

# **REPSOL SINOPEC RESOURCES UK LIMITED**

**2020 ENVIRONMENTAL STATEMENT**



# CONTENTS

<b>01</b>	<b>INTRODUCTION</b>
<b>02</b>	<b>UK OPERATIONS</b> Fields & Installations Oil & Gas Production Drilling
<b>04</b>	<b>ENVIRONMENTAL MANAGEMENT</b>
<b>06</b>	<b>ENVIRONMENTAL PERFORMANCE</b> Emissions to Atmosphere of Greenhouse Gasses Discharges to Sea Oil in Produced Water Production Chemicals Drilling & Pipeline Chemicals Accidental Releases Waste Management
<b>18</b>	<b>APPENDICES</b> Glossary Data Table

**Repsol Sinopec Resources UK Limited strive to provide a reliable, safe and efficient energy supply to continuously improve to meet the current challenges facing the oil and gas industry and delivering environmental performance that meets or exceeds regulation.**

2020 was an extraordinary year that required us to meet the challenges posed by the global COVID-19 pandemic and a sharp drop in the oil price. We are extremely proud of the resilience shown by our workforce and their commitment to maintaining safe and steady operations.

At Repsol Sinopec we recognise that emissions reduction and energy transition is a societal shift to a lower-carbon future and that we must play our part. We are focused on emissions management and reducing the carbon intensity of our operations and are aligned to the 2050 Net Zero goal.

In 2020 we appointed an Emissions Manager who is responsible for delivering our Company Net Zero Road Map. The road map outlines the steps we intend to take, as well as a series of increasingly challenging emissions reduction targets. A Greenhouse Gas Emissions Management Policy has been published, further demonstrating our Leadership and Shareholder commitment to emission reductions.

Our overall greenhouse gas emissions (expressed as CO<sub>2</sub> equivalent) reduced in 2020 due to several factors such as operational stability, power sharing between installations, reduced flaring, and the cessation of production of one of our installations.

In 2020 we targeted a reduction of CO<sub>2</sub>e emissions by 26,500 tonnes, which was exceeded, with a reduction of 95,760 tonnes. Looking forward to 2021, we have set ourselves a target to reduce our emissions by a further 85,350 tonnes CO<sub>2</sub>e.

Our oil in produced water performance in 2020 saw an increase in the total mass of oil discharged to sea and a slight uptick in the average oil in water concentration. These increases have been linked to performance issues at a small number of our installations, which are being closely monitored and have improvement plans in place. However, our overall oil in water performance remains well below regulatory limits. In parallel, we are moving ahead with several facilities improvements to support improved water management across our installations.

2020 showed chemical use and discharge across our production operations remaining relatively consistent with the previous year.

The Company saw an improvement in the number of accidental oil and chemical spill incidents and there was an associated sharp decrease in the total cumulative mass of these spills in comparison to 2019. This improvement in losses was directly linked to the rectification of several ongoing subsea hydraulic control fluid releases that were repaired during 2019 and 2020 via multiple Dive Support Vessel (DSV) campaigns.

Throughout 2020 we continued to engage and work closely with our waste management vendor and its subcontractors to help drive waste improvements and continue to raise awareness on our installations. Ultimately, our waste generation is linked to the level and type of operations conducted. Our waste generated in 2020 significantly increased; however, this was directly attributable to the substantial volume generated during decommissioning of the Buchan Alpha platform, which generated ~ 12,400 tonnes of waste, of which 98 % was successfully reused, recycled or recovered with only 2 % going to landfill. Furthermore, through our waste vendor we have continued to reduce the volume of waste sent to landfill from additional onshore sorting. This in turn increased the amount of waste that was routed to 'Waste to Energy' i.e. incineration; therefore, maximising waste utilised for electricity generation.

Overall, we continue to operate a challenging portfolio of ageing installations, while continuing to deliver year on year performance improvements across the business. Our environmental performance is central to how we operate.



Darren Stoker

**Chief Technical Officer**

# UK OPERATIONS



## Fields and Installations

Our principal UK operating areas, (shown below) encompasses a total of 51 fields, 11 operated assets and two onshore terminals detailed in Tables 1 and 2.



## Oil & gas production

Oil reservoirs contain a mixture of oil, water and natural gas. A primary purpose of an offshore production platform is to separate out the extracted 'well fluids' into these three separate components using separation vessels. Once the oil has been separated from the gas and water, it is pumped to shore via subsea pipelines; or, in the case of oil from the Ross and Blake fields, shipped to shore. The gas is dried and then compressed. Some of the gas, where possible, is used to generate power to run the process equipment on site and the remainder of the gas is exported via pipeline to the UK mainland (see Table 1), used for gas lift, or flared.

The proportion of oil, gas and water produced from reservoirs changes over time. Oil and gas production will decrease and the volume of water will increase. The separated water, known as produced water, is managed, cleaned and processed to reduce oil droplets prior to discharge to sea.

## Drilling

As the fields mature and more information about the reservoirs becomes available, more wells may be drilled or existing wells may be revisited. This can be done either from the platform, or with mobile drilling rigs. Geological information and production tests determine how many wells are needed to produce the oil and gas efficiently.

**HYDROCARBON EXPORT ROUTES** Table 1

Installation	Oil	Gas
Arbroath	Via Montrose	Via Montrose
Auk	Via Fulmar	N/A
Beatrice <sup>1</sup>	Nigg Oil Terminal	N/A
Bleo Holm	Shuttle Tanker	Frigg Pipeline
Buchan <sup>#</sup>	Forties Pipeline	N/A
Claymore	Flotta Pipeline	N/A
Clyde	Norpipe Pipeline	St Fergus Line
Fulmar	Norpipe Pipeline	St Fergus Line
Montrose	Forties Pipeline	CATS Pipeline
Piper B	Flotta Pipeline	Frigg Pipeline
Saltire <sup>1</sup>	Via Piper B	Via Piper B
Tartan	Flotta Pipeline	Frigg Pipeline

**FIELDS & INSTALLATIONS** Table 2

FIELD	BLOCK	INSTALLATION
Arbroath	22/18	Arbroath
Arkwright	22/23a	Arbroath
Auk	30/16	Auk
Auk North	30/16n,t	Fulmar
Beatrice	11/30a	Beatrice Complex <sup>1</sup>
Beaully*	16/21	Balmoral*
Blake	13/24b	Bleo Holm
Brechin	22/23	Montrose
Buchan	21/01	Buchan <sup>#</sup>
Burghley*	16/22	Balmoral*
Carnoustie	22/17	Arbroath
Cayley	22/17s	Montrose
Chanter	15/17	Piper B
Claymore 14/19	14/19	Claymore
Claymore 14/20b	14/20b	Claymore
Clyde	30/17b	Clyde
Duart	14/20b	Tartan
Enoch*	16/13a	Brae*
Fulmar	30/16	Fulmar
Galley	15/23	Tartan
Godwin	22/17n & 22/17s	Arbroath
Halley	30/12b	Fulmar
Hannay	20/05c	Buchan <sup>#</sup>
Highlander	14/20	Tartan Alpha
Iona	15/17	Piper B
Leven	30/17b	Clyde
Medwin	30/17b	Clyde
Montrose	22/17	Montrose
Nethan	30/17b	Clyde
Orion	30/18	Clyde
Petronella	14/20	Tartan
Piper	15/17	Piper B
Ross	13/29	Bleo Holm
Saltire	15/17	Saltire <sup>1</sup>
Scapa	14/19	Claymore
Shaw	22/22a	Montrose
Tartan	15/16	Tartan Alpha
Tartan North Terrace	15/16b	Tartan Alpha
Tweedsmuir	21/01a	Piper B
Wood	22/18	Montrose
Affleck*	30/19a	Clyde via Janice FPU**
Andrew*	16/27a	Andrew*
Balmoral*	16/21b,c	Balmoral*
Blane*	30/03	Ula*
Cawdor*	30/13 & 30/14	Clyde
Flyndre*	30/13 & 30/14	Clyde
Glamis*	16/21a	Balmoral*
MacCulloch*	15/24b	North Sea Producer**
Stirling*	16/21b,c	Balmoral*
Wareham*	98/06a,07a	Onshore
Wythch Farm*	98/06a,07a	Onshore

\* Not operated by the company therefore data is not included in this report.

# Installation no longer at location

<sup>1</sup> Installation Not Normally Attended (NNA)

# ENVIRONMENTAL MANAGEMENT

The company has an integrated Safety and Environmental Management System (SEMS). The environmental elements of the system have been independently verified as meeting the requirements of the Oslo-Paris Convention (OSPAR) Recommendation 2003/5 to promote the use and implementation of Environmental Management Systems by the offshore industry.

## Minimise impact and continuous improvement

Our environmental commitment, as outlined in our corporate HSE policy, is to minimise our impacts and always comply with the law or the company's standards, whichever are higher. All environmental aspects including climate change, air quality, water quality and waste are issues that receive constant attention to minimise our environmental impacts. The environmental impacts from oil and gas exploration and production activities have been minimised as far as practicable through the design of the installations and subsequent modifications made to plant and process.

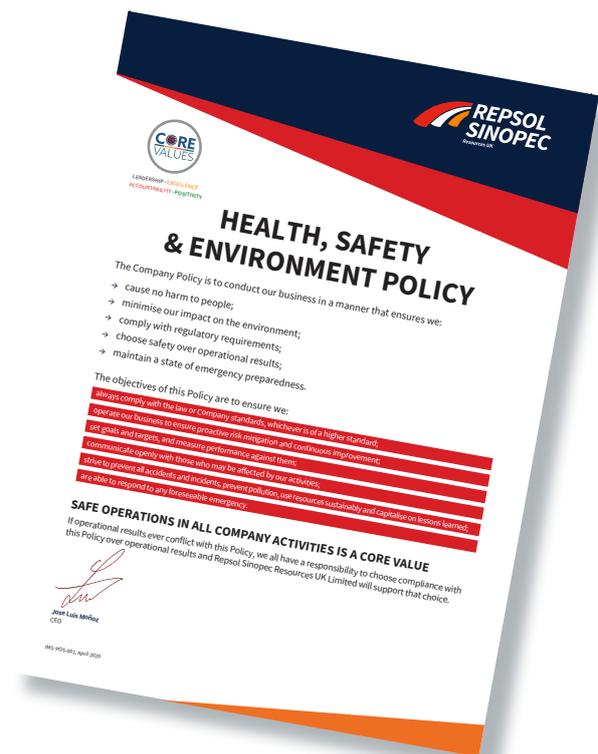
## We follow a 2-phase environmental management strategy

The first phase consists of the identification and characterisation of our environmental impacts to determine their significance and how to manage them. This considers local environmental sensitivities, company and legislative performance standards and stakeholder concerns.

The second phase involves the development and implementation of environmental management strategies that are integrated with business and operational systems, and are integral to all company performance improvement objectives: such as safety, installation integrity and security of supply.

## Targets and objectives

Our Executive Committee sets annual environmental targets against which performance is tracked. Each is set with a view to achieving the overarching objective of continuous improvement. To ensure all of our installations work towards achieving the targets, a performance contract is agreed with the site leadership team and company personnel.



Our Corporate HSE Policy

## Permits and consents

Our conduct in the North Sea is governed by a range of legislation and we are required to hold a number of permits and consents that authorise our operations. These permits and consents come with detailed operating conditions to which we must adhere.

We track and investigate non-compliance (permit breaches) to measure and continually improve the effectiveness of our systems, processes and procedures.

# ENVIRONMENTAL MANAGEMENT BY DESIGN AND MAINTENANCE

**Our installations are designed and maintained to minimise their environmental impact.**

**Primary impact mitigation measures have been integrated into the design of the facilities and include:**

- Closed system processes to safely contain reservoir fluids in vessels and flow lines under all process conditions.
- Pressure, temperature, flow control and shutdown systems to maintain safe operating conditions at all times.
- Bunding of areas with a potential for spills.

**Secondary defence measures are those that relate to the operation of the facilities and include:**

- Corrosion prevention and monitoring programmes and preventative maintenance programmes ensure that vessels, flow lines, valves, fittings and equipment remain in a safe operating condition.
- Consideration of all potential accidental/emergency scenarios to ensure procedures and resources are in place for prevention, control and mitigation.
- Procedures to minimise operational leaks and spills and ensure availability of clean-up equipment to deal with spillages.
- Training of personnel to operate and maintain the above safeguards in good working order.

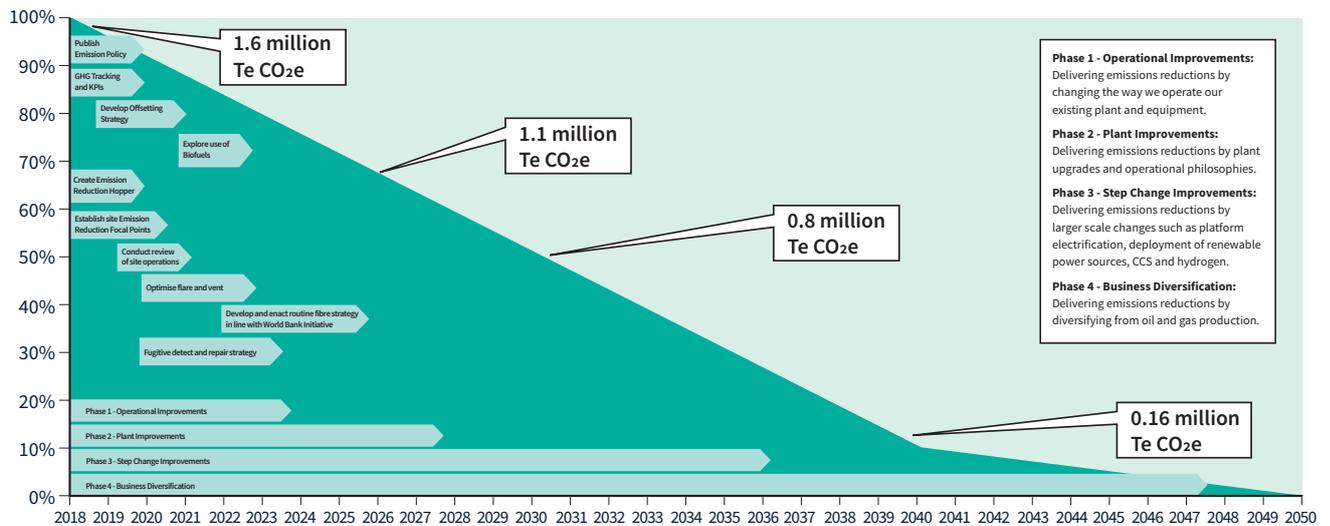
**ENVIRONMENTAL PERFORMANCE**

**EMISSIONS TO ATMOSPHERE  
OF GREENHOUSE GASSES**



The Company recognises the importance of emissions management. It is the Company's expectation that all operations are conducted in a manner that strives for good emissions management - seeking emissions reductions in line with, or better than, the 2050 Net Zero emissions goal.

The Company has developed its own road map to the 2050 Net Zero emissions goal. Whilst this is aligned to the Oil and Gas UK's Road Map to Net Zero, it details the key steps the Company believes it will need to take in order to achieve Net Zero.



**Figure 1**  
Emission Road Map to Net Zero 2050

One such step has been the development and publication of a Greenhouse Gas emissions management policy, which has a purpose to establish and communicate the leadership commitment to Emissions Management and the 2050 Net Zero emissions goal by the board, Executive Committee (ExCom), Executive Management Team (EMT), Senior Management, Employees and key Contractors.

Since 2018 the Company has executed a number of emission reduction initiatives which have helped reduce emissions as shown in **Figure 2**. A summary of the most notable are as follows:

Initiative	Emissions Saving (Tonnes CO <sub>2</sub> e)
Clyde flare reduction plan	100,000
Piper flare optimisation	60,000
Fulmar flare and vent reduction plan	25,000
Installation of Fulmar to Auk power interconnector	25,000

The Company continues to explore opportunities for emissions' reductions across our portfolio, these opportunities fall into 4 broad improvement categories as outlined in **Figure 1**.

### 2020 Emissions Performance:

The extraction and processing of oil and gas is energy intensive. During normal operations, installations burn natural gas and diesel for power. In addition, any natural gas extracted from the reservoir, that cannot be used or exported, has to be flared for safety reasons.

The level to which different GHG's contribute to Climate Change depends on the gas. For example, 1 tonne of methane (CH<sub>4</sub>) has a much higher global warming potential than CO<sub>2</sub>. To fully reflect the impact of our operations, GHGs are combined and expressed as tonnes of CO<sub>2</sub> equivalent (CO<sub>2</sub>e). In this report all references to CO<sub>2</sub>e figures assume one tonne of CH<sub>4</sub> to be equivalent to 25 tonnes of CO<sub>2</sub>. We also use Production Carbon Intensity, that is, the tonnes of CO<sub>2</sub>e produced per unit of production (1000 Barrels Oil Equivalent (BOE)) as a measure of production efficiency from a climate change perspective.

# EMISSIONS TO ATMOSPHERE OF GREENHOUSE GASSES

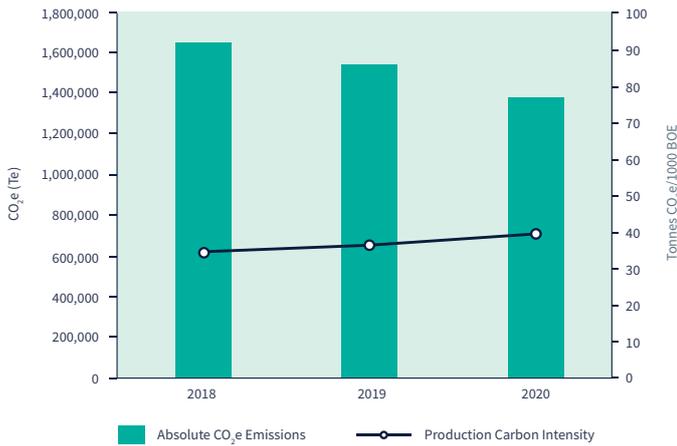


Figure 2

CO<sub>2</sub> Equivalent emissions and production intensity annual trend (2018 - 2020)

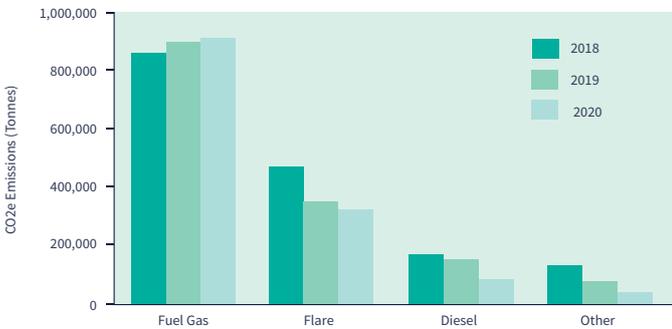


Figure 3

CO<sub>2</sub> Equivalent emissions by source stream (2018 - 2020)

Figure 3 shows the contribution of CO<sub>2</sub>e from each source stream over the last 3 years. Improved uptime for asset turbines on natural gas has led to a small uptick in this measurement. By preferentially burning natural gas as a fuel for power generation, it helps to reduce diesel consumption which produces more CO<sub>2</sub> when combusted. The statistics show a continued drop in flaring in 2020.

**Note:** "Other" includes emissions from venting and fugitive emissions.

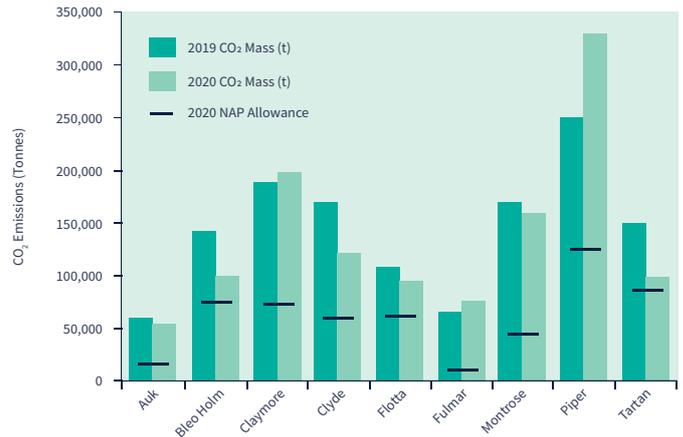


Figure 4

2020 / 2019 EU ETS CO<sub>2</sub> emissions and free allowance per installation

The European Union Emissions Trading Scheme (EU ETS) is the primary financial means used across the EU to incentivise the reduction of CO<sub>2</sub> emissions from larger industrial installations. The basic principal is that at the end of each year qualifying installations must surrender an "emissions allowance" for each tonne of CO<sub>2</sub> emitted. Some emission allowances are issued free of charge to the installation at the beginning of the year with the remainder required to be purchased. 2020 is the last year the UK will participate within the EU ETS as a result of the withdrawal of the UK from the European Union. The UK Government is in the process of creating a 'UK ETS' to regulate CO<sub>2</sub> emissions in a manner aligned with that of the EU ETS. Figure 4 shows total installation emissions against the total free allowance provision. EU ETS qualifying emissions relate to CO<sub>2</sub> resulting from combustion only and does not take into account the CO<sub>2</sub> equivalency for methane and other uncombusted GHG's.

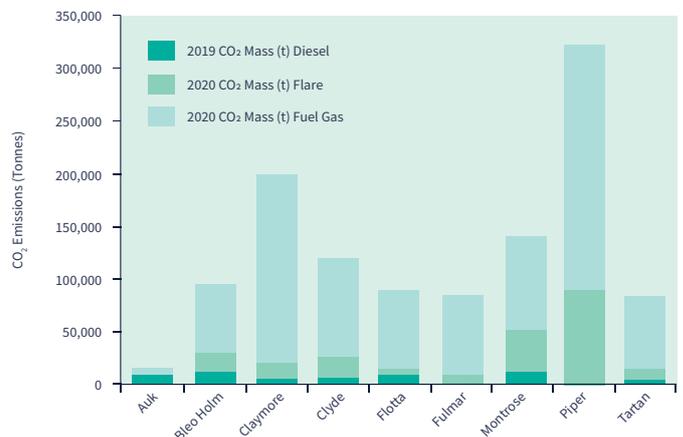


Figure 5

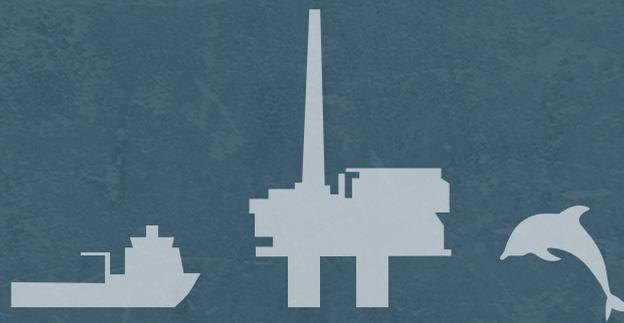
2020 / 2019 EU ETS CO<sub>2</sub> emissions and free allowance per installation

# EMISSIONS TO ATMOSPHERE OF GREENHOUSE GASSES

As the graphs demonstrate, the majority of assets have reduced the quantity of EU ETS qualifying CO<sub>2</sub> emissions emitted in 2020 compared to 2019. Piper had a noticeable increase which was down to issues with its amine plant which resulted in an extended period of elevated flaring. Fulmar and Claymore also had small increases compared to their recorded 2019 emissions primarily due to increased flaring and fuel gas usage. In October 2020 Tartan dropped out of the EU ETS due to production cessation and the resultant reduction in the combustion of hydrocarbon fuels and flaring.

**ENVIRONMENTAL PERFORMANCE**

**DISCHARGES  
TO SEA**



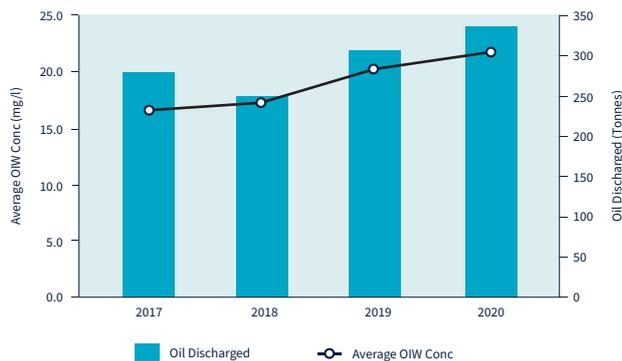
# OIL IN PRODUCED WATER (OIW)

The fluid extracted from our oil wells contains a mixture of oil, entrained gas and water. The primary function of our offshore installations is to separate the oil, gas and water, before sending the oil onshore and either reusing the produced gas as fuel, using it to aid lift in wells, or combusting it in the flare. The water is treated before safely discharging it to sea. The treated water may still contain some oil at the point of discharge.

To protect the marine environment, industry regulators place strict limitations on both the concentration and quantity of oil discharged in produced water, with a drive towards minimising these discharge concentrations. At these low concentrations, the entrained oil quickly disperses and is broken down by weathering and biodegraded by marine microorganisms. The UK government enforces a standard, internationally agreed, emission limit value of 30 mg of oil per litre of produced water discharged (flow weighted average over one month), to which all our offshore installations must adhere to.

The total amount of produced water discharged from our assets during 2020 was 15,531,575 m<sup>3</sup>. This discharge contained 340 T of dispersed oil at an average concentration of 21.88 mg/l.

**Figure 6** shows an increase in the total mass of oil discharged to sea in 2020. This increase in mass is directly linked to not only the volume of produced water discharged, but also the concentration of oil within each discharge stream. Across our installations we saw a modest 1.53 % uplift in produced water volume on the previous year. This can be linked back to increased water cut from aging wells and the cessation of production from the Tartan Alpha platform in August 2020. **Figure 6** also shows a small increase (1.05 mg/l) in the Company average discharge concentration for 2020 compared to 2019. This increase can be attributed to the accumulation, throughout the year, of numerous instances where sample discharges of more than 100 mg/litre were recorded. Such discharges are notified to the environmental regulator as OPPC non-compliances and are generally attributed to process upsets and/or poor separation facilities linked to deteriorating weather in the case of Bleo Holm FPSO. In addition, Clyde experienced OIW issues due to a tree change out and when Flyndre fluids were routed through the Clyde process. Although there was an increase in the annual average OIW discharge concentration, at a Company level, the average concentration remains significantly below the permitted limit.



**Figure 6**

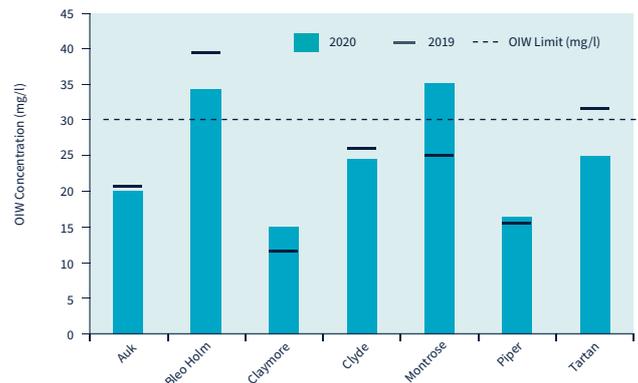
Annual Average Oil in Water Concentration and Total Mass of Oil Discharged to Sea

**Figure 7** illustrates the annual average OIW concentrations for each operating installation in 2020 with 2019 as a comparison. With the exception of Bleo Holm and Montrose, all other installations achieved better than the 30 mg/l threshold for discharges to sea in 2020.

The North Sea is a harsh environment and inclement weather/sea states are not uncommon, during such instances the Bleo Holm FPSO experiences vessel rolling. The rolling motion has a consequence on the effectiveness of the separation system resulting in the inability to efficiently polish the discharge stream. As a result, during such periods, higher than normal concentrations of oil are discharged within the produced water stream. This ultimately has a knock-on

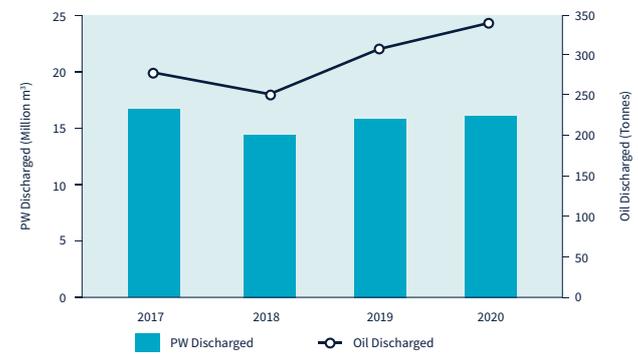
effect to the annual average OIW concentration for the installation, which for 2020 was 35.1 mg/l.

Montrose and the Montrose BLP experienced OIW issues throughout 2020 that were attributed to the 1st stage separator and level control issues. The overall OIW figure for Montrose for 2020 was 36.2 mg/l.



**Figure 7**

Installation Oil in Produced Water Performance



**Figure 8**

Annual Discharge Mass of Oil and Volume of Produced Water

As outlined with **Figure 6** above the mass of oil discharged to sea is directly correlated to the volume of water and the concentration of oil within the discharge stream. Higher than normal concentrations of oil in the discharge stream result in increased oil mass discharged to sea.

**Figure 8** highlights an increase in mass of oil discharged throughout 2020 in comparison to 2019 of 21 tonnes; however, the increase in volume of produced water discharged is not significant at 234,644 m<sup>3</sup>. Therefore, the uptick of mass of oil discharged in 2020 can be correlated directly to the higher annual average oil in water concentrations exhibited at Montrose, Bleo Holm, Claymore and Piper as highlighted in **Figure 7** above when compared to 2019.

Due to the nature of produced water, discharges can occasionally give rise to an oil sheen on the sea surface around the installation. Periodically, either due to poor plant performance resulting in sustained higher oil in waters, or calm weather, sheens can extend some distance from the discharge point. Any notifications of sheens reported on our installations are investigated, and, if necessary, steps taken to rectify the cause. Where these sheens are considered more significant than normal, and extend outside the platform 500 m zone, we are required to notify the environmental regulator via a PON1 Permitted Discharge Notification (PDN). During 2020 the Company raised four such notifications. This was an increase of three from 2019 and can be attributed to sheens from Montrose and Clyde.

# PRODUCTION CHEMICALS

The Company utilises a variety of chemicals within the offshore production process; chemicals are used to maintain and operate subsea infrastructure, improve the flow of fluids from the reservoir, aid separation, prevent corrosion and remove deposited solids within vessels. Production chemicals are then either exported with oil to shore, degraded within a closed loop system or discharged to sea from the produced water stream.

The use and discharge of production chemicals offshore is heavily regulated through the approval of a chemical permit for each installation, as well as the use of pipeline or well intervention chemical permits, which incorporate regulatory limits for each chemical used and discharged. Chemical use and discharge offshore is regulated through the Offshore Chemicals Regulations (OCR) 2002 (as amended). These regulations implement the OSPAR Decision 2000/2 on a Harmonised Mandatory Control System (HMCS) for the Use and Reduction of the Discharge of Offshore Chemicals on the UK Continental Shelf. The HMCS details requirements for the comprehensive testing, ranking, hazard assessment and risk management of chemicals and, in addition, the substitution of certain chemicals by less hazardous alternatives. The Company ensures all production chemicals used during our offshore operations are covered, including the use and discharge, by a relevant chemical permit. Additionally, through internal assurance activities we ensure operations are conducted in accordance with the conditions of the permit. The quantity of chemicals used and discharged is then reported quarterly to the environmental regulator.

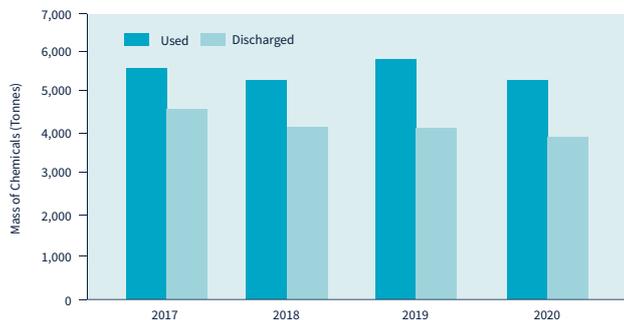


Figure 9 - Tonnage of Production Chemicals Used and Discharged per year

Figure 9 illustrates that there has been a slight decrease in both the use and discharge of production chemicals in comparison with 2019. This decrease is primarily linked to a reduction in installation activity due to varying circumstances, which more than offset the increased activity at other installations in the fleet. The decrease in production chemical use was associated with; a prolonged shutdown on Bleo Holm, reduced production from the Shaw well linked to the Montrose installation, flow assurance works which reduced hydrate formation and a lack of water injection availability on Clyde and the Cessation of Production (COP) of one Installation. These decreases in overall platform usages of production chemicals offset the increased usage at Claymore due to; higher uptime and issues with Scapa produced water quality, and at Piper due to the unavailability of the amine plant leading to increased chemical injection.

As per 2019, the Company maintained steady production uptime across the fleet, which leads to a reduction in inefficient chemical use linked to start-ups and shutdowns, during which large quantities of chemicals are often utilised to maintain or help stabilise the process.

Throughout 2020, the Company expanded its Decommissioning portfolio, with the Tartan installation transitioning to COP in August 2020. The COP of this installation, in combination with the continued Not Normally Attended (NNA) mode of two formerly producing installations and a further one remaining as a pumping station to support other installations in the area, leads to a reduction in production chemical use across these installations. Since COP in August, the production chemical use on Tartan has reduced significantly in comparison to 2019 levels.

Some production chemicals used have a substitution (SUB) warning, meaning they contain a component that may present a hazard to the marine environment. An important part of the HMCS is the phased replacement of these harmful chemicals.



Figure 10 - Usage of Chemicals with Substitution Warning 2016 - 2019

Figure 10 shows a decrease in substitution chemical usage in 2020 compared to previous years across all the company's activities. This is primarily due to the COP of Tartan, which significantly reduced the quantity of SUB chemicals used on this installation compared to 2019, and a significant reduction in the quantity of a SUB chemical used in the produced water on Bleo Holm, (due to a reduction in produced water rates). As with other production chemicals, the use of SUB chemicals is directly attributable to production uptime of the installations rather than the addition of new chemicals with a substitution warning. This decrease in SUB chemicals on these installations offset the slight increase in SUB chemicals used on Claymore, due to Scapa produced water quality issues.

To reduce the number of SUB chemicals used on our installations, we work in conjunction with our chemical vendors to seek alternatives, which do not compromise on production optimisation or carry SUB warnings and trial them on our installations. In 2020, due to the Global Pandemic, a number of planned works to swap out or progress the swap out of SUB chemicals were postponed, due to bedspace restrictions on a number of installations and reduction in work to essential works only.

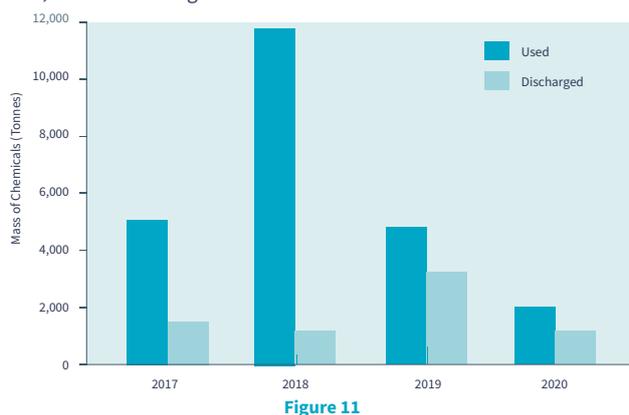
The Company actively reviews each installation's chemical permit application on a regular basis and removes unused products, to ensure our permits remain current. Furthermore, on an annual basis, the Company reviews the use of substitution chemicals with chemical vendors to identify priority chemicals for swap out for the coming year. Chemicals identified and agreed for swap out are then added as a KPI to the chemical vendor's annual contract. To ensure a continued focus on this issue throughout the year, these KPIs are monitored at project-specific and quarterly business review meetings. However, swapping out long term bespoke chemicals, which have acquired a substitution warning, comes with its own challenges and whilst best endeavours are made, they are not always successful, because of their uniqueness. To combat this, some products are swapped out even if the new chemical also carries a SUB warning, as the new chemical often has a lower Risk Quotient and therefore an environmental gain from the substitution.

Despite these challenges, in 2020, the Company ceased the use of five chemicals which carried a SUB warning (four associated with Tartan COP and one SUB chemical which was used temporarily due to COVID-19 supply issues). Additionally, three further substitution chemicals were removed from permitry as no longer required.

# DRILLING, WELL INTERVENTION AND PIPELINE CHEMICALS

Chemicals are required to support and facilitate the safe handling of Wells during Drilling, Well Interventions and Pipeline Operations. Chemicals are specifically selected to optimise operations, integrity and performance. Where possible 'greener' chemistries are introduced and brought into use where efficiency and safety are not compromised.

As can be seen from **Figure 11**, chemical consumption in 2020 was less than 2019. This reduction directly correlates to the impacts of the sharp drop in oil price and the Global pandemic. Because only priority workscopes and routine integrity requirements to maintain existing well stock were carried out. Consequently, there was less use of chemicals throughout 2020 than that expected from a normal operating year. As per previous years the discharge of chemicals is consistently lower than the use. This is in part due to the type of operations being conducted. For example, in Phase 1 of well decommissioning to suspend wells through the setting of plugs filtered treated seawater is used to push well fluids further down the wellbore and into the formation through a practice known as bull heading, thereby highlighting significant chemical use, but no discharge to the marine environment.



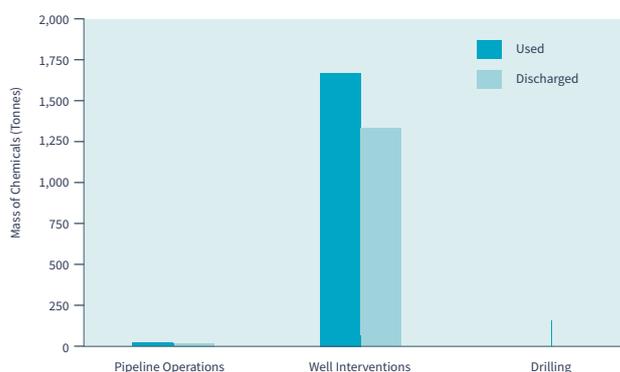
**Figure 11**  
Total Chemicals Used and Discharged During Drilling, Well Intervention and Pipeline Operations

Routine well Intervention activities include scale squeezes, scale soaks, flushing of lines, annulus top ups and pressure testing. Chemicals utilised for the removal of scale and solids build-up in wells continues to account for a significant volume used in well management. This activity is essential to ensure no restrictions within flowlines to allow the clear passage of fluids, which can influence pressure build up and reduce the volume of hydrocarbon flowing. Chemicals are also required to protect the well and pipework itself from microorganisms and corrosion (rusting/pitting). Whenever seawater is injected into the well this is dosed with biocide to ensure there is no bio-risk introduced to the well environment.

As assets increase with age and reservoirs produce higher water cut volumes, there is an increased risk of corrosion. In response there is an increased requirement for well interventions and assurance to protect the well, infrastructure and environment. As wells age, well pressures must be managed along with the integrity of the well infrastructure. Pressure tests (which require chemical use) are important to provide the required data to understand and maintain the integrity.

In 2020 there were two focused well campaigns completed on Montrose (using a high-pressure unit) and Claymore to increase production rates. As part of risk management, the company continues to suspend wells no longer in use, these fall under

'plugging and abandonment' operations. There were fewer plugging and abandonment operations conducted in 2020 than in 2019.



**Figure 12**  
2020 Chemical Use and Discharge by Operation

**Figure 12**, demonstrates the comparison of mass of chemicals used and discharged for operations associated with Pipeline, Well intervention and Drilling activities undertaken in 2020. As can be seen, there were no drilling activities and minimal pipeline operations completed in 2020. However, a single well infill drilling campaign commenced on the Claymore installation in November 2020 which ran into 2021 where reporting of this activity will be captured.

Two key Pipeline operations were conducted during the year these were; the Bleo Holm Riser Replacement Project and the initiation of the Tartan Area decommissioning project which was linked to the COP in August 2020 of the Tartan Installation. Between these two operations only ~7.5 tonnes of chemical was used and ~6 tonnes was discharged. There were further planned pipeline operations which were postponed as a result of impacts from the low oil price and the Global pandemic. In contrast to well intervention operations, pipeline operations will discharge most chemicals through flushing and barrier testing, but the quantities involved are significantly lower compared to well based activities.

As highlighted above, the Company continued to undertake priority driven well intervention operations. In contrast to pipeline and drilling activities, chemicals utilised as part of Well intervention activities are generally routed back through the production installation process, where discharge occurs at the host installation along with the produced water, retained downhole or disposed of within a donor well.

As with the production related chemicals, reducing the number of substitution chemicals used during well operations, is an area of focus. Due to the very specialist nature of chemicals used during complex well activities, alternative chemistries which provide the same or improved performance are often limited. The Company continues to work closely with chemical vendors and drilling contractors to test and replace substitution chemical products where it is operationally feasible to do so.

**ENVIRONMENTAL PERFORMANCE**

**ACCIDENTAL  
RELEASES**

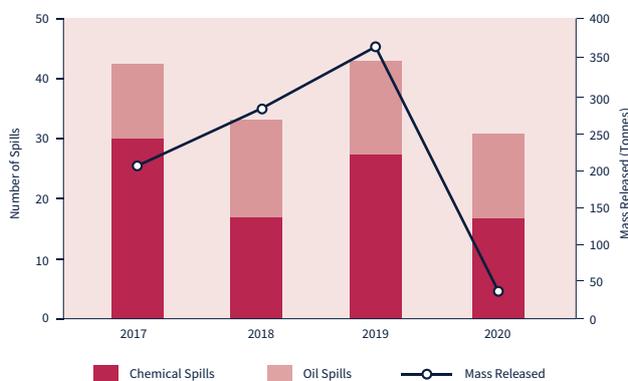


**Preventing oil, gas and chemical leaks is the Company's first Golden Rule. Assuring plant integrity is critical to the prevention of spills across our assets, in combination with raising awareness of spill risks, ensuring individuals are competent to perform their duties, and adhering to the Company operating procedures and our environmental permit requirements. If spills do occur, they are thoroughly investigated and corrective actions instigated.**

In 2020, there was a decrease in the overall number of spills reportable to the regulator, with the number of reported oil spills remaining relatively consistent with past years. This decrease in spill incidents could have a correlation to a reduction in offshore activities to essential works only throughout 2020 (as a result of the oil price drop and Global Pandemic). **Figure 13** shows an 89% decrease in total mass released from such reportable incidents when compared to 2019.

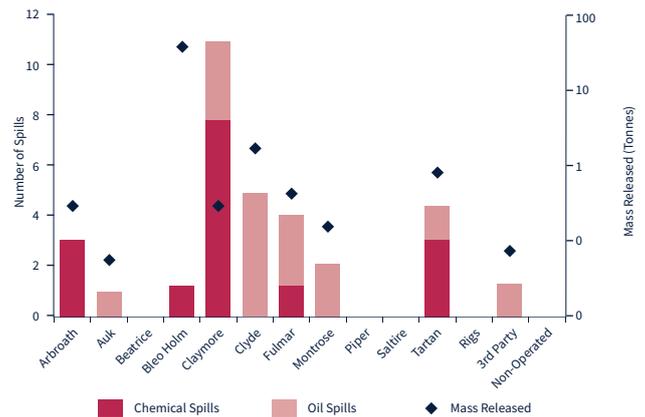
The overall decrease in spill mass was directly related to the rectification of several ongoing subsea hydraulic control fluid releases identified on our subsea infrastructure. These issues were repaired during multiple Dive Support Vessel (DSV) campaigns conducted throughout 2019 and 2020.

Uncontrolled releases of hydraulic control fluid from our subsea systems can contribute a significant number of our reportable incidents and were responsible for 94% of the tonnage released from spills in 2020. This high volume of hydraulic fluid lost can be attributed to aging systems and their design (these systems are designed to be operated to failure). Although any uncontrolled releases from these systems are reportable to the environmental regulator as a spill, under normal operations, these systems discharge 100% of their control fluids. Environmental impact assessments, which include computer modelling of the loss, have illustrated that several hundred tonnes would have to be released instantaneously to have a discernible impact on the environment (as hydraulic fluids comprise mainly of water). The uncontrolled release of these chemicals from the Company's assets in 2020 occurred over a protracted period of time; therefore, they are predicted to have no significant impact on the receiving marine environment, as illustrated by modelling for environmental risk assessments. Furthermore, during any period of an ongoing release, the Company is fully engaged with the regulator and corrective action plans are communicated, along with timescales for rectification.



**Figure 13**

Overall total number of oil and chemical spills, and mass released 2017 - 2020



**Figure 14**

Number of oil and chemical spills and mass released to sea per installation in 2020

As can be seen in **Figure 14**, Bleo Holm has released the largest mass from spill incidents in 2020. Though Bleo Holm only had one reportable spill in 2020 with a total mass released of 0.24 tonnes of hydraulic control fluid there was, however, an associated ongoing spill from 2019. This spill incident was located at the Blake Field, which was repaired prior to the end of Q1 2020 (see **Table 3** for total mass released in 2020). Claymore, meanwhile, had the most numerous spill occurrences; with eleven accidental releases in total (three oil and eight chemical). No individual incident was reported as > 1 tonne released and the total accumulated mass released of the eleven incidents associated with Claymore equated to 0.308 tonnes.

**Table 3 - 2020 Spill Mass > 1 tonne**

Location	Brief Details	Hydrocarbon / Chemical	Mass Released (Tonnes)
Blake Field	Subsea release of hydraulic control fluid from faulty Subsea Control Module (SCM) at the Blake B1 well. Incident reported in 2019 but remained ongoing until rectification works completed prior to the end of Q1 2020.	Chemical	36.128

As well as operating offshore installations, the Company operates two onshore terminals, which also experience environmental incidents on occasion. Such incidents are reported to and regulated by the Onshore Environmental Regulator, Scottish Environment Protection Agency (SEPA). During 2020 there were no such reportable incidents at either of the Company's onshore terminals.

**ENVIRONMENTAL PERFORMANCE**

**WASTE  
MANAGEMENT**



Waste Management is a key focus area for the Company and the energy industry as a whole. Through the Company’s activities of extracting oil and gas and decommissioning the Company will utilise materials, consume energy and generate waste.

In conjunction with our environmental policy, we have set targets for waste management and continue to explore opportunities in reducing the volume of waste generated by our activities. This can include the removal of waste streams or efficiency improvements; resulting in few resources required and or less waste generated.

By applying the waste hierarchy we can prioritise opportunities to reduce, reuse, recycle, recover energy and responsibly dispose of waste. This can harness and maximise the value of waste as a resource, minimise the use of energy, minimise the consumables involved in moving and processing the waste and reduce volumes being sent to landfill.

Waste is generated from a variety of sources including; our onshore office, offshore accommodation facilities, maintenance, replacement and repairs, drilling activities and the packaging of consumable products. Waste is also generated in the decommissioning and removal of offshore installations and infrastructure which are no longer involved in producing hydrocarbons. These waste materials may no longer be of use to the company but can be of value to third parties.

All waste materials generated offshore are segregated by type and shipped to shore for treatment, reuse, recycling, and safe disposal by licensed waste companies. In compliance with legislation and best practice, the company has controls in place for the safe handling, storage, treatment and disposal of waste arising from activities. We aim to continually improve in this area by minimising the associated impacts related to waste generation.

Figure 15 represents the percentage of waste sent through disposal routes for the total volume of waste generated offshore in 2020, with 87% of all company waste being recycled, compared with 64% in 2019. The chart includes both operational and decommissioning waste.

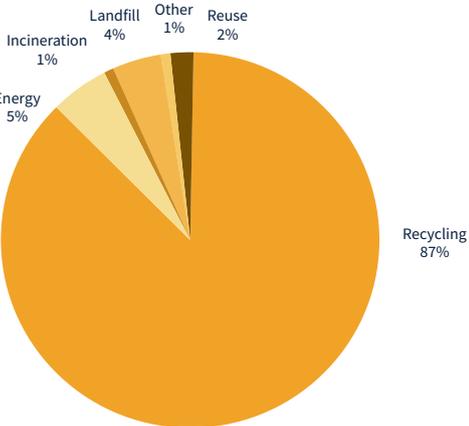


Figure 15  
2020 Percentage of Waste by Disposal Routes

There are many factors which influence the quantity of waste from our business entering the various disposal routes. Such influencing factors include any new installation or commissioning work and the duration and frequency of planned shutdowns on installations, during such times significant work is undertaken in upgrading the installation and equipment. The number of personnel onboard the installations can fluctuate throughout the year depending upon planned operations, as can the number of rigs and vessels engaged in activities through the Company. Decommissioning works are beginning to exert an increasing impact on the quantity of waste generated, especially recycling and reuse due to the significant volumes/tonnages of scrap metal. The influence of decommissioning wastes on the 2020 figures is considerable due to the completion of Buchan Alpha’s deconstruction

at Dales Voe, Shetland. In addition, both Beatrice and Saltire assets have been in ‘Normally Not Attended’ (NNA) status since 2018 in preparation for decommissioning, with no personnel onboard for close to 50% of the time.

A reduction in overall operational activity and planned work scopes was experienced in 2020. This was influenced by a steep fall in oil price followed by the Global Pandemic and national lockdown. Whilst managing these risks the company continued to operate with reduced offshore personnel and a focus on safe production and priority operational work scopes.

Figure 16 shows a comparison over a 4 year period of the total waste generated by the Company’s offshore activities.

The overall waste generated in 2020 has increased significantly in comparison to 2019. This increase is attributed to the substantial volume of waste generated during decommissioning of the Buchan Alpha Platform, which amounted to ~ 12,400 tonnes, of which 98% was reused/recycled/recovered and only 2% went to landfill.

Operational waste generated in 2020 fell significantly. This decrease was certainly influenced by the global pandemic and economic factors. Managing COVID-19 risks alongside the strategy for improved shut down efficiencies, with fewer and shorter annual shutdowns of installations throughout the year, prevented any spike in associated waste volumes. Platform and rig based plug and abandonment activity remained consistent with 2019 with a Platform High Pressure Unit on contract on Montrose and additional personnel likely contributing to the volume of non-hazardous waste generated.

In 2020 the company had a decrease in the volume of hazardous waste being treated onshore as shown in Figure 16. This decrease can be attributed to reduced operational activity, personnel and work scopes and no new wells being drilled, which generate larger volumes of special waste requiring onshore treatment ahead of disposal. A single infill well was drilled on the Claymore platform in 2020 using oil based mud at the end of the year. The waste generated in preparing the site and delivering the well on a day-to-day basis was not segregated from the operational waste so can’t be reported separately. As the drilling ran into 2021, the reporting of drill cuttings returned to shore for disposal falls out with 2020 reporting data.

The decommissioning of Buchan Alpha’s influence on the non-hazardous waste figures is clearly displayed. Over 11,500 tonnes of scrap metal waste was generated, the majority of which was recycled (structural materials) or reused (i.e. the sea anchors). Hazardous waste from Buchan Alpha was minimal in comparison (~240 tonnes) with the majority being recovered to energy (oils).

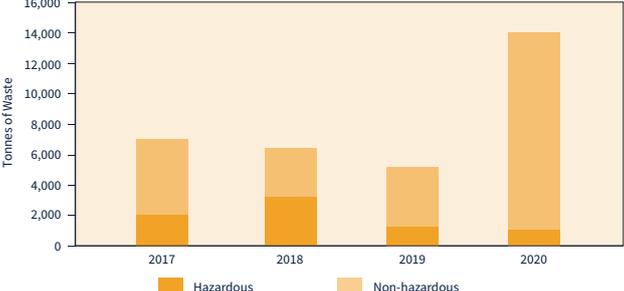


Figure 16  
Total Hazardous and Non-hazardous Waste Produced 2017 - 2020

# WASTE MANAGEMENT

As shown in **Figure 17**, the proportion of waste material sent to landfill in 2020 has decreased slightly compared to the previous year. This reduction is most likely linked to less total waste generated by the company from operations. There was also a change in the waste disposal supply chain with additional onshore sorting of general waste and increased routing of 'Waste to Energy' through incineration in preference to landfill disposal. Therefore, maximising the waste as a resource, powering electricity generation where possible.

The decommissioning of Buchan Alpha resulted in 2 % (~260 tonnes) of waste being routed to landfill.



**Figure 17**  
5 % Waste Sent to Landfill

Recent examples of this associated with Buchan Alpha have included the reuse of lifeboats, CAT engines, pumps, smoke detectors, sea anchors, fire extinguishers and communication domes. Additionally, reading books, catering equipment, kitchenware, PPE, furniture and electrical goods were donated to charities.

## Continual Improvement:

In 2020 although the pandemic resulted in overall operational activity being minimised and personnel numbers reduced, engagement and interface with sites increased to focus on areas of waste management and compliance improvement. The change in supply chain for waste disposal created increased visibility of waste being generated and associated disposal routes. In turn this enabled a new monthly communication of waste breakdowns for sites to review and compare against, specifically identifying waste generated that is going to landfill. Focal points on sites continue to be proactive in challenging waste streams and identifying recycling route options and initiatives. A number of these have required discussion with vendors to provide improved alternatives, i.e. single use plastic tie wraps for securing shipments. Initiatives to support charities have reduced waste streams and provide benefit, such as the routing of textiles (linens) for reuse.

Our NNA assets will continue to generate low levels of decommissioning waste as they prepare for final removal and disposal. The decommissioning of these assets and their associated infrastructure will continue to periodically generate significant volumes of waste material. This challenge is met with specific waste management plans and closely working with the supply chain to identify innovative solutions which were possible can provide further benefit to other users through resale, reuse or recycling. The decommissioned materials are only classified as waste as they no longer serve the purpose for which they were designed and installed. The Company is committed to promote the 'Circular Economy' and will continue to explore opportunities for waste and extend the life span of materials and products in other ways and forms. This contributes to the circular economy and promotes waste as a resource with a future.

# APPENDICES

## GLOSSARY

<b>BOE</b>	Barrels of Oil Equivalent
<b>CH<sub>4</sub></b>	Methane
<b>CO</b>	Carbon monoxide
<b>CO<sub>2</sub></b>	Carbon dioxide
<b>CO<sub>2</sub>e</b>	Carbon dioxide equivalent
<b>COP</b>	Cessation of Production
<b>DSV</b>	Dive Support Vessel
<b>EU ETS</b>	European Union Emissions Trading Scheme
<b>FPSO</b>	Floating Production, Storage, Offload vessel
<b>GHG</b>	Greenhouse Gas
<b>HMCS</b>	Harmonised Mandatory Control System
<b>KPI</b>	Key Performance Indicator
<b>N<sub>2</sub>O</b>	Oxides of Nitrogen
<b>NM VOC</b>	Non-Methane Volatile Organic Compounds
<b>NNA</b>	Not Normally Attended
<b>NO<sub>x</sub></b>	Nitrogen Oxide
<b>OBM</b>	Oil Based Mud
<b>OCR</b>	Offshore Chemicals Regulation 2002
<b>OIW</b>	Oil in Produced Water
<b>OPRED</b>	Offshore Petroleum Regulator for Environment and Decommissioning
<b>OSPAR</b>	The Convention for the Protection of the marine Environment of the North East Atlantic
<b>PDN</b>	Permitted Discharge Notification
<b>PW</b>	Produced Water
<b>SEMS</b>	Safety and Environmental Management System
<b>SEPA</b>	Scottish Environment Protection Agency
<b>SO<sub>x</sub></b>	Oxides of Sulphur
<b>SUB</b>	Substitution
<b>The Company</b>	Repsol Sinopec Resources UK limited
<b>The Regulator</b>	Department for Business, Energy & Industrial Strategy (OPRED)

# 2020 DATA TABLES

2020 Data Table 1	Atmospheric Emissions (Tonnes)						
	SITE	CO <sub>2</sub>	Nox	N <sub>2</sub> O	SO <sub>x</sub>	CO	CH <sub>4</sub>
Arbroath Platform	5,443	36	0	2	16	0	4
Auk A Platform	59,259	78	2	5	129	554	2,476
Beatrice	18	0	0	0	0	0	0
Blane	-	-	-	-	-	-	-
Buchan A Platform	-	-	-	-	-	-	-
Claymore A Platform	200,966	810	16	2	471	144	77
Clyde Platform	129,145	219	9	6	283	137	114
Flotta Terminal *	93,554	203	7	6	126	24	4
Fulmar A Platform	89,257	94	7	1	195	59	37
Montrose A Platform	161,366	784	11	10	356	198	139
Nigg Terminal	363	7	0	0	2	0	0
Piper B Platform	341,430	599	23	3	799	668	173
Ross FPSO Bleo Holm	96,698	276	7	9	219	148	40
Saltire A Platform	369	7	0	0	2	0	0
Tartan A Platform	100,419	270	7	5	240	83	69
Pipeline Operations	-	-	-	-	-	-	-
Mobile Drilling / Well Interventions	-	-	-	-	-	-	-
Non Operated Subsea Tiebacks	-	-	-	-	-	-	-
<b>Total</b>	<b>1,278,288</b>	<b>3,382</b>	<b>88</b>	<b>51</b>	<b>2,837</b>	<b>2,017</b>	<b>3,132</b>

2020 Data Table 2	Produced Water			Chemicals (Tonnes)		Waste Generated (Tonnes)		Accidental Releases		
	SITE	Average Oil In Water (mg/l)	Total Water Volume (m <sup>3</sup> )	Oil Discharged Weight (Te)	Used	Discharged	Hazardous	Non-Hazardous	# Oil Spills	# Chemical Spills
Arbroath Platform	-	-	-	282	9	24	63	-	3	0.41
Auk A Platform	21	1,367,971	29	100	79	22	65	1	-	0.05
Beatrice	-	-	-	-	-	17	6	-	-	-
Blane	-	-	-	0	2	-	-	-	-	-
Buchan A Platform	-	-	-	-	-	242	12,163	-	-	-
Claymore A Platform	16	4,097,063	65	1,589	1,237	49	201	3	8	0.31
Clyde Platform	25	1,051,038	26	532	287	69	193	5	0	1.69
Flotta Terminal *	4	5,546,691	21	-	-	14	358	-	-	-
Fulmar A Platform	-	-	-	28	19	25	164	3	1	0.51
Montrose A Platform	36	1,335,394	48	312	379	63	227	2	-	0.16
Nigg Terminal	-	-	-	-	-	490	104	-	-	-
Piper B Platform	19	6,014,276	117	1,171	633	68	239	-	-	-
Ross FPSO Bleo Holm	35	1,198,694	42	1,288	1,146	63	288	-	1	36.37
Saltire A Platform	-	-	-	0	0	2	9	-	-	-
Tartan A Platform	26	467,139	12	104	89	77	124	1	3	0.64
Pipeline Operations	-	-	-	7	6	-	-	-	-	-
Mobile Drilling / Well Interventions	-	-	-	2,051	1,326	-	-	-	-	-
Non Operated Subsea Tiebacks	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>22</b>	<b>15,531,575</b>	<b>340</b>	<b>7,464</b>	<b>5,211</b>	<b>1,227</b>	<b>14,202</b>	<b>15</b>	<b>16</b>	<b>40.14</b>

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