



# 2019 Environmental Report


INEOS UK SNS LIMITED

**CONTROLLED DOCUMENT**

**Title:**

**INEOS Oil and Gas UK  
2019 Environmental Report**

**Notes:**

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## Glossary

|                   |   |
|-------------------|---|
| <b>BMS</b>        | Business Management System  |
| <b>DSV</b>        | Dive Support Vessel   |
| <b>EMS</b>        | Environmental Management System   |
| <b>HS&amp;EMS</b> | Health Safety & Environment Management System   |
| <b>HSE</b>        | Health, Safety and Environment  |
| <b>ISO</b>        | International Standards Organisation  |
| <b>NUI</b>        | Normally unattended installation  |
| <b>OCNS</b>       | Offshore Chemical Notification Scheme   |
| <b>OPEP</b>       | Oil Pollution Emergency Plan  |
| <b>OSC</b>        | Offshore support contractor   |
| <b>OSPAR</b>      | Oslo Paris convention for the protection of the marine environment of the NE Atlantic |
| <b>PLONOR</b>     | Poses Little or No Risk to the environment  |
| <b>PON1</b>       | Petroleum Operations Notice 1   |
| <b>PWT</b>        | Produced water treatment plant  |
| <b>ROV</b>        | Remotely Operated Vehicle   |
| <b>SNS</b>        | Southern North Sea  |
| <b>VOC</b>        | Volatile Organic Compounds  |

## 1 Introduction

This document is the 2019 Environmental Report for INEOS UK SNS Ltd ('INEOS Oil and Gas UK') and describes offshore operations undertaken throughout the year.

This report is a public statement designed to:

- Describe the scope of the company's offshore activities;
- Provide a description of the INEOS Oil and Gas UK Environmental Management System (EMS);
- State the company's environmental policy, goals, objectives and targets; and
- Provide a performance summary for 2019.

This document is the fifth annual Environmental Report to be issued as a public statement by INEOS UK SNS Limited.

## 2 Scope of Activities

This Section summarises activities undertaken in 2019.

### 2.1 Overview of INEOS

INEOS is a global manufacturer of petrochemicals, speciality chemicals and oil products with sales of around \$60 billion. INEOS UK SNS Limited is operator of the Breagh and Clipper South gas production fields during 2019. It was also operator of the non-producing Cavendish, Windermere and TOPAZ fields which are awaiting full decommissioning.

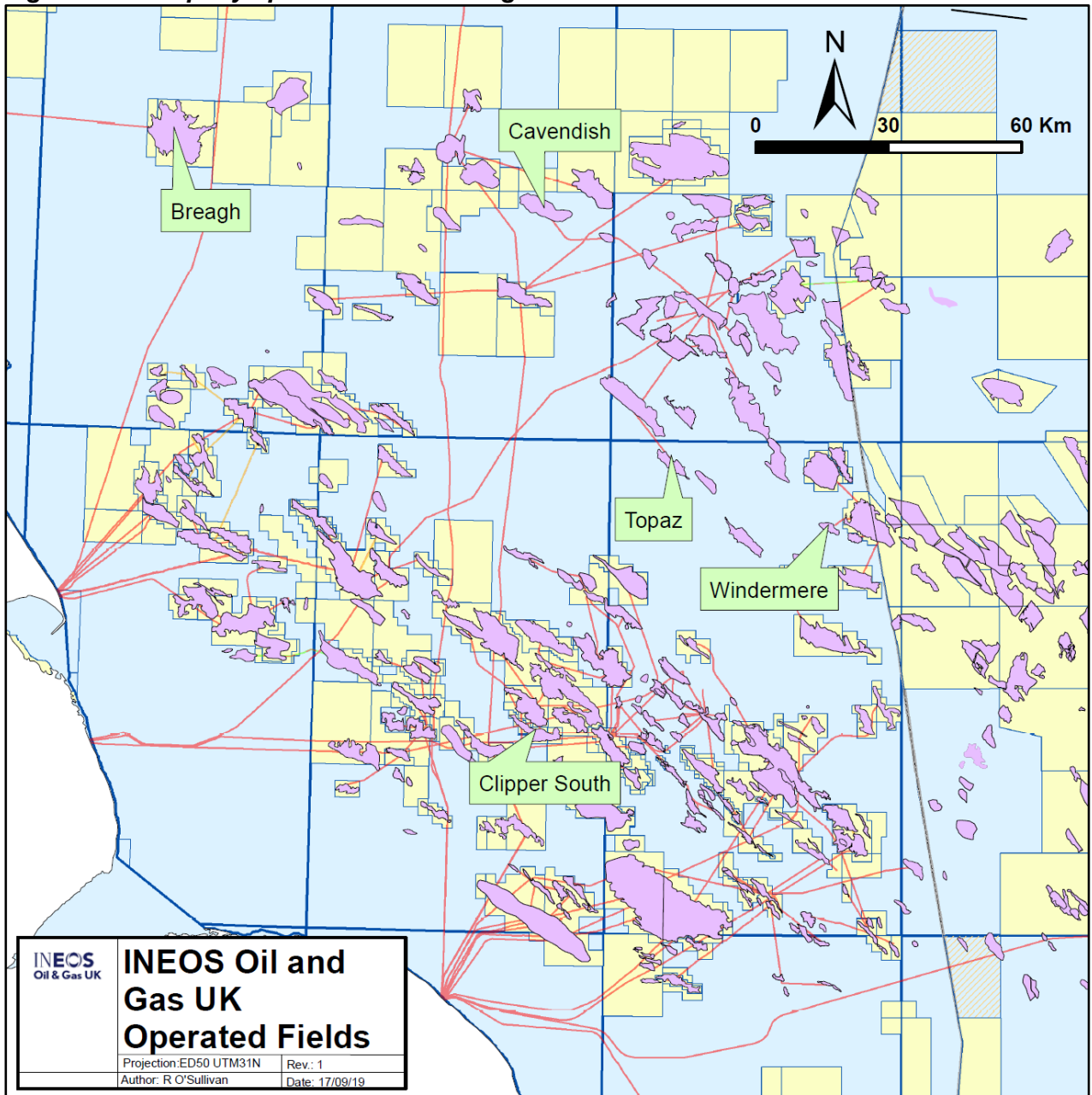
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### 2.2 Location of Offshore Activities during 2019

The locations of INEOS UK SNS Ltd operated fields are shown in Figure 2.1 below.

**Figure 2-1 Company operated fields during 2019**



## 2.2.1 Production Operations

### 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. The platform is normally operated unmanned, typically for periods of 25-30 days in between maintenance visits.

The Breagh platform was controlled, operated and maintained for production purposes in 2019 by INEOS Oil and Gas UK, with the assistance of an Offshore Support Contractor (OSC).



### 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.

The platform is operated as a NUI and maintenance visits typically occur for approximately ten days per month. INEOS Oil and Gas UK operated the Clipper South platform with the assistance of an OSC during 2019.

Clipper South originally exported gas via the ConocoPhillips owned LOGGS platform. This was taken out of service in October 2018 and a new pipeline between Clipper South and the Shell owned Clipper platform was installed. Due to the liquids handling requirements at the Clipper platform, a produced water treatment plant was installed on Clipper South; this was commissioned in December 2018.

## 2.2.2 Other Operations

### 2.2.2.1 Cavendish

The Cavendish platform is a fixed four-legged jacket that produced gas and condensate and is located in SNS Block 43/19a. The platform was tied back via a 47 kilometre long 10-inch pipeline to the ConocoPhillips operated Murdoch host platform however production ceased in 2018 and the wells were shut in.

Work was undertaken in 2019 to flush the pipeline, which was then cut and left flooded, and the three wells were plugged and abandoned. The platform was left in lighthouse mode with no hydrocarbons present and minimal maintenance requirements. The helideck has been decommissioned therefore annual maintenance visits are undertaken from a walk-to-work vessel.





#### 2.2.2.2 Windermere



The Windermere platform is an NUI located in SNS Block 49/09b. This is now operating in Hydrocarbon Safe Mode (HSM). No hydrocarbons or chemicals are stored or used on the platform. Maintenance visits occur once per year when a vessel is used to allow daytime access.

The two Windermere wells were plugged and abandoned, leaving the platform hydrocarbon free.

#### 2.2.2.3 Topaz

The Topaz subsea well head and protective structure was a gas producing seabed installation located in SNS Block 49/02a. The facility was 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.

Due to low flow rates, the Topaz well has been shut in and production ceased on 31<sup>st</sup> October 2017. Operations were undertaken in 2019 to flush and flood the pipelines between Topaz and Schooner and to cut and remove a section of the pipeline.

#### 2.2.2.4 Drilling

No drilling operations were undertaken during 2019.

### 3 EMS Summary

This Section provides a brief description of the company's EMS as it operated in 2019.

#### 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

The offshore operations undertaken by the business have had ISO 14001 certification since 2010, which was first obtained by previous owners of the business, and has continued through into INEOS Oil and Gas UK ownership. This covers the management of all the company's exploration, drilling, development and production operations. Recertification was achieved in December 2019.

#### 3.3 Review

A formal review of SHEQ 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 or decommissioning 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 recognises its moral and legal obligations to conduct all activities in a manner which protects the natural environment with the prevention of pollution. All employees are required to act responsibly so as to protect the environment.

In relation to environmental management, the company will:

- annually set QHSE objectives, seeking to achieve continual improvement;
- ensure that a competent workforce is established and receives all necessary information, instruction and training and that all personnel have a clear understanding of their roles and responsibilities;
- monitor and record QHSE performance and assess compliance through internal audits;
- annually conduct management review of performance against objectives; and
- ensure that sufficient resources are provided to achieve its objectives.

For all business activities and projects, the company will;

- comply, as a minimum, with all HS&E legislation applicable in the UK, to discharge its Duty of Care, applying best industry practice and undertaking steps to improve safety or environmental protection levels where appropriate;
- ensure that systematic hazard identification, assessment of risk and incorporation of measures to control risks are central to all our activities;
- apply all necessary control measures in the design, construction and operation of offshore facilities to prevent the occurrence of major accident events;
- select competent contractors with regard to their QHSE management capability and provide them with all necessary information;
- monitor and audit contractors as necessary; and
- maintain emergency and contingency plans.

The company requires each of its contractors and suppliers to:

- operate effective QHSE management systems; and
- comply with INEOS Oil and Gas UK's QHSE requirements including appropriate QHSE planning, hazard identification, risk control, performance monitoring and reporting.

#### **4.3 Objectives and targets for 2019**

The environmental management objectives and targets for the period between January and December 2019 were determined in order to progressively achieve the commitments set out in the QHSE Policy Statement. Section 5.2 provides further detail.

## 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 2019 Environmental Performance Summary

Progress against the identified objectives and targets for 2019 is considered in the annual Management Review. Key objectives and targets are related to incidents, BMS development and certification, competence, emergency preparedness and response, audit and review and the offices. The majority of objectives were achieved with two not achieved; these related to reportable incidents. The audit schedule continues throughout the year in order to ensure that progress against objectives and targets is maintained.

#### 5.2.1 Production Activities

Production operations during 2019 were undertaken at the Breagh and Clipper South.

##### 5.2.1.1 PON1 Incidents

One incident required submission of a Petroleum Operations Notice 1 notification (PON 1) during 2019.

**Table 5-1 INEOS Oil and Gas UK Ltd PON1 incidents**

| Date   | Incident Type | Description of Incident   |
|--------|---------------|---|
| 2/5/19 | PON1          | Hydraulic leak from Emergency Shutdown Valve at Clipper South. Loss of 75-90 litres of hydraulic fluid. |

##### 5.2.1.2 Chemical use and discharge

During 2019, Breagh production operations used methanol 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.

Three products are used regularly for Clipper South operations: EC66721A (colour band White), Ethylene Glycol (OCNS category E) and SURFLO PLUS® SFPEC1610A (colour band Gold). These products inhibit the formation of hydrates and prevent corrosion in the pipeline between Clipper South and Clipper and must be added to ensure pipeline integrity.

SOBO S GOLD 08 (colour band Gold) rigwash detergent was also used on Clipper South for platform cleaning. No other chemicals were used or discharged.

Table 5-2 below presents the quantities of chemicals used and discharged at Breagh and Clipper South during 2019 based on label and ranking categories.

**Table 5-2 Chemicals Used and Discharged during normal platform operations**

| OCNS category or colour band ranking | Additional Label | Quantity (kg) |           |
|--------------------------------------|------------------|---------------|-----------|
|                                      |                  | Use           | Discharge |
| E                                    | PLONOR           | 37,211        | 0         |
| Gold                                 | -                | 54,823        | 77        |
| White                                | -                | 34,237        | 0         |

### 5.2.1.3 Produced water discharges

The Breagh platform utilises a closed production system and there are no separation facilities or disposal caissons; therefore there are no discharges of produced water.

Clipper South has a produced water treatment (PWT) plant to remove produced water prior to export to Clipper. The PWT plant was installed on Clipper South in 2018. Table 5-3 below presents the volume of water that was processed by the PWT plant and the results of the sampling of the water that is discharged once treated. The PWT plant reduced oil in water concentrations to well below the permitted quantities and only 0.756 tonnes of oil was discharged to sea.

**Table 5-3 Clipper South PWT Discharge Results**

| Month        | Total Volume of Water (m <sup>3</sup> ) | Average Oil in Water (mg/l) | Weight of Oil (t) |
|--------------|---|-----------------------------|-------------------|
| January      | 4,567.58                                | 25.09                       | 0.115             |
| February     | 4,704.00                                | 24.82                       | 0.117             |
| March        | 6,347.40                                | 14.11                       | 0.09              |
| April        | 6,272.00                                | 9.67                        | 0.061             |
| May          | 5,034.00                                | 12.05                       | 0.061             |
| June         | 7,200.00                                | 6.96                        | 0.05              |
| July         | 7,325.42                                | 7.14                        | 0.052             |
| August       | 6,348.68                                | 11.37                       | 0.072             |
| September    | 2,877.68                                | 9.00                        | 0.026             |
| October      | 6,484.50                                | 5.27                        | 0.034             |
| November     | 7,241.00                                | 5.26                        | 0.038             |
| December     | 6,829.00                                | 5.80                        | 0.04              |
| <b>Total</b> | <b>71,231.26</b>                        | <b>-</b>                    | <b>0.756</b>      |

5.2.1.4 Waste

A total of 82.48 tonnes of waste was generated by the Clipper South and Breagh during 2019. A summary is provided as Table 5-4 below. No waste was directed to landfill.

**Table 5-4 Summary of Waste from Production Operations (tonnes), 2019**

| Asset         | Group    | Type                       | Reuse | Re-cycling | Waste to Energy | Incinerate | Landfill | Other | Total | Comments  |
|---------------|----------|----------------------------|-------|------------|-----------------|------------|----------|-------|-------|-----------|
| Breagh        | Group I  | Chemicals / paints         | 0     | 0          | 0               | 6.52       | 0        | 0     | 6.52  |           |
|               |          | Oils                       | 0     | 0.16       | 0               | 0          | 0        | 0     | 0.16  |           |
|               |          | Misc                       | 0     | 0.07       | 0.2             | 0          | 0        | 0     | 0.27  |           |
|               |          | Sludges/ Liquids/ Washings | 0     | 0          | 0               | 6.18       | 0        | 2.84  | 9.02  | Treatment |
|               | Group II | Drums/ Containers          | 0     | 0.05       | 0               | 0          | 0        | 0     | 0.05  |           |
|               |          | Scrap Metal                | 0     | 2.41       | 0               | 0          | 0        | 0     | 2.41  |           |
|               |          | Segregated recyclables     | 0     | 2.3        | 0               | 0          | 0        | 0     | 2.3   |           |
|               |          | General                    | 0     | 0.26       | 1.02            | 0          | 0        | 0     | 1.28  |           |
| Clipper South | Group I  | Chemicals / Paints         | 0     | 1.12       | 0               | 44.23      | 0        | 0     | 45.35 |           |
|               |          | Drums/ Containers          | 0     | 0.02       | 0               | 0          | 0        | 0     | 0.02  |           |
|               |          | Oils                       | 0     | 1.18       | 0               | 0          | 0        | 0     | 1.18  |           |
|               |          | Misc                       | 0     | 0.55       | 0.32            | 0          | 0        | 0.37  | 1.24  | Treatment |
|               |          | Sludges/ Liquids/ Washings | 0     | 3.42       | 0               | 0.2        | 0        | 0.65  | 4.27  |           |
|               | Group II | Drums/ Containers          | 0     | 0.2        | 0               | 0          | 0        | 0     | 0.2   |           |
|               |          | Scrap Metal                | 0     | 1.38       | 0               | 0          | 0        | 0     | 1.38  |           |
|               |          | Segregated Recyclables     | 0     | 3.33       | 0               | 0          | 0        | 0     | 3.33  |           |
|               |          | General                    | 0     | 0.71       | 2.79            | 0          | 0        | 0     | 3.5   |           |
| <b>TOTAL</b>  |          |                            | 0     | 17.16      | 4.33            | 57.13      | 0        | 3.86  | 82.48 |           |

In addition to the above wastes, the liquid waste generated at the Breagh platform during routine maintenance visits 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 and Clipper South platforms have self-sufficient power supplies in the form of standalone diesel generators. Operational emissions to air from combustion of diesel to power generators is summarised in Table 5-55 below.

**Table 5-5 Emissions to Air from Breagh and Clipper South (tonnes), 2019**

| Asset         | Diesel Used | Emissions to Air |      |                 |                  |                 |      |                 |
|---------------|-------------|------------------|------|-----------------|------------------|-----------------|------|-----------------|
|               |             | CO <sub>2</sub>  | CO   | NO <sub>x</sub> | N <sub>2</sub> O | CH <sub>4</sub> | VOC  | SO <sub>x</sub> |
| Breagh        | 79          | 252.8            | 1.24 | 4.69            | 0.02             | 0.01            | 0.16 | 0.32            |
| Clipper South | 158         | 505.6            | 2.48 | 9.39            | 0.03             | 0.03            | 0.32 | 0.63            |

Atmospheric emissions relating to production operations at Breagh and Clipper South were also generated as a result of the combustion of fuel on board 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 2019 comprised the following from maintenance venting:

- Breagh – 7.13 tonnes
- Clipper South – 0.19 tonnes

#### 5.2.1.6 Oil spills

Oil Pollution Emergency Plans (OPEPs) were in place to cover all operations at Breagh, Clipper South, Cavendish, Topaz and Windermere during 2019. 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.

### 5.2.2 Other activities

#### 5.2.2.1 Cavendish and Windermere

In 2019, operations were undertaken to prepare for decommissioning the Cavendish and Windermere installations and wells. Cavendish wells had been shut in but hydrocarbons remained on board so maintenance activities were still required monthly. The Windermere platform was in hydrocarbon safe mode and therefore only required annual visits, however, the wells were not plugged and abandoned.

A campaign of works was performed at Cavendish, then Windermere, using the Seajacks Hydra work barge.

At Cavendish, work was undertaken to flush the pipelines between Cavendish and Murdoch, plug and abandon the three wells and put the platform into lighthouse mode. The pipeline flush operations were undertaken in collaboration with ConocoPhillips, who operated the Murdoch platform at the time.

At Windermere the wells were plugged and abandoned.

### Chemicals

The chemicals required to undertake these operations were all permitted under the Offshore Chemicals Regulations. Those that were used at the Murdoch end of the pipeline during the Cavendish operations were permitted by ConocoPhillips. The chemicals required for use at the Cavendish end were added to the Cavendish production chemical permit. New Workover and Intervention Applications (WIA) were permitted for the plug and abandonment at Cavendish and Windermere.



The chemicals used for these operations (excluding those permitted by ConocoPhillips) are presented below.

**Table 5-6 Chemicals Used and Discharged during operations at Cavendish and Windermere, 2019**

| OCNS category or colour band ranking | Additional Label | Quantity (kg) |           |
|--------------------------------------|------------------|---------------|-----------|
|                                      |                  | Use           | Discharge |
| E                                    | PLONOR           | 284,823.8     | 45,547    |
|                                      | -                | 168           | 16.9      |
| Gold                                 | -                | 15,200.95     | 1,699.2   |
|                                      | SUB              | 415           | 16        |
| Silver                               | SUB              | 422.4         | 0         |
| Total                                |                  | 301,030.1     | 47,279.1  |

Waste

The waste generated during the Cavendish pipeline operations was recorded as produced by the Cavendish platform. During the plugging and abandonment of the Cavendish and Windermere wells, waste was directed via the Seajacks Hydra. As the Hydra moved directly from Cavendish to Windermere, it is not possible to separate the waste generated at each location, therefore all waste generated during the Cavendish and Windermere operations is presented below.

**Table 5-7 Waste generated during Cavendish and Windermere operations, 2019**

| Asset     | Group                  | Type                       | Reuse | Re-cycling | Waste to Energy | Incinerate | Landfill | Other | Total | Comments  |
|-----------|------------------------|----------------------------|-------|------------|-----------------|------------|----------|-------|-------|-----------|
| Cavendish | Group I                | Chemicals / paints         | 0     | 0.42       | 0               | 2.6        | 0        | 0     | 3.02  |           |
|           |                        | Drums/ Containers          | 0     | 0.18       | 0               | 0          | 0        | 0     | 0.18  |           |
|           |                        | Oils                       | 0     | 2.02       | 0.06            | 0          | 0        | 0     | 2.08  |           |
|           |                        | Misc                       | 0     | 0.06       | 0.61            | 0          | 0        | 0     | 0.67  |           |
|           |                        | Sludges/ Liquids/ Washings | 0     | 0.86       | 0               | 0          | 0        | 0     | 0.86  |           |
|           | Group II               | Drums/ Containers          | 0     | 0.11       | 0               | 0          | 0        | 0     | 0.11  |           |
|           |                        | Scrap Metal                | 0     | 48.48      | 0               | 0          | 0        | 0     | 48.48 |           |
|           |                        | Segregated recyclables     | 0     | 0.536      | 0               | 0          | 0        | 0     | 0.536 |           |
|           | General                | 0                          | 0.43  | 1.49       | 0               | 0          | 0        | 1.92  |       |           |
| Hydra     | Group I                | Chemicals / Paints         | 0     | 0.95       | 0               | 3.4        | 0        | 0     | 4.35  |           |
|           |                        | Drums/ Containers          | 0     | 0.04       | 0               | 0          | 0        | 0     | 0.04  |           |
|           |                        | Oils                       | 0     | 0.92       | 0               | 0          | 0        | 0     | 0.92  |           |
|           |                        | Misc                       | 0     | 0.6        | 0.84            | 0          | 0        | 0     | 1.44  |           |
|           |                        | Sludges/ Liquids/ Washings | 0     | 0          | 0               | 0          | 0        | 36.9  | 36.9  | Treatment |
|           | Group II               | Drums/ Containers          | 0     | 0.28       | 0               | 0          | 0        | 0     | 0.28  |           |
|           |                        | Scrap Metal                | 0     | 24.01      | 0               | 0          | 0        | 0     | 24.01 |           |
|           | Segregated Recyclables | 0                          | 3.56  | 0          | 0               | 0          | 0        | 3.56  |       |           |

| Asset        | Group | Type    | Reuse | Re-cycling | Waste to Energy | Incinerate | Landfill | Other | Total  | Comments |
|--------------|-------|---------|-------|------------|-----------------|------------|----------|-------|--------|----------|
|              |       | General | 0     | 4.72       | 15.05           | 0          | 0        | 0     | 19.77  |          |
| <b>TOTAL</b> |       |         | 0     | 88.18      | 18.05           | 6          | 0        | 36.9  | 149.13 |          |

Less than 150 tonnes of waste was generated during these two operations. No waste was sent to landfill.

#### Atmospheric emissions

Diesel consumption by the Hydra is reported by SeaJacks. Diesel consumption at Cavendish during 2019 is presented below.

**Table 5-8 Summary of emissions to air (tonnes)**

| Source           | Diesel consumption | CO <sub>2</sub> | CH <sub>4</sub> | NM VOC | SO <sub>x</sub> | NO <sub>x</sub> |
|------------------|--------------------|-----------------|-----------------|--------|-----------------|-----------------|
| Power generation | 32                 | 102.4           | 0.50            | 1.9    | 0.007           | 0.006           |

In addition to the above, 0.24 tonnes of natural gas was vented. Various supply boats, standby vessels and helicopters were used in association with the campaign which would slightly increase the emissions associated with the project.

Windermere does not have a diesel generator and no hydrocarbons are present in the topsides, therefore emissions to air associated with the Windermere platform have been reported via Seajacks.

#### Discharges to Sea

During the plug and abandonment of the Windermere wells, it was necessary to flush the A- and B- annulus (the void between the different casing strings). The chemicals used during the installation of the wells remained in place and therefore fluids returned to the surface that had been circulated in these spaces may have been contaminated with these chemicals. On reaching the surface, fluids were transferred to a dedicated storage tank for onshore treatment. Once considered clean, the remaining fluids were discharged to sea under Condition 6 of the Chemical Permit. A total of 233m<sup>3</sup> of water was discharged at a maximum concentration of 17mg/l of base oil. In total 3.58kg of base oil was discharged in this operation.

The Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005 (as amended) requires that discharges of reservoir hydrocarbons (i.e. produced water) are regulated. Oil discharge Term Permits were issued for these activities and during operations at Windermere a total of 3.4kg of oil in water was discharged to sea. No oil was discharged at Cavendish.

These operations had a dedicated Oil Pollution Emergency Plan 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.

#### 5.2.2.2 Topaz

The Topaz pipelines between the Schooner platform and the Topaz wellhead were flushed and filled with seawater prior to a further operation to remove a section of the pipelines.

Pipeline Flush

The flush fluids were injected into the pipelines at the Schooner platform with pumping provided from Murdoch. The liquids were circulated within the pipelines to remove residual hydrocarbons and once considered below 30mg/l oil in water content, they were injected downhole at Topaz. There were no discharges to the sea associated with this operation. No additional barge or jack up were used as all operations were coordinated from the Schooner and Murdoch platforms therefore emissions to air, discharges to sea and seabed impact were minimised.

Pipeline Cut

The operation to cut the section from the pipeline was undertaken from a Dive Support Vessel (DSV) using divers and a Remotely Operated Vehicle (ROV). Time onsite was minimised and a vessel was used that was already operating in the area in order to minimise the emissions to air.

Prior to cutting the pipelines, barrier testing to ensure isolations were in place and leak testing to ensure the new permanent blind flange was operational were undertaken. The chemicals used to undertake the barrier testing and the leak testing are presented below.

**Table 5-9 Chemicals Used and Discharged during operations at Topaz**

| OCNS category or colour band ranking | Additional Label | Quantity (kg) |           |
|--------------------------------------|------------------|---------------|-----------|
|                                      |                  | Use           | Discharge |
| E                                    | PLONOR           | 89            | 89        |
| Gold                                 | -                | 0.109         | 0.109     |
| Total                                | -                | 89.109        | 89.109    |

As the flooded pipeline was cut, the seawater that was used to flood the pipeline in the operation above was discharged to sea. No monitoring of the hydrocarbon content of this seawater was possible but it was assumed that a maximum of 30mg/l oil in water could be present as a worst case. Based on this assumption, 0.005kg of hydrocarbons were discharged in relation to this activity.