



# Environmental Performance Report 2017

## Offshore Operations





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## Section 1 Introduction

Ithaca Energy (UK) Ltd. ([www.ithacaenergy.com](http://www.ithacaenergy.com)). The company's principal focus is the exploration and development of oil and gas reserves in the North Sea on the United Kingdom's Continental Shelf (UKCS).

This is the twelfth annual environmental performance report for offshore operations. Section 2 of the report provides a general description of the company and its activities; Section 3 provides an overview of Ithaca Energy's environmental management system, environmental policy and high-level environmental objectives; and the final section presents 2017 environmental performance data together with performance against environmental targets.

## Section 2 Overview of Operations and Activities in 2017

### 2.1 Overview

Ithaca has a solid and diversified producing asset portfolio, mainly producing oil. The producing fields, which are a mix of operated and non-operated assets, are located across the Northern, Central and Southern North Sea and Moray Firth areas of the UK Continental Shelf.

The company also has an interest in the Wytch Farm Field located in Southern England (on/offshore oil field).

2017 was Ithaca Energy's ninth full year as a production operator in the North Sea.

In addition to existing production operations at the Stella Field, operations in 2017 saw the drilling of a new well at Harrier, which will be tied in to the main Stella Field in 2018.

### 2.2 Inner Moray Firth

The Inner Moray Firth contains the Greater Beatrice Area consisting of the Beatrice and Jacky Fields. Ownership of the Beatrice Field was transferred from Ithaca in early 2015, although Ithaca retain ownership of Jacky. The Jacky Field was produced in 2009 via an unmanned wellhead platform tied back by subsea flow lines to the Beatrice Alpha platform. Production ceased in Q1 2015.

### 2.3 Outer Moray Firth

The Athena field is situated in Block 14/18b in the Outer Moray Firth area. 2015 was the third year of production from the Athena field since the completion of start-up and commissioning operations in mid-2012. Athena ceased production in Q1 2016.

### 2.4 Northern North Sea

The Causeway Area consists of the Causeway and Fionn oil fields, approximately 150km northeast of the Shetland Islands. It consists of two production wells which are tied back to the TAQA operated North Cormorant platform. TAQA holds and reports on the relevant environmental permits.

## 2.5 Central North Sea

The Greater Stella Area covers four Blocks, 29/10a, 29/10b, 29/10d and 30/6a, and includes the Stella, Harrier, Hurricane and Helios Fields. In 2017 the remainder of operations, including the installation of an oil export pipeline and delivery of the *FPF-1* production installation, was completed, and the newly drilled Harrier well will be tied in to production facilities at the *FPF-1* in 2018.

## 2.6 Southern North Sea

In the Southern North Sea, Ithaca Energy is operator of the Anglia field (Blocks 48/18b, 48/19b and 48/19e), comprising of a normally unmanned wellhead platform and subsea wells which are tied back to the Lincolnshire Offshore Gas Gathering System (LOGGS) complex for process and export. LOGGS is operated by ConocoPhillips who hold and report on the relevant environmental permits. Anglia ceased production in Q4 2015.

## Section 3 Environmental Management System

### 3.1 Policy

A copy of Ithaca Energy's current Health Safety and Environmental (HS&E) Policy Statement is included overleaf. The policy is endorsed by the Chief Executive Officer of Ithaca (Energy) UK Ltd on behalf of the Board of Directors. It acknowledges Ithaca Energy's HS&E responsibilities in relation to its business activities and includes commitments to continual improvement, assessment and management of the risks and impacts associated with operations, to meet legislative requirements and accepted best practice and a willingness to openly communicate these principles to company personnel and the general public.

The HS&E Policy is implemented through the company's HSEQ Management System..



**ITHACA**  
ENERGY (UK) LTD.

**HEALTH, SAFETY AND ENVIRONMENTAL POLICY**

ITHACA ENERGY (UK) LTD. is committed to proactively achieving excellence in Health, Safety and Environmental (HS&E) performance across all of our operations. We consider our HS&E performance and the health, safety and security of those who work for, with and alongside us as central to our business success.

ITHACA will comply with applicable legislation and guidance.

In order to meet our commitment ITHACA will:

- Provide competent resource to implement this policy and to develop and maintain our HS&E systems.
- Provide effective leadership, training and mentoring to sustain and develop workforce HS&E competency and skills and maintain a positive HS&E culture.
- Define clear responsibilities and accountabilities for HS&E issues within the company.
- Set realistic HS&E objectives and targets and develop action plans to measure these as a contribution towards continual improvement of our HS&E performance.
- Ensure HS&E performance is prominent in the selection of our contractors
- Assess and manage operations through all stages to minimise risk of harm to people, the environment and facilities
- Communicate and consult with stakeholders and the public and have regard for their interests when planning activities.
- Ensure that appropriate plans and resources are in place to respond to incidents and emergencies.
- Investigate incidents, implement recommendations to prevent re-occurrence and share lessons learned.

To support our commitment to HS&E performance ITHACA will develop and maintain effective HS&E systems which will be independently verified against relevant ISO and other recognised standards. HS&E systems will be subject to periodic and management review to ensure ongoing compliance and improvement.

This policy applies to all company activities and ITHACA employees, and contractors and other associates engaged in work on our behalf, have a responsibility to comply with it and prevent harm to themselves and others and damage to the environment.



**Les Thomas, CEO ITHACA ENERGY (UK) LTD**  
On behalf of the Board of Directors

12<sup>th</sup> March 2016

### 3.2 Environmental Management System

Ithaca Energy recognises its obligations to identify, assess and mitigate environmental risks and actively manage environmental performance of its field operations.

The Ithaca Energy HSEQ Management System was verified in May 2018 as meeting BEIS's Guidance for Environmental Management System Requirements in relation to OSPAR Recommendation 2003/5.

The scope of the HSEQMS covers upstream, offshore and operated assets for which Ithaca Energy is the Licensed Operator. It encompasses oil and gas exploration and appraisal (E&P), development and production operation activities carried out by Ithaca Energy in UKCS blocks for which it is the Licensed Operator, including those third party activities conducted on their behalf or over which they have influence, and for which they are ultimately responsible for the environmental performance.

The EMS comprises the following major elements:

- **HSEQ Policy and Planning** – policy and principles are set, with links to relevant legislation and management of activities through efficient and systematic planning, with objectives and processes established to deliver the company policy.
- **HSEQ Implementation and Operations** – management of activities through implementation of the processes
- **Checking & Corrective Actions** - monitoring and measurement of activities against environmental policy, objectives, targets, legal and other requirements, and reporting of the results
- **Management Review** – review of performance and taking actions to continually improve performance of the environmental management system

In order to ensure that the commitments made in the HSEQ Management System are fulfilled, responsibilities are assigned for initiating, executing and checking. Environmental responsibilities are assigned through line management and specific personnel are assigned objectives, targets and actions relevant to their particular function. Ithaca Energy has access to specialist advice and support on environmental issues.

Ithaca Energy undertakes its operations by selecting specialist contractors for key activities such as production operations management and drilling management. The EMS formally describes the environmental responsibilities of Ithaca Energy staff and contractors in complying with Ithaca Energy's HS&E policy.

## Section 4 Environmental Performance

Ithaca Energy’s 2017 environmental performance from drilling, installation and other subsea activities is presented in Section 4.1 and that from operational activities are in Section 4.2.

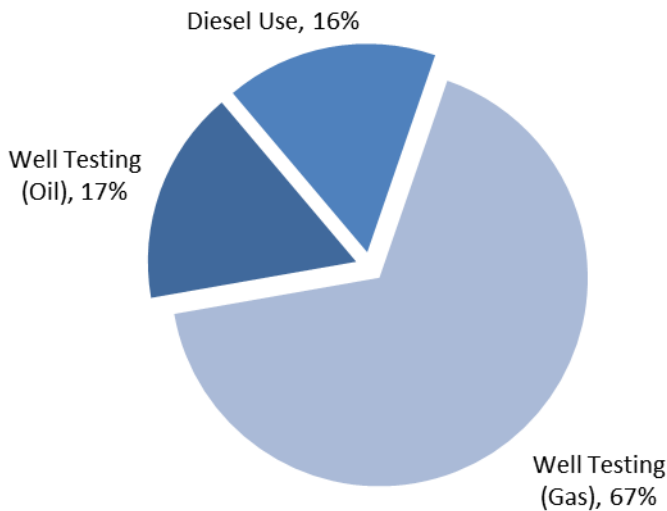
### 4.1 Drilling, Installation and Decommissioning Activity

Atmospheric emissions, drilling chemical discharges and waste from the drilling and well testing of the Harrier production well and subsea installation activities are presented in this section. Data was derived from the returns to the UK offshore Environmental Emissions Monitoring System (EEMS), with EEMS standard emissions factors used to calculate atmospheric emissions from drill rig fuel use and well test (Atmospheric Emissions Calculations (Issue 1.810a)).

KEY DATA	
Number of new wells drilled	1
Number of flowing well tests	1

#### 4.1.1 Atmospheric Emissions

Atmospheric emissions generated from activity at the Stella/Harrier fields consisted of emissions from drilling and well testing (both oil and gas) of the development wells. Overall, CO<sub>2</sub> emissions were 37,764.8 tonnes, with all other gas emissions considered minor. A breakdown of CO<sub>2</sub> emissions showed contributions from flaring of oil and gas during well test operations was greater than from diesel consumption engines on the *Ensco 122* drilling rig.



#### KEY DATA

Stella wells	Tonnes
CO <sub>2</sub>	37764.8
NOx	134.4
N <sub>2</sub> O	1.3
SO <sub>2</sub>	7.4
CO	68.4
CH <sub>4</sub>	80.7
VOC	55.3

Note: figures rounded to 1 decimal place



### 4.1.2 Chemical Discharges

In 2017, drilling a sixth well at the Stella/Harrier field and the subsea installation of associated pipelines (as well as a minor amount of pipeline work at the Cook Field) resulted in 466.4 tonnes of chemicals discharged to sea. Almost all (>99%) chemical discharges were listed by OSPAR as posing little or no hazard to the marine environment (PLONOR) and/or belonged to the offshore chemical notification scheme (OCNS) Band Gold or Band E (the least harmful categories). Very small quantities of two OCNS Band Silver biocides used to minimise bio-fouling during subsea pipeline installation were discharged. These biocides were neither on the list of chemicals for priority action nor on the list of substances for potential concern and were not allocated a substitution warning under the UK national plan.

None of the discharged chemicals had a substitution warning (SUB).

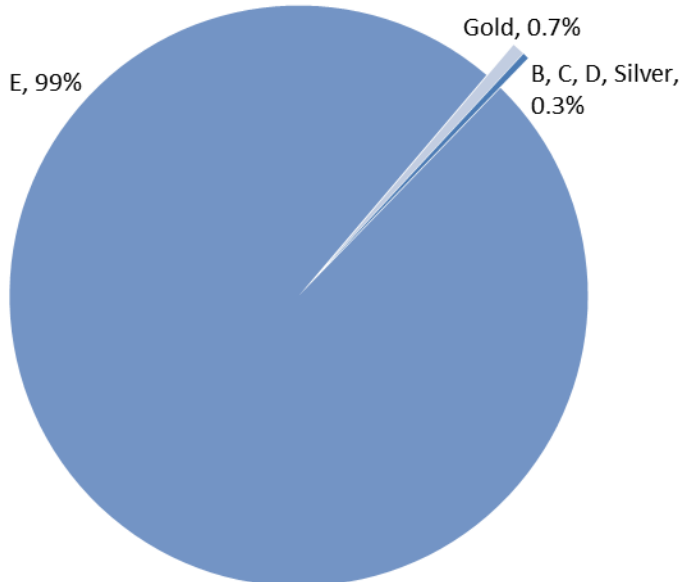
Ithaca Energy continues to seek to minimise the use of chemicals with SUB labels, and together with its contractors are exploring alternatives to these chemicals for future operations.

Discharges of fluids from well test operations during drilling of the Harrier well was regulated by the Oil Pollution Prevention and Control (OPPC) term permits for the *Enesco 122* drilling rig operations.

KEY DATA	
Well clean up fluids discharged (m <sup>3</sup> )	197
Mean dispersed oil concentration (mg/l)	30.46
Permitted dispersed oil discharged (tonnes)	<0.1

Note: figures rounded to 1 decimal place

### 2017 Chemical Discharges from Drilling and Subsea Installation



### KEY DATA

Harrier well	Tonnes
Band D	1.6
Band E	452.4
OCNS Gold	3.0
SUB chemicals	0.0
Subsea	Tonnes
Band C	<0.1
Band E	9.1
OCNS Silver	<0.1
OCNS Gold	0.3
SUB chemicals	0.0

Note: figures rounded to 1 decimal place

#### 4.1.3 Waste Disposal

In 2017, 832.1 tonnes of oil based mud contaminated drill cuttings were generated by the drilling programme and returned to shore for drilling fluid recovery and treated, and were disposed of at a licensed facility. The vast majority (90%) of these cuttings were either rock chippings or were used to re-wet processed solids and were sent to landfill. The remainder constituted of recovered oil which was recycled and then blended with other waste oils to be used as burning fuel.

#### 4.1.4 Oil and Chemical Spills

There was a minor spill of condensate from the Ensco 122 Drill Rig, a PON1 was submitted and closed.

## 4.2 Offshore Production Operations

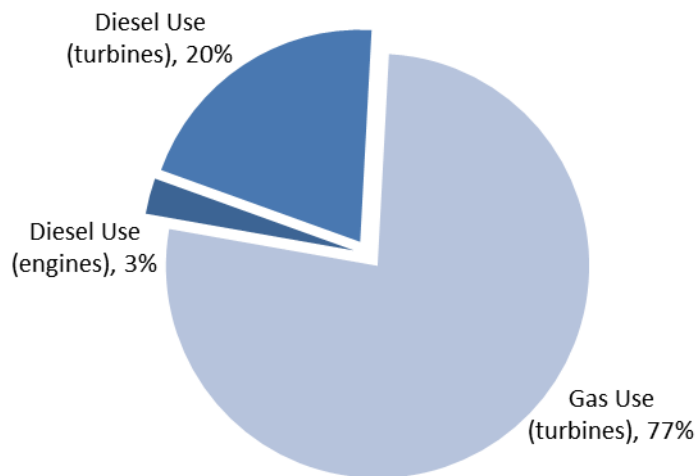
This section reports on emissions, discharges and waste arising from production of the Stella/Harrier Fields for which Ithaca Energy is licensed operator. Ithaca Energy is the licensed operator of the tie-back Anglia Field and the Causeway Area Fields and for which the operators of the host facilities (Conoco-Phillips and TAQA respectively) hold the responsibility for reporting against environmental permits.

Data was derived from the returns to the UK offshore Environmental Emissions Monitoring System (EEMS), with EEMS standard emissions factors used to calculate atmospheric emissions from fuel use (Atmospheric Emissions Calculations (Issue 1.810a)).

### 4.2.1 Atmospheric Emissions

Ithaca Energy generated 73,452 tonnes of CO<sub>2</sub> emissions in 2017 from operations at Stella. The emitted CO<sub>2</sub> was generated mainly by diesel and gas turbines (97%), with a small contribution (3%) from diesel engines. All other atmospheric emissions were comparatively minor.

#### 2017 CO<sub>2</sub> Emissions from Production



#### KEY DATA

Stella wells	Tonnes
CO <sub>2</sub>	73,451.9
NO <sub>x</sub>	220.7
N <sub>2</sub> O	5.5
SO <sub>2</sub>	21.4
CO	73.4
CH <sub>4</sub>	18.4
VOC	3.3

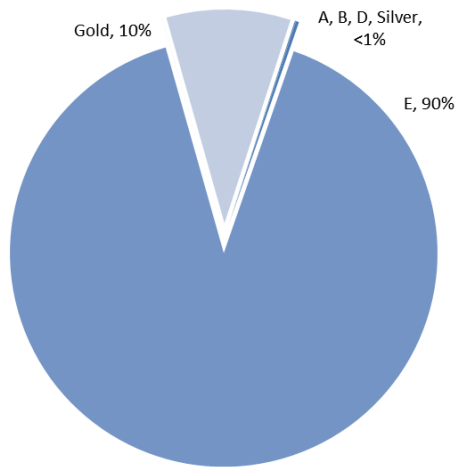
Note: figures rounded to 1 decimal place

### 4.2.2 Chemical Discharges

In 2017, Ithaca Energy discharged 265.6 tonnes of chemicals from production operations at the Stella field. 99.7% of the discharged chemicals were either OCNS Band E or Gold. Approximately 2% of the discharged chemicals from production operations had SUB warning labels.

Ithaca Energy regularly reviews its chemical usage, and the chemicals noted above and with SUB warning labels are prioritised for replacement where technical alternatives exist.

### 2017 Chemical Discharges from Production



#### KEY DATA

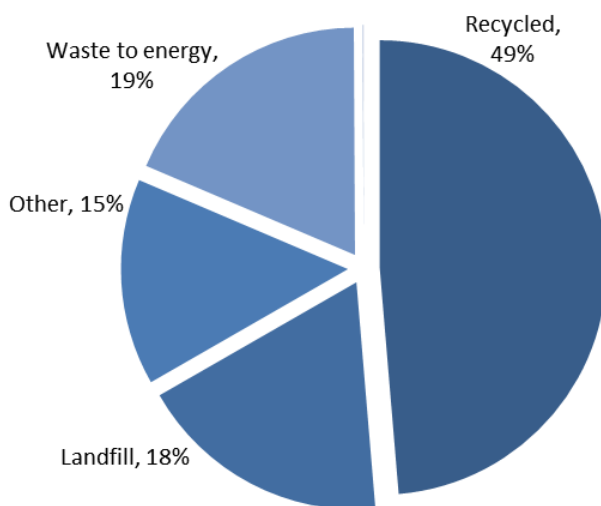
Stella	Tonnes
Band A	<0.1
Band B	0.2
Band D	0.6
Band E	239.8
OCNS Silver	<0.1
OCNS Gold	24.9
Chemicals with SUBs	5.3

Note: figures rounded to 1 decimal place

### 4.2.3 Waste Disposal

In 2017, Ithaca Energy generated 239.5 tonnes of operational waste material (Groups I, II and III) from the Stella field. Of the total operational waste produced by Ithaca Energy, 49% was reused or recycled, 19% was “waste to energy”, 18% was sent to landfill and 15% (other) were liquids and water removed from sludges/liquids/tank washings and subsequently treated onshore and discharged under consent. An additional 1.5 tonnes was generated at the non-productive Jacky and Anglia fields, of which 79% was reused or recycled and the remainder sent to landfill.

### 2017 Operational Waste from Production



#### KEY DATA

Jacky & Anglia	Tonnes
Waste Reused	0.1
Waste Recycled	1.0
Waste to Energy	0.0
Waste Incinerated	0.0
Waste to Landfill	0.3
Other	0.0

Stella	Tonnes
Waste Reused	0.0
Waste Recycled	116.2
Waste to Energy	44.6
Waste Incinerated	0.1
Waste to Landfill	43.2
Other	35.4

Note: figures rounded to 1 decimal place

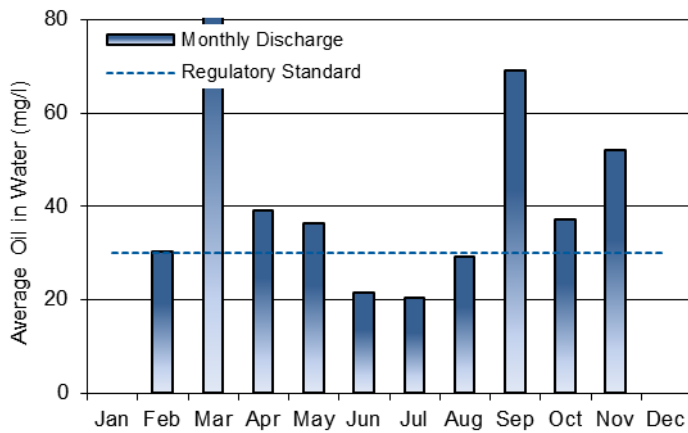
#### 4.2.4 Oil and Chemical Spills

There were no accidental oil or chemical spills during production activities in 2017.

#### 4.2.5 Produced Water Discharges

Produced water discharges in 2017 from *FPF-1* were reported from start of production in February, to the end of the year. The Stella field generated a total of 51,759m<sup>3</sup> of produced water, which was discharged to sea, with average oil in water (OIW) content of 41.3mg/l over the month.

#### 2017 Stella Produced Water Discharges



#### KEY DATA

Volume discharged	51,759.0
Average OIW concentration (mg/l)	41.3
Number of discharges	2.1

*: figures rounded to 1 decimal place*

### 4.3 Performance against Environmental Targets

Ithaca Energy senior management along with the Health, Safety and Environment Manager set and review corporate targets annually, taking account of all planned exploration, development and production activities for the coming year. The 2017 corporate targets relate to all of Ithaca Energy's offshore operations. Specific environmental performance targets are set for the Stella offshore operations. The targets and associated performance are detailed in the tables that follow.

#### 2017 CORPORATE PERFORMANCE TARGETS

The table below summarises Ithaca Energy's performance against corporate environmental targets.

Target	Performance
Agree FPF1 HSE plan for 2017 with Petrofac and monitor it during the year to 100% completion	A 85% completed HSE plan with FPF-1 was achieved by end 2017.
Hold bi-weekly HSE meetings with Petrofac with minuted output according to governance document. Achieve %90 completion of meetings and minutes	Achieved 90% completion of meetings.
Successfully complete Secretary of State Representative (SoSReP) oil spill exercise	Achieved in May 2017
Bi-annual formal Stella incident review, to identify trends and improvement opportunities	Completed as planned
Provide HSE input (Pipeline Comparative assessment, management system descriptions, assurance planning etc.) to Anglia decommissioning programmes	Completed as planned.
Complete PLANC Register prior to commencement of drilling	Completed as planned.

## Abbreviations

BEIS	Department for Business, Energy & Industrial Strategy
BWO	BW Offshore
CO <sub>2</sub>	Carbon dioxide
EEMS	Environmental emissions monitoring system
EIP	Environmental Improvement Plans
EMS	Environmental management system
E-Rep	Environmental-Representatives
FPSO	Floating Production, Storage and Offloading
HS&E	Health, safety and environmental
ISO 14001:2004	International standard for environmental management systems
KPI	Key performance indicator
LOGGS	Lincolnshire Offshore Gas Gathering System
LTOBM	Low toxicity oil based mud
mg/l	Milligrammes per litre
OCNS	Offshore Chemical Notification Scheme
OCR	Offshore Chemical Regulations
OIW	Oil in water
OPPC	Oil pollution prevention and control
OSPAR	Oslo and Paris conventions
PLC	Programmable logic controller
PON 1	Petroleum operations notice number 1 – format for reporting oil and chemical spills
Q1 Q2 Q3 Q4	Quarter of the year
SUB	Candidate for substitution
UKCS	United Kingdom Continental Shelf
WGPSN	Wood Group PSN