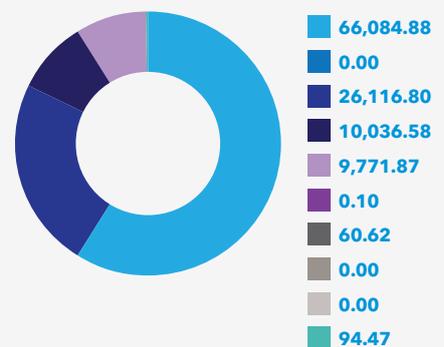
**Northern Producer (T)**

FIG.7b



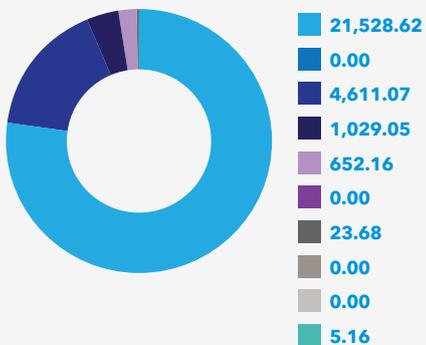
**Heather (T)**

FIG.7c



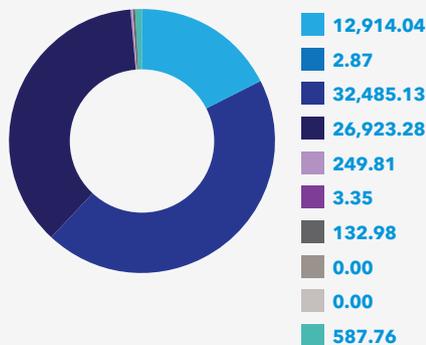
**Magnus (T)**

FIG.7d



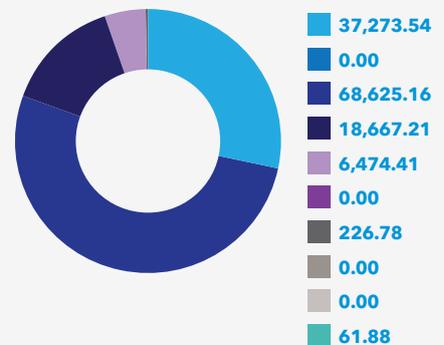
**EnQuest Producer (T)**

FIG.7e



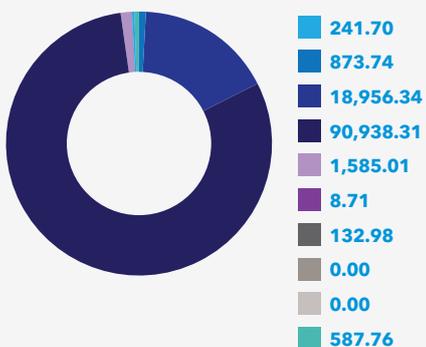
**Kittiwake (T)**

FIG.7f



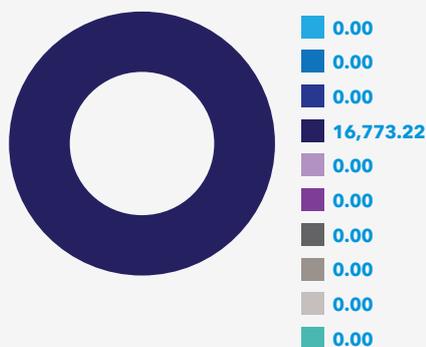
**Kraken (T)**

FIG.7g



**Transocean Leader (T)**

FIG.7h



- NATURAL GAS COMBUSTION
- CRUDE
- GAS FLARING
- DIESEL COMBUSTION
- METHANE VENTING
- GAS BOTTLES
- REFRIGERANT LOSSES
- ELECTRICITY
- STEAM
- FUGITIVE EMISSIONS

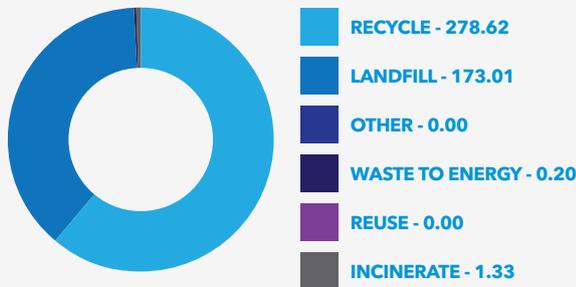
Data for Magnus is from 1 December, data for Kittiwake is up to June and data for Kraken is only included where EnQuest are the permit holder.

Figure 7 above shows the greenhouse gas emissions by asset in 2017.

# 20 Operational waste by asset

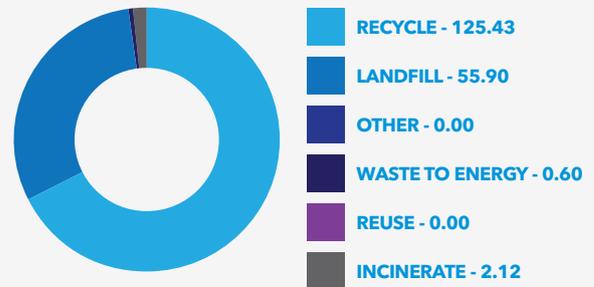
**Thistle - waste (T)**

FIG.8a



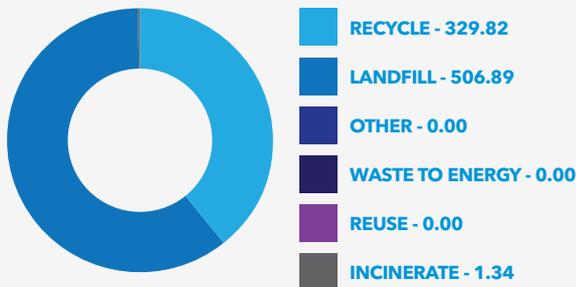
**Northern Producer - waste (T)**

FIG.8b



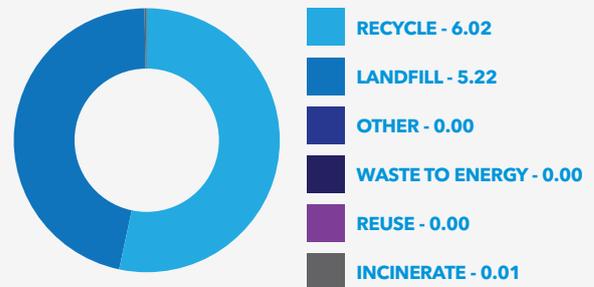
**Heather - waste (T)**

FIG.8c



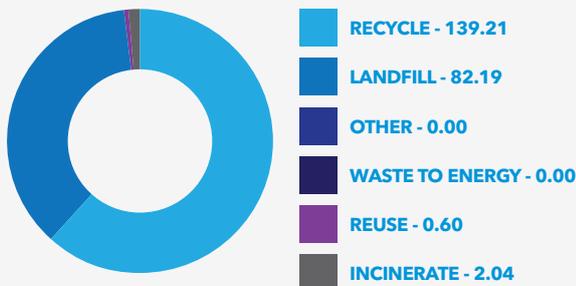
**Magnus - waste (T)**

FIG.8d



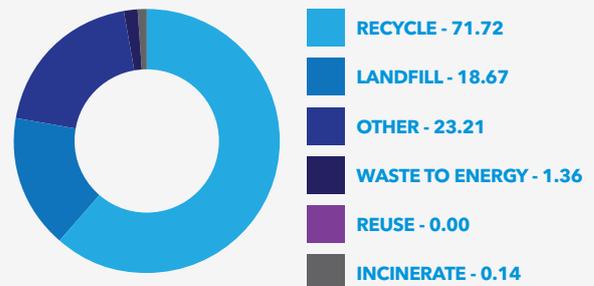
**EnQuest Producer - waste (T)**

FIG.8e



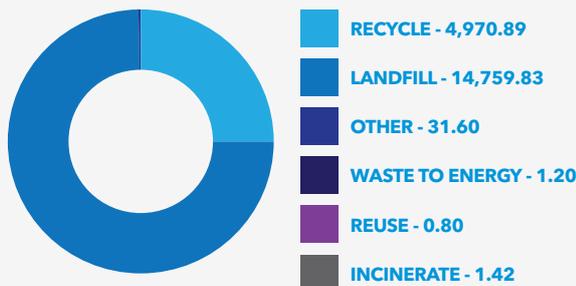
**Kittiwake - waste (T)**

FIG.8f



**Transocean Leader - waste (T)**

FIG.8g



*Data for Magnus is from 1 December, data for Kittiwake is up to June and data for Kraken is only included where EnQuest are the permit holder.*

Figure 8 charts above shows the destination of waste that is generated on EnQuest assets, including the drilling rig in 2017.

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# LOOKING FORWARD

**AS A MATURE PROVINCE, THE UKCS IS A CHALLENGING PLACE TO WORK. LOOKING FORWARD TO 2018, WE ARE COMMITTED TO FURTHER IMPROVING OUR ENVIRONMENTAL PERFORMANCE**

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## 22 2018 Continual Improvement Plan

**We remain committed to improving our environmental performance.**

The HSE&A Continual Improvement Plan (CIP) describes our improvement initiatives; what we will do to achieve them and how we will measure success. Specific objectives, targets and actions are developed and cascaded to all levels within the organisation. The Senior Environmental Advisor provides input to the development of the CIP by using the current performance data together with significant environmental aspects and impacts to guide focus areas.

In addition, each installation has an Asset HSE&A plan that is based on the HSE&A CIP and is reviewed on a monthly basis by the Asset Environmental Advisor.

The key Environmental Control objective for 2018 is to:

- Improve Environmental Management System Understanding.

Across our assets we continue to raise awareness of environmental legislation and permit conditions to prevent permit non-compliances. An Environmental Compliance manual will be developed to map the roles and responsibility pertaining to environment permit obligations. We continue to investigate any spills to sea and permit non-compliances to identify root causes and implement improvement actions.



# CONTACT

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