



INEOS Breagh
Environmental Report 2015

CONTROLLED DOCUMENT

Title:

INEOS Breagh
2015 Environmental Report

Notes:


| Revision Record: | | | | | | |
|---|---------------|--------------|---|---------------------|---|------------|
| Rev. | Date Prepared | Author | Name | Title | Signed | Date App'd |
| 1 | 09-06-16 | P Jones | HJ Bister | Operations Director |  | 09-06-16 |
| 0 | 01-06-16 | R O'Sullivan | - | - | | - |
| Document Origination | | | Document Approval for INEOS Breagh Use | | | |
| The master signed original of this document is held by the INEOS Breagh QHSE Team | | | | | | |

Table of Contents

| | | |
|-------|---|----|
| 1 | Introduction | 5 |
| 2 | Scope of Activities..... | 6 |
| 2.1 | Overview of INEOS | 6 |
| 2.2 | Offshore activities during 2015..... | 6 |
| 2.2.1 | Production Operations | 6 |
| 2.2.2 | Drilling Operations | 9 |
| 3 | EMS Summary..... | 10 |
| 3.1 | Introduction | 10 |
| 3.2 | Verification | 10 |
| 3.3 | Review | 10 |
| 4 | Environmental Policy..... | 12 |
| 4.1 | Introduction | 12 |
| 4.2 | HS&E Policy Statement | 12 |
| 4.3 | Objectives and targets for 2015..... | 13 |
| 5 | Performance Summary | 14 |
| 5.1 | Introduction | 14 |
| 5.2 | 2015 Environmental Performance Summary..... | 14 |
| 5.2.1 | Production Activities..... | 16 |
| 5.2.2 | Drilling..... | 19 |

Table of Tables

| | | |
|-----------|--|----|
| Table 5-1 | HSE Objectives and Targets Relating to Environmental Performance During 2015.. | 15 |
| Table 5-2 | Summary of Waste from Production Operations (tonnes), 2015 | 17 |
| Table 5-3 | Emissions to Air from Producing Assets (tonnes), 2015 | 18 |
| Table 5-4 | Chemical Use and Discharge During Drilling Operations (tonnes) in 2015 | 19 |
| Table 5-5 | Summary of Emissions to Air from Drilling at Crosgan (tonnes)..... | 19 |

Glossary

| | |
|-------------------|---|
| BMS | Business Management System |
| Centrica | Centrica Energy Upstream |
| CMS | Caister Murdoch System |
| DEA UK | DEA UK SNS Ltd |
| DECC | Department of Energy and Climate Change |
| Ensco | Ensco plc |
| EMS | Environmental Management System |
| HS&EMS | Health Safety & Environment Management System |
| HSE | Health and Safety Executive |
| INEOS | INEOS UK SNS Ltd |
| ISO | International Standards Organisation |
| NMVOG | Non-methane volatile organic compounds |
| NUI | Normally unattended installation |
| OCNS | Offshore Chemical Notification Scheme |
| OCR | Offshore Chemicals Regulations 2002 (as amended 2011) |
| OIR12 | Hydrocarbon Report Release Form |
| OPEP | Oil Pollution Emergency Plan |
| OSPAR | Oslo Paris convention for the protection of the marine environment of the NE Atlantic |
| PLONOR | Pose Little Or No Risk |
| PON1 | Petroleum Operations Notice 1 |
| POSA | Processing and operating services agreement |
| ppm | Parts per million |
| RDUK | RWE Dea UK |
| SNS | Southern North Sea |
| TGT | Theddlethorpe Gas Terminal |
| UKCS | UK continental shelf |
| VOC | Volatile Organic Compounds |

1 Introduction

This document is the 2015 Environmental Report for INEOS UK SNS Ltd and describes all production and drilling operations undertaken throughout the year.

At the start of 2015, the company was owned by RWE Dea Group and operated under the name of RWE Dea UK SNS Limited. The RWE Dea Group underwent a change of control in March 2015 and RWE Dea UK SNS Limited was re-named “Dea UK SNS Limited” under a new owner, Letterone, that acquired all of the RWE Dea Group. The parent company continued to be based in Hamburg, Germany, but operated under the name ‘DEA’ (Deutsche Erdel AG) from March 2015.

On 30th November 2015, Dea UK SNS Limited underwent a further change of control and became part of the INEOS group of companies. Dea UK SNS Limited changed its name again to “INEOS UK SNS Limited” but trades under the name “INEOS Breagh”.

It should be noted that, other than the name change, the operational business management system, including the HSE management system, remained unchanged during 2015.

This report is a public statement designed to:

- Identify and define the scope of the company’s offshore activities;
- Summarise the Environmental Management System (EMS);
- State the company’s environmental policy, goals, objectives and targets; and
- Provide a performance summary for 2015.

This document is the first INEOS annual Environmental Report to be issued as a public statement.

2 Scope of Activities

This Section summarises activities undertaken in 2015.

2.1 Overview of INEOS

INEOS is a global manufacturer of petrochemicals, speciality chemicals and oil products. In the UK, INEOS is one of the largest manufacturing businesses. It employs some 4,000 people in the UK across 7 sites. INEOS UK SNS Limited is part of the INEOS Upstream group which is a new INEOS exploration and production business.

INEOS UK SNS Ltd ('INEOS Breagh') took over all DEA UK licences and operations in November 2015. INEOS is operator of the following producing fields Breagh, Clipper South, Cavendish, Topaz and Windermere fields and is also operator of the following non-producing assets: Opal, Kenny, Crosgan and Blocks 42/6, 42/11 and 42/12b.

The INEOS UK SNS Ltd head office is located at the below address:

4th floor
90 High Holborn
London WC1V 6LJ
Tel: 020 3116 0200
Fax: 020 3116 0205

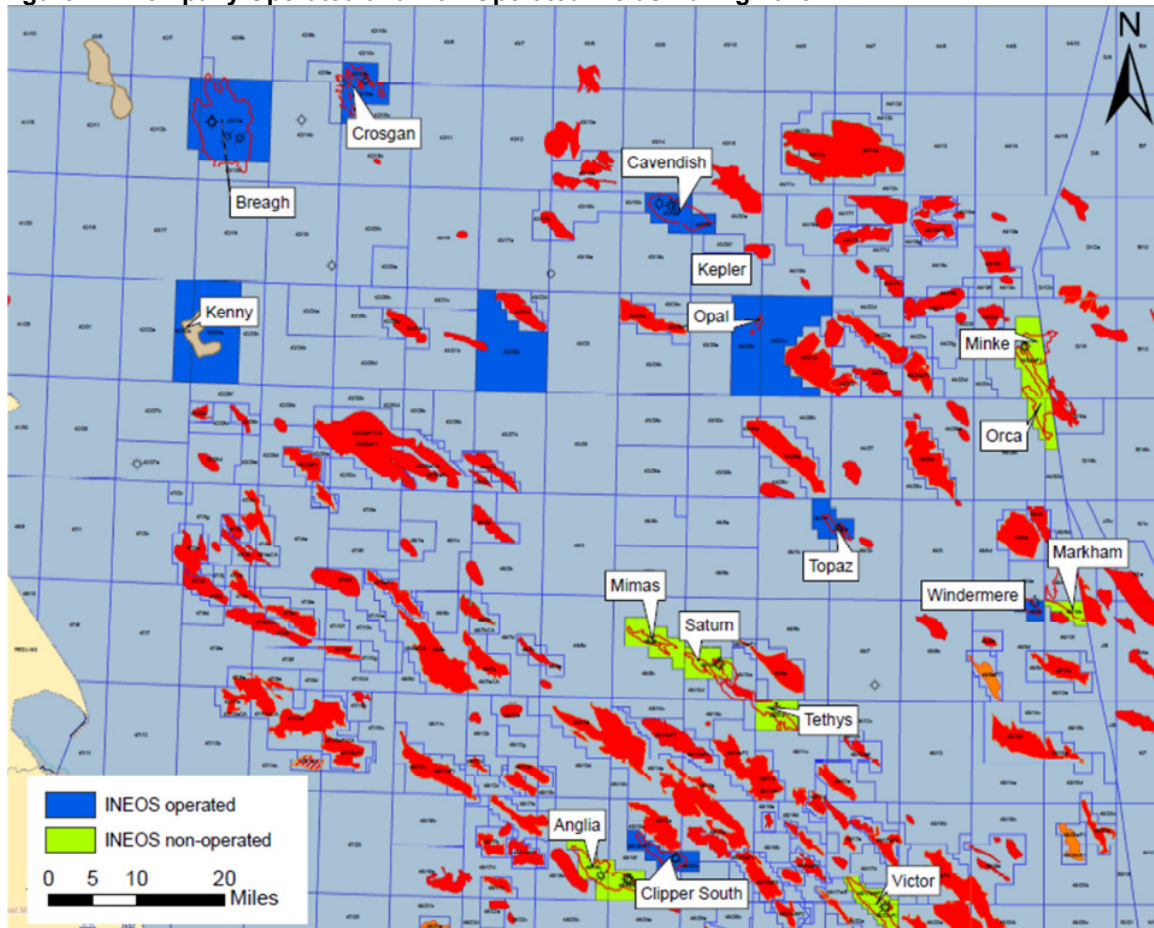
2.2 Offshore activities during 2015

Offshore activities during 2015 have been grouped into Production and Drilling for discussion in both the remainder of this Section and in the Performance Summary provided in Section 5.

2.2.1 Production Operations

Production operations during 2015 included assets at Breagh, Clipper South, Cavendish, Topaz and Windermere fields. The locations of company operated and non-operated fields is shown in Figure 2.1 below. All fields produce gas and condensate.

Figure 2-1 Company Operated and Non-Operated Fields During 2015



2.2.1.1 Breagh

The Breagh A platform is located in SNS Block 42/13a in a water depth of 62m. The platform was installed in late 2011 and production commenced in October 2013. Drilling was completed in 2014. The platform is operated as a NUI, typically for periods of between 35-40 days in between maintenance visits.

The Breagh platform is controlled, operated and maintained for production purposes by INEOS, with the assistance of ODE Ltd.



2.2.1.2 Clipper South



Production operations commenced at the Clipper South platform in August 2012. It is located in SNS Block 48/19, approximately 100km east of the Theddlethorpe gas terminal, in a water depth of 23.5m.

During the initial stages of Clipper South production, an operations team has been continuously on board to operate and maintain the facility, commission subsequent wells and perform routine removal of accumulated proppant from the

wellhead cyclones. They were present throughout 2015. INEOS operate the Clipper South platform with the assistance of an offshore support contractor (ODE Ltd).

2.2.1.3 Cavendish

The Cavendish platform is a gas and condensate producing NUI located in SNS Block 43/19a. The platform is tied back via a 47 kilometre long 10-inch pipeline to the ConocoPhillips operated Murdoch host platform. The Cavendish platform is a fixed four-legged jacket that is visited on a routine basis to undertake maintenance operations. The Cavendish topsides facilities enable primary operational control from the Murdoch platform. The Murdoch platform is the main hub of the Caister Murdoch System (CMS). Incoming gas supplies are commingled at Murdoch before being landed onshore in the UK, via the CMS trunk line, at the Theddlethorpe Gas Terminal (TGT).



The Cavendish platform was controlled, operated and maintained for production purposes by INEOS, with the assistance of an offshore support contractor (ODE Ltd). In a services support role, ODE Limited provides resources to maintain the facilities.

2.2.1.4 Topaz

The Topaz subsea well head and protective structure, pictured below during installation, is a gas producing seabed installation located in SNS Block 49/02a. The facility is tied back to the Schooner host platform via a 15.2 kilometre long 6-inch gas export line, with associated methanol feed line and control and communications cable. The Schooner platform is itself tied back to the Murdoch platform described above. Schooner was owned by Faroe Petroleum (UK) Limited during 2015.



The Topaz subsea production facility is controlled, operated and maintained for production purposes remotely from Schooner. Faroe has a contract in place with Petrofac Ltd., the Duty Holder and day-to-day operator of the Schooner platform.

2.2.1.5 Windermere

The Windermere platform, pictured below, is a gas producing normally unattended installation (NUI) located in SNS Block 49/09b. The platform is tied back via a 7 kilometre long 8-inch pipeline to the Centrica Energy Upstream (Centrica) operated ST-1 platform that is part of the Markham field complex. The Windermere platform is a fixed three-legged jacket that is visited on a routine basis to undertake maintenance operations. The Windermere topside facilities enable primary operational control from Centrica's J6-A platform. The ST-1 platform is tied back to the J6-A platform which is located in the Dutch sector and is the main hub of the Markham field



complex. Incoming gas supplies are commingled at J6-A before being landed onshore in the Netherlands.

The Windermere platform is controlled, operated and maintained for production purposes by Centrica. Although an operator in their own right, in this instance, Centrica acts as a contractor and are responsible for day-to-day production operations at Windermere. In a Processing and Operating Services Agreement (POSA), Centrica were contracted to provide processing and operating services.

2.2.2 Drilling Operations

2.2.2.1 Crosgan Well

After departing the Breagh platform in 2014, an exploration well was drilled at the Crosgan location in Block 42/15a by the Ensco 70 MODU. Drilling commenced in December 2014 and was completed in February 2015. No further drilling was undertaken during 2015.

3 EMS Summary

This Section provides a brief description of the company's EMS as it operated in 2015.

3.1 Introduction

The EMS is a component of the overall Business Management System (BMS) that defines the organisational structure, planning activities, responsibilities, procedures, business processes and resources required for developing, implementing, achieving, reviewing and maintaining the environmental policy.

The EMS is a tool for identifying and managing the impact the business has on the environment. It works to reduce this impact by controlling the quantity of materials and energy used and the amount of waste produced. As well as facilitating the management of environmental impacts in a credible way, the EMS provides a practical tool to help evaluate and improve performance.

The following guiding principles and methodologies are incorporated into the OSPAR Strategy and integrated, as appropriate, into the EMS:

- the precautionary principle;
- the polluter pays principle;
- best available techniques and best environmental practice, including, where appropriate, clean technology;
- sustainable development;
- the application of an integrated ecosystem approach; and
- the waste management hierarchy of avoidance, reduction, re-use, recycling, recovery, and residue disposal.

3.2 Verification

RDUK had an HS&EMS in place from 2002 and in November 2010 was awarded ISO 14001 certification by DNV, an independent and accredited third party certification body possessing recognised competence in this field.

Since the initial certification, the HS&EMS has been subject to biannual reviews, each of which has resulted in the successful re-approval of the certification. The ISO 14001 certification covers the management of all the company's exploration, drilling, development and production operations and was successfully re-certified in October 2014. Regular reviews and recertification will continue with INEOS Breagh.

3.3 Review

A formal review of QHSE performance is conducted annually. This is an essential step required to assess the effectiveness of the HS&EMS in achieving the aims of the company's policy and objectives and to achieve continuous improvement in the control system.

The review process enables the company to:

- review progress against existing objectives and targets;
- consider evidence of performance, such as audits and other reports;

- consider the sufficiency of the organisational structure, the available resources, the policy and the management system in general; and
- agree new objectives and targets.

Internal auditing is used to objectively investigate how each element of the management system is being applied. Internal audit reports provide input to management review, along with other performance indicators.

4 Environmental Policy

This Section provides a brief description of the company's environmental policy, including relevant environmental goals, objectives and targets set for significant environmental aspects and impacts.

4.1 Introduction

In line with the OSPAR Strategy, the company has established an environmental goal of protecting and conserving the maritime area against any potentially adverse effects resulting from its activities. To achieve this goal, programmes and measures to identify, prioritise, monitor and prevent/reduce/eliminate any emissions, discharges or losses of substances which could cause pollution have been developed.

Non-polluting activities, that may have potentially adverse effects on the ecosystems and biological diversity of the maritime area, include exploration activities and the installation of structures, cables and pipelines.

4.2 HS&E Policy Statement

The components of the HS&E Policy Statement that relate to environmental management are stated in the remainder of this Section.

The Company operates in a sensitive environment and takes a proactive stance in the protection of the environment, recognising its moral and legal obligations to conduct all activities in a manner which protects the natural environment. All employees are required to act responsibly so as to protect the environment.

In relation to environmental management, the company will:

- annually set and internally publish objectives, seeking to achieve improvement wherever practicable;
- document procedures for management, based on recognised standards which clearly allocate responsibilities within the HS&EMS;
- provide and maintain clear lines of communication and consult with employees to ensure awareness and gain commitment to the policy and the company's procedures for its implementation;
- ensure that all employees are competent to discharge their relevant responsibilities and receive all necessary information, instruction and training;
- monitor and record performance, and conduct internal audits;
- annually conduct a management review of performance against objectives, including review and development of policy and the HS&EMS; and
- ensure that sufficient resources are provided and allocated to implement the policy.

For all its activities and projects undertaken, the company will:

- comply, as a minimum, with all environmental legislation applicable in the UK, applying best industry practice and undertaking steps to improve environmental protection levels where appropriate;

- plan for the management of environmental issues, identifying performance standards, procedures for control and monitoring, and resources to be applied;
- ensure that systematic hazard identification, assessment of the risk of harm and incorporation of measures to control risks are central to the design, construction and operation of facilities;
- select competent contractors and provide them with all necessary information, including definition of HS&E requirements;
- monitor and audit contractors to ensure that they operate in compliance with the principles of the Policy and meet the standards required; and
- maintain emergency and contingency plans.

The company requires each of its contractors and suppliers to:

- operate an effective EMS relevant to their scope of work/supply; and
- comply with these environmental requirements including appropriate planning, hazard identification, risk control, performance monitoring and reporting.

4.3 Objectives and targets for 2015

The environmental management objectives and targets for the period between January and December 2015 were set out in a document entitled *Objectives and Targets for QHSE Management (2015)* (Reference: RD-COR-BOT015-1). The objectives were determined in order to progressively achieve the commitments set out in the HSE Policy Statement. The relevant environmental objectives and targets for 2015 are set-out in the next section in Table 5.1 along with the associated progress status.

5 Performance Summary

This Section provides a summary of performance in relation to compliance with relevant legislative requirements and compliance with the environmental policy, goals, objectives and targets. A summary of offshore environmental aspects, and their associated emissions and impacts, is also provided.

5.1 Introduction

The company's internal and external auditing processes enabled reporting on the areas of environmental performance defined in Section 4, i.e. the extent to which the environmental goals listed below have been achieved:

- compliance with legislation;
- progress made in achieving environmental goals; and
- continual improvement in environmental performance.

5.2 2015 Environmental Performance Summary

Progress against the items identified in *Objectives and Targets for HS&E Management 2015* is shown in Table 5.1 below.

Table 5-1 HSE Objectives and Targets Relating to Environmental Performance During 2015

| EMS development | |
|--|--|
| Modify and amend the documented EMS to accommodate change in organisation and responsibilities that arise from the change of ownership | Ongoing |
| Risk management | |
| Ensure timely close-out of HS&E actions in QHSE Actions Register | Achieved |
| Introduce new system of web-based Workstation instruction and assessment, extending this to personnel based in remote offices and/or home-based | Achieved |
| Conduct an initial energy audit in accordance with Energy Savings Opportunity Scheme | Achieved |
| Training | |
| Ensure all London office personnel are given office H&S induction training within 1 month of starting. | Achieved |
| Maintain training for oil spill response to DECC standards and conduct oil spill response exercises | Achieved |
| Operated Installations | |
| Ensure approved Oil Pollution Emergency Plans are in place for each operated installation – for standalone production operations and for COMOPS with drill rig, where applicable. | Achieved |
| Emergency Preparedness and Response | |
| Maintain Emergency Response arrangements suitable for all current operations, revising the Emergency Response Manual and other documentation as necessary. | Achieved |
| Establish a fully equipped ERC room to upgrade ERC facilities in Holborn office. | Deferred due to relocation |
| Conduct an emergency response exercise with ERT and others – for a major safety incident scenario. | Deferred due to sale |
| Conduct oil spill response exercises with all offshore installations | Achieved |
| Participate with other operators in DECC SOSREP Workshop for major oil spill response | Achieved |
| Provide training for ERT members, as necessary, prior to 2015 ER exercise. | Deferred due to sale |
| Review status of training for oil spill response to DECC standards and ensure sufficient personnel trained to support ongoing operations and before start of next drilling campaign. | Achieved |
| Legislation Changes | |
| Monitor new legislation and official guidance arising from HSE, DECC and OSCA. Review and ensure that all necessary amendments are made to relevant procedures. | Achieved |
| Environmental incidents | |
| Total Reportable Incident Frequency ¹ < 1.0 per 100,000 exposure hours worked | Achieved |
| Target zero reportable oil/chemical spillage incidents to sea or land. | Achieved |
| Target zero unplanned hydrocarbon releases offshore from operating installations | Unplanned hydrocarbon release ² |
| Target zero reportable non-compliances with environmental permit conditions | One non-compliance ³ |
| Zero reportable incidents for office-based activities | Achieved |
| Audit and Review | |
| Ensure that a programme of sufficient audits and reviews across HS&E activities is completed during 2015. | 23 planned, 17 completed |
| Prepare and publish Annual Environmental Report for 2014 | Achieved |

¹ For all reportable safety and environmental incidents.

² Reported to HSE (OIR12) – small gas leak from pig launcher door seal.

³ PON10 – non-compliance with Consent to Locate permit on Breagh A due to failure of a Navaid lantern on 21st May.

5.2.1 Production Activities

Production operations during 2015 were undertaken at the Breagh, Clipper South, Cavendish, Topaz and Windermere fields.

5.2.1.1 PON1 Incidents

There were no incidents that required submission of a Petroleum Operations Notice 1 notification during 2015.

5.2.1.2 Chemical use and discharge

Breagh

During 2015, Breagh operations used 22,653kg Methanol (and all dilutions) (REDA) gas hydrate inhibitor in order to undertake well start-up operations. The methanol remained within the production system and therefore was not discharged to sea at the platform. No other chemicals were used.

Clipper South

During 2015, Clipper South operations used and discharged 450kg of SOBO S Gold 08 rigwash detergent for platform cleaning. No other chemicals were used or discharged.

Cavendish

For the Cavendish facilities, production chemicals are supplied via Murdoch and remain in a closed system that originates and terminates onshore at TGT. As such, the use of these chemicals does not require permitting under the OCR. However, chemicals are required for helideck cleaning on Cavendish and a Chemical Permit is in place for this. During 2015, 175kg of SOBO S GOLD 08 was used for this purpose.

Topaz

During 2015 up to a maximum of 413 litres of Castrol Transaqua HT2 was discharged via the Topaz subsea well. Transaqua HT2 is a water-based hydraulic fluid with an Offshore Chemical Notification Scheme (OCNS) category D ranking. The use and discharge of this product is permitted under the OCR on the Chemical Permit for the Schooner platform.

Windermere

For the Windermere facilities, production chemicals are supplied in an umbilical that is routed from the nearby ST-1 platform and remain in a closed production system that is processed at J6-A located in the Dutch sector. As such, no overboard discharges of production chemicals occurred at the Windermere platform. The use of the chemicals within the production system on Windermere does not require permitting under the Offshore Chemical Regulations 2002 (as amended 2011) (OCR).

5.2.1.3 Produced water discharges

There are no produced water, or other, discharges to sea at the Windermere platform; since May 2013 all produced water from J6-A has been re-injected. Due to several produced fluid streams arriving at J6-A, separate measurement of hydrocarbons originating from Windermere is not made.

The Breagh, Clipper South, Cavendish and Topaz developments utilise closed production systems and there are no separation facilities or disposal caissons at these installations. As such, there are no offshore discharges of produced water associated with these production operations.

5.2.1.4 Waste

A total of 113.93 tonnes of waste was generated by the four NUIs during 2015. A summary is provided as Table 5-2 below.

Table 5-2 Summary of Waste from Production Operations (tonnes), 2015

| Asset | Group | Type | Reuse | Re-cycling | Waste to Energy | Incinerate | Landfill | Total |
|---------------------------------|---------------|---------------------------------|---------------|------------|-----------------|------------|----------|---------------|
| Breagh | Group I | Chems/ Paints | 0 | 0 | 4.259 | 0 | 0 | 4.259 |
| | | Drums / Containers | 0 | 0.105 | 0 | 0 | 0 | 0.105 |
| | | Oils | 0 | 0 | 0.96 | 0 | 0 | 0.96 |
| | | Misc | 0 | 0 | 0.25 | 0 | 0 | 0.25 |
| | | Sludges/ Liquids/ Tank Washings | 0 | 0 | 0.8 | 0 | 0 | 0.8 |
| | Group II | Drums / Containers | 0 | 0.08 | 0 | 0 | 0 | 0.08 |
| | | Scrap Metal | 0 | 5.12 | 0 | 0 | 0 | 5.12 |
| | | Seg. Recyclables | 0 | 0.877 | 0 | 0 | 0 | 0.877 |
| | | General | 0 | 0 | 0 | 0 | 2.933 | 2.933 |
| | Clipper South | Group I | Chems/ Paints | 0 | 0.009 | 2.43 | 0 | 0.1 |
| Drums / Containers | | | 0 | 0.055 | 0 | 0 | 0 | 0.055 |
| Oils | | | 0 | 0 | 1.44 | 0 | 0 | 1.44 |
| Misc | | | 0 | 0.03 | 0.81 | 0 | 0.26 | 1.1 |
| Sludges/ Liquids/ Tank Washings | | | 0 | 0 | 42.13 | 0 | 0 | 42.13 |
| Group II | | Drums / Containers | 0 | 0.291 | 0 | 0 | 0 | 0.291 |
| | | Scrap Metal | 0 | 24.543 | 0 | 0 | 0 | 24.543 |
| | | Seg. Recyclables | 0 | 9.392 | 0 | 0 | 0 | 9.392 |
| | | General | 0 | 0.12 | 0 | 0 | 9.709 | 9.829 |
| Group III | | Clinical | 0 | 0 | 0 | 0.002 | 0 | 0.002 |
| Cavendish | Group I | Chems/ Paints | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Oils | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Misc | 0 | 0 | 0.188 | 0 | 0 | 0.188 |
| | Group II | Drums / Containers | 0 | 0.11 | 0 | 0 | 0 | 0.11 |
| | | Scrap Metal | 0 | 1.83 | 0 | 0 | 0 | 1.83 |
| | | Seg. Recyclables | 0 | 0.05 | 0.1 | 0 | 0 | 0.15 |
| | | General | 0 | 0 | 0 | 0 | 1.127 | 1.127 |
| Windermere | Group I | Chems/ Paints | 0 | 0 | 1 | 0 | 1 | |

| Asset | Group | Type | Reuse | Re-cycling | Waste to Energy | Incinerate | Landfill | Total |
|--------------|----------|------------------|----------|---------------|-----------------|--------------|---------------|---------------|
| | Group II | Scrap Metal | 0 | 2.42 | 0 | 0 | 0 | 2.42 |
| | | Seg. Recyclables | 0 | 0.4 | 0 | 0 | 0 | 0.4 |
| Total | | | 0 | 45.432 | 54.367 | 0.002 | 14.129 | 113.93 |

In addition to the above wastes, the liquid waste generated at the Breagh, Cavendish, Windermere and Schooner⁴ platforms during routine maintenance visits by the contracted flying squads was limited to small volumes of wastewater, from the sink and shower, as well as sewage from the single toilets, which was discharged to sea. The Clipper South platform has a macerator for all black waste. The small amounts of domestic waste generated during NUI visits is bagged and returned onshore. Company policy states that no garbage, including plastic, is to be disposed of overboard.

5.2.1.5 Atmospheric emissions

The Breagh, Clipper South and Cavendish platforms have self-sufficient power supplies in the form of standalone diesel generators. The Windermere facility is provided with power via a subsea electrical cable from the ST-1 facility. Operational emissions to air from combustion of diesel to power generators is summarised in Table 5-3 below.

Table 5-3 Emissions to Air from Producing Assets (tonnes), 2015

| Asset | Diesel Used | Emissions to Air | | | | | | |
|---------------|-------------|------------------|-----|-----------------|------------------|-----------------|-----------------|------|
| | | CO ₂ | CO | NO _x | N ₂ O | SO ₂ | CH ₄ | VOC |
| Breagh | 71 | 227 | 1.1 | 4 | 0.02 | 0.28 | 0.01 | 0.14 |
| Clipper South | 195 | 624 | 3.1 | 12 | 0.04 | 0.78 | 0.04 | 0.39 |
| Cavendish | 48 | 154 | 0.8 | 3 | 0.01 | 0.19 | 0.01 | 0.10 |

Atmospheric emissions relating to production operations at the Breagh, Clipper South, Cavendish and Windermere fields were also generated as a result of the combustion of fuel onboard the helicopters and supply/standby vessels utilised during planned maintenance visits.

In addition to the above, emissions to air from operational facilities emanated from the manual venting of produced gas for maintenance purposes. The calculated emissions of direct gas from operational facilities in 2015 comprised the following from maintenance venting:

- Breagh – 7.13 tonnes
- Cavendish – 0.69 tonnes
- Clipper South – 1.19 tonnes
- Windermere – 5.07 tonnes

5.2.1.6 Oil spills

Oil Pollution Emergency Plans (OPEP's) were in place to cover all production operations at Breagh, Clipper South, Cavendish, Topaz and Windermere during 2015. Each OPEP lists the required offshore and onshore actions and responses, defines roles and responsibilities in the event of an oil spill and provides a risk assessment. The OPEP for Windermere was updated in September 2015 in order to comply with the requirements resulting from the Offshore Safety Directive. The remaining OPEPs will be updated during 2016.

⁴ Waste that is applicable to the Topaz subsea tieback.

No oil spills occurred at, or in association with, any of the production operations during 2015.

5.2.2 Drilling

Drilling operations during 2015 comprised the completion of an appraisal well at Crosgan by the Ensco 70 MODU.

5.2.2.1 Chemical use and discharge

In compliance with the OCR, a chemical permit was approved by DECC and chemical use and discharge was recorded throughout the well operations at Crosgan. The total amounts of chemicals used and discharged during operations at Crosgan are presented in Table 5-4.

Table 5-4 Chemical Use and Discharge During Drilling Operations (tonnes) in 2015

| Risk level | Justification for assigned risk level | Used | Discharged |
|------------------------|--|--------------|------------|
| Environmentally benign | PLONOR listed ⁵ | 1,387 | 254 |
| Low risk | No SUB warning | 495 | 33 |
| Increased risk | No SUB warning, however, chemical has other warnings (e.g. heavy metals) | 0 | 0 |
| Substitution Warning | Substitution warning is in place | 14 | 1 |
| Total | | 1,896 | 288 |

A description of the replacement strategies the suppliers are employing was provided to DECC as part of the Annual Reporting Relating to Chemical Goals.

5.2.2.2 Waste

Prior to the commencement of drilling activities, RDUK (the company name at the time) ensured that Garbage Management Plans were in place for the Ensco 70. Ensco is responsible for ensuring compliance with all waste disposal licences and waste transfer documentation requirements for scrap metal and non-hazardous waste. Reuse or recycling is the preferred option. Company policy states that no garbage, including plastics, are to be disposed overboard. Only macerated food waste and sewage is discharged.

Drilling activities at Crosgan resulted in 942 tonnes of cuttings discharges (from water based mud drilling only). Oil Based Muds (OBM) and cuttings were back-loaded to shore where the majority of the OBM will be recycled. At the time of writing, this waste is being held by the waste contractor on site until further processing is undertaken at a later date.

5.2.2.3 Atmospheric emissions

The drilling of Crosgan required the combustion of 810 tonnes of diesel on the Ensco 70. This resulted in the following calculated emissions to air. No flaring activities were undertaken as part of this activity.

Table 5-5 Summary of Emissions to Air from Drilling at Crosgan (tonnes)

| | CO ₂ | CH ₄ | NM VOC | SO ₂ | NO _x |
|-------------------------|-----------------|-----------------|--------|-----------------|-----------------|
| Power generation | 2,592 | 0.15 | 1.62 | 3.24 | 48 |

⁵ PLONOR listed products are considered to Pose Little Or No Risk to the environment.

In addition to the above, various supply boats, standby vessels, tugs and helicopters were used in association with the Crosgan appraisal well. A quantity of diesel would have been combusted onboard the support vessels, adding a relatively small fraction to the atmospheric emissions identified above.

5.2.2.4 Oily water discharges and Oil Spills

No produced water was discharged to sea under the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005 during the Crosgan operation. In accordance with MARPOL 73/78 Annex 1, oily drainage water generated onboard the Ensco 70 drilling rig and the contracted support vessels, was collected and treated to provide an effluent with a maximum oil in water content of 15 ppm.

All drilling operations had dedicated Oil Pollution Emergency Plans listing the required offshore and onshore actions and responses, defined role and responsibilities in the event of an oil spill, risk assessment and outline relief well drilling plans in the event of a blowout.