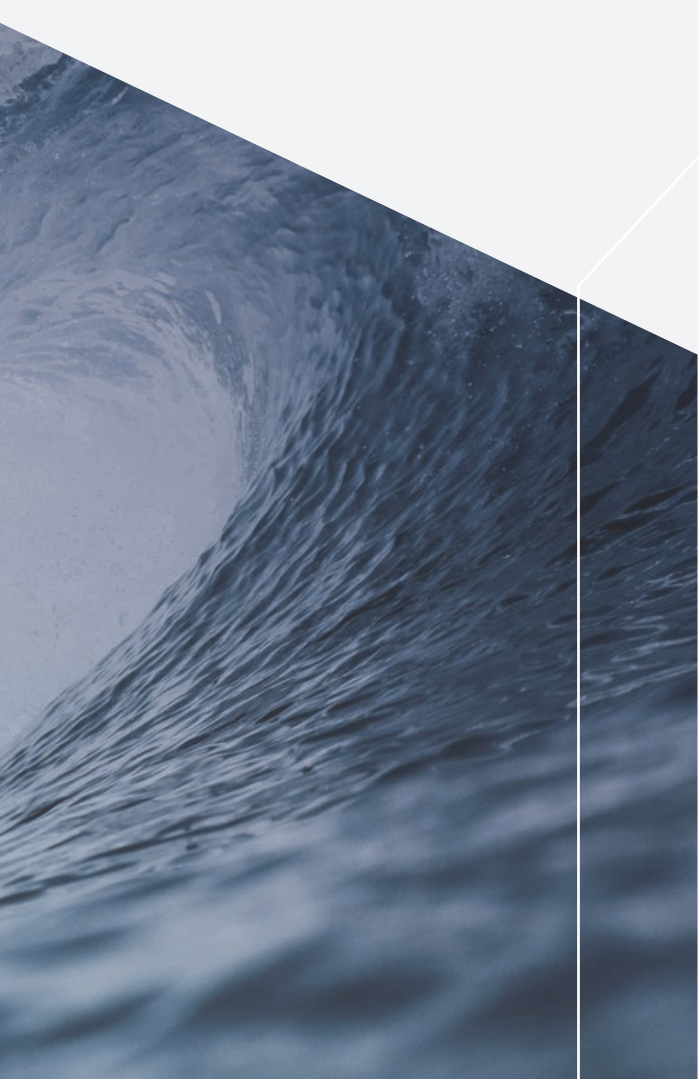


2020 Annual Public Statement of Environmental Performance

For Premier Oil UK Limited
(a Harbour Energy company)



Premier Oil UK Limited, referred to as 'Premier Oil' throughout this report, is now a Harbour Energy company.

Premier Oil's UK business comprises oil and gas assets owned by three separate subsidiary companies – Premier Oil UK Limited, Premier Oil E&P Limited and Premier Oil E&P UK EU Limited. For the purposes of this statement, we refer to these collectively as Premier Oil.

Harbour Energy was formed in 2021 through an all-share merger between Premier Oil and Chrysaor. We are now the largest UK listed independent oil and gas company. We have a global portfolio, with a leading position in the UK and multiple international growth options.

Across our diversified portfolio of interests, we have 1,500 employees and produce over 200,000 barrels of oil equivalent per day. Our portfolio holds a balance of oil and gas resources, with 80 percent of our production and 93 percent of our reserves being in the UK.

Integration activities are now ongoing to align our management systems, but for the 2020 reporting period, Chrysaor will provide a separate OSPAR Report. This report contains the environmental performance for Premier Oil's activities in the UK in 2020.

Contents

Foreword	3
Introduction	4
Environmental Management	6
UK Operations	10
2020 Objectives	19
2020 Performance	21
2021 Objectives	37
Abbreviations	39

Foreword

At Harbour Energy, our role is to help meet the world's energy needs through the safe, efficient and sustainable production of hydrocarbons. As our business continues to grow, we know that working together to reduce emissions and align with the global ambition of Net Zero carbon grows ever more important.

Across all our assets, we are continuing to improve our plant efficiency as we seek to produce our hydrocarbons in the most environmentally sustainable way we can. Innovation will play a key part. By adopting the best available technology, we will minimise methane emissions while we work with industry to explore the potential for hydrogen production as well as carbon capture and storage.

Looking ahead, we will continue to use the strengths of our legacy companies to further reduce our emissions and to maintain affordable and reliable energy supplies for the world. We will also keep measuring, verifying and reporting our environmental, social and governance (ESG) performance metrics in support of our sustainability goals.

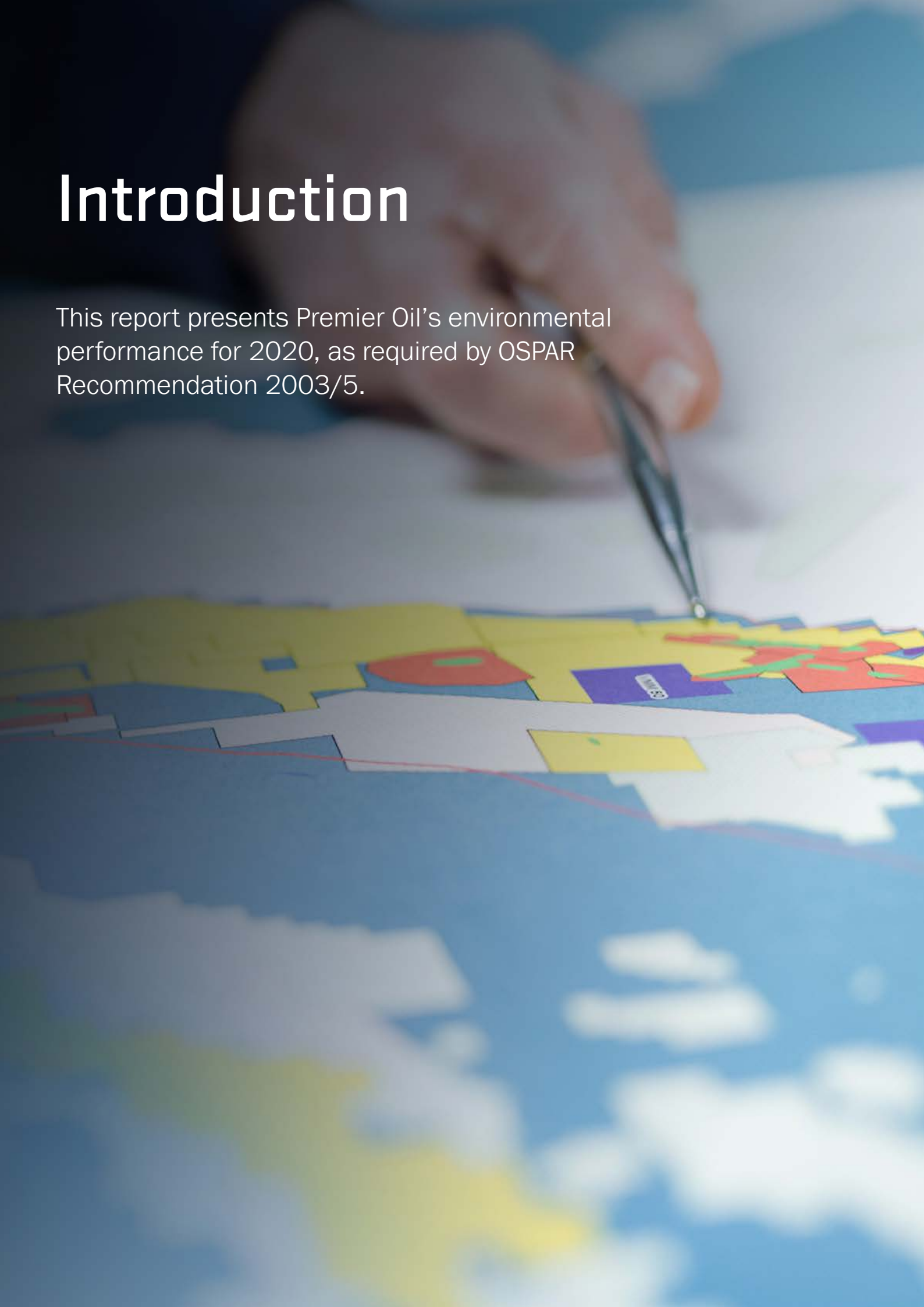
Harbour Energy is committed to achieving Net Zero greenhouse gas emissions by 2035.

Phil Kirk

**President and CEO Europe
Harbour Energy**

Introduction

This report presents Premier Oil's environmental performance for 2020, as required by OSPAR Recommendation 2003/5.



Introduction

Premier Oil's North Sea position was transformed in 2009 with the acquisition of Oilexco North Sea Limited then further expanded in 2016 with the purchase of E.ON UK's North Sea assets.

In 1Q 2021, Premier Oil completed an all-share merger with Chrysaor to become Harbour Energy plc. From 31 March 2021, Premier Oil is a wholly owned subsidiary of Harbour Energy plc.

Under Recommendation 2003/5 of the Oslo Paris Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) requires that all companies operating in the UKCS have systems and procedures in place to identify, monitor and control the environmental aspects associated with offshore activities.

During 2020, Premier Oil achieved successful re-certification to the international environmental management system standard, ISO 14001:2015 and moved to the new ISO 45001 standard. These certificates have now been superseded by Group-wide certificates incorporating all our global business units.

About this report

This environmental report focuses on the performance of Premier Oil's operated assets in the United Kingdom Continental Shelf (UKCS) in 2020.

For the purpose of this statement, the data included covers all production and drilling activities carried out in compliance with permits and consents.

The report aims to:

- describe our main assets and activities
- provide a brief overview of our environmental management
- provide details on key environmental aspects and their impact
- summarise our UK environmental performance and progress against objectives for the year.

In 2020, Premier Oil operated the Johnston, Catcher and Solan fields and the Tolmount Development.

We were also working on decommissioning end-of-life assets in the Balmoral and Huntington fields, following cessation of production in 2020.



Environmental Management

We are committed to operating responsibly and securely, never compromising on Health, Safety, Environmental or Security standards.



Environmental Management

Premier Oil is a wholly owned subsidiary of Harbour Energy plc. Following the merger in 1Q 2021, integration activities are now underway to align Chrysaor and Premier Oil's management systems.

Environmental Management Systems

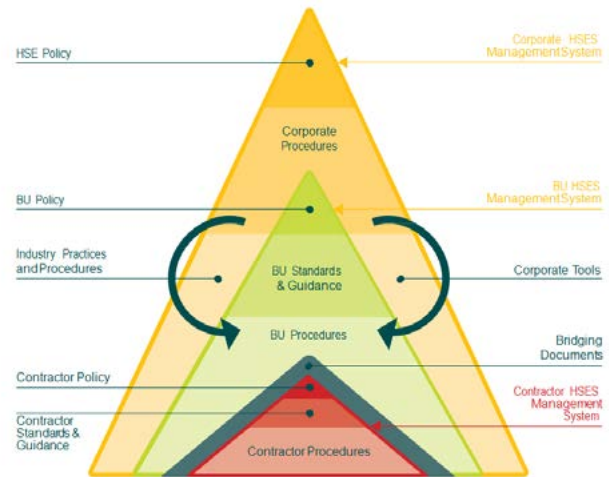
Premier Oil's Environmental Management System (EMS) is certified to ISO standard 14001:2015.

We are committed to operating responsibly and securely, never compromising on Health, Safety, Environmental or Security standards. This is enacted by our Health, Safety, Environmental and Security (HSES) policy.

Our Health, Safety, Environment and Security Management System (HSES-MS) exists to provide a systematic approach to the management of HSES issues, to protect our people and the environment and comply with UK legislation. The HSES-MS has a hierarchical document structure. It is based on the industry model prepared by the International Association of Oil and Gas Producers (IOGP) and embraces the principles of quality management as found in the ISO 14001, ISO 45001, and Occupational Health and Safety Assessment Series (OHSAS) 18001 international standards.

The HSES-MS comprises of:

- The HSES policy.
- Company expectations - these are the responsibility of the Chief Executive Officer and issued by the Group HSES manager; they apply to all our businesses.
- The tools to allow for implementation of the corporate expectations e.g. business unit and asset-specific procedures.



HSES Management System structure



HSES Management System framework/elements

Our HSES-MS has 10 individual elements. Each contains a set of concise expectations that are mandatory for implementation and maintenance within all the constituent parts of our group. They define what is expected when managing HSES risk during work activities.

Environmental Management

Carbon and Energy Reduction Strategy

Premier Oil's corporate Climate Change Policy set out our commitment to ensure we are greater than 65% Net Zero by 2020 and 100% Net Zero by 2030.

In 2020, we committed to develop all major projects on a carbon neutral basis in respect of Scope 1 and Scope 2 greenhouse gas (GHG) emissions. This was to be achieved by ensuring our projects are low carbon by design and carbon neutral by commitment.

Our UK Climate Change Strategy drives a culture to ensure that facilities are low carbon through the use of best available technologies (BAT). At the same time whilst continuing to facilitate operations-based reductions, supply chain alignment, the use of standard emission calculations and open performance reporting to the Carbon Disclosure Project (CDP).

By working to instil carbon assessment in our business decisions, we actively design low carbon facilities as part of development planning. We are working with our supply chain to set GHG and emissions key performance indicators (KPIs) in contracts with high environmental impact.

Low Carbon by Design, Carbon Neutral by Commitment



**Low Carbon
by Design**



**Flaring &
Venting**



**Process
Efficiency**



Methane



**Metrics, Targets
& Reductions**



HSE & Security Policy

Our HSE & Security Policy focuses our Management Systems on robust risk management, incident prevention and cultural development issues associated with our operations.

HEALTH, SAFETY, ENVIRONMENT & SECURITY POLICY

Premier Oil is committed to operating responsibly and securely, never compromising our Health, Safety, Environmental or Security standards. We will do all that is reasonably practicable to reduce HSES risks, ensure the safety and security of everyone affected by our operations, protect the environment by minimising our environmental impacts and protect our assets and business data.

To achieve this we will:

- Provide strong, visible leadership and commitment at all levels of the Company;
- Effectively identify hazards, threats and vulnerabilities to assess and manage risks;
- Meet or surpass our legal and other requirements (compliance obligations);
- Set objectives and targets to drive improvement;
- Support and train our people and assure their competence;
- Provide appropriate resources;
- Encourage open and honest communication;
- Effectively manage the HSES risks associated with contracted work;
- Maintain, safe, clean, healthy and secure workplaces to protect our people, environment, assets and data;
- Maintain protected high quality documented systems and processes;
- Plan and prepare for potential emergencies;
- Report, investigate and learn from any incidents and near misses;
- Routinely inspect the workplace and audit systems and processes;
- Seek opportunities to continually improve our performance.

It is the responsibility of everybody involved in Premier Oil to comply with our policies and Standards and to assist the Company in their implementation.

It is one of my primary duties to ensure that we all demonstrate strong leadership and visible commitment to Health, Safety, the Environment and Security.

Our goals to protect the environment and to continuously improve the health and safety of everyone involved with our operations, reflect how seriously I take this responsibility.

Achieving these goals goes beyond legal compliance: we must aspire to excellence and industry best practice in everything we do.

Our performance comes from the behaviours and actions of every one of us. We are all responsible for Health, Safety, the Environment and Security and I expect everyone:

- to follow procedures,
- intervene when we see unsafe acts or conditions;
- report all hazards and incidents; and
- seek to continuously improve our HSES management.

We must always be completely professional in every part of our business and show respect for our colleagues, partners, neighbours and the environment around us.

Premier Oil must be recognised as an environmentally and socially responsible company and as a safe and desirable place for our staff and contractors to work.

Tony Durrant
Chief Executive Officer
Premier Oil plc
1st January 2020



HEALTH, SAFETY & ENVIRONMENT. WE'RE ALL RESPONSIBLE.

NO SHORT CUTS. NO EXCEPTIONS. NO INCIDENTS.





UK Operations

Our legacy Premier Oil portfolio in the UK includes Balmoral, Solan, Huntington, Catcher, Johnston and the Tolmount Development.





Operated assets

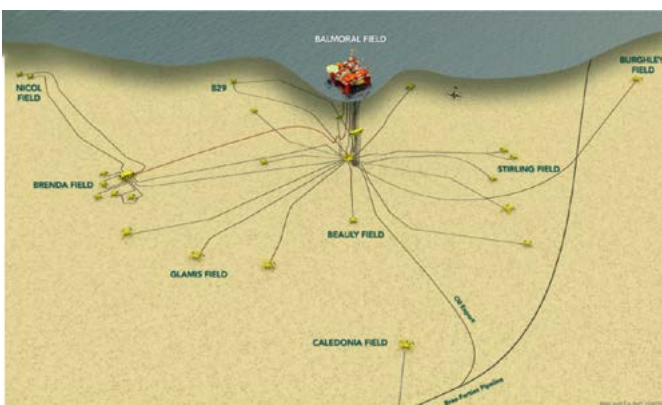
Balmoral

Balmoral is located in Block 16/21a of the central North Sea, approximately 125 miles (201 kilometres) north-east of Aberdeen and 20 miles (32 kilometres) west of the UK/Norway trans-boundary line. It lies in a water depth of approximately 147 metres.

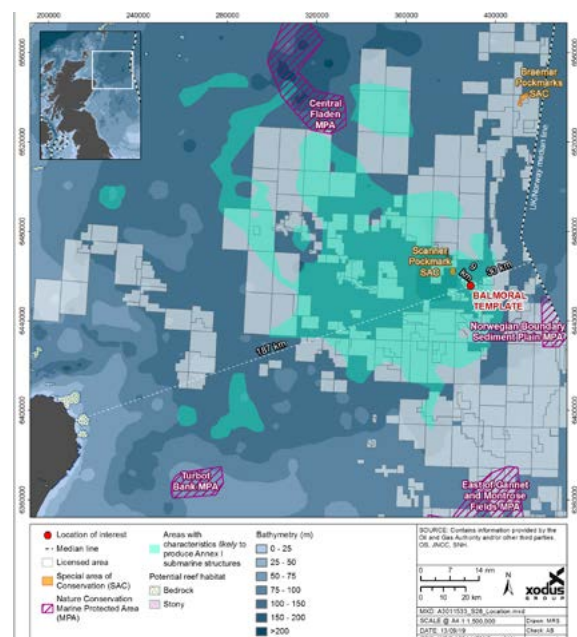
First oil was produced from the Balmoral field in 1986, and Premier Oil acquired operatorship of the installation as part of the acquisition of Oilexco North Sea Limited in 2009.

The *Balmoral* floating production vessel processed fluids from the Balmoral, Stirling, Brenda, Nicol, Burghley and Beaulieu fields. Crude oil was transported to shore via the Forties Pipeline System (FPS) to the Kinneil reception terminal on the Firth of Forth. Produced gas was used for power generation and gas lift, with excess gas flared from the installation. The water phase was treated to meet the regulatory standard for oil in water (OIW) and was then discharged overboard.

The Balmoral field ceased production on 28 November 2020. Subsea and topside flushing and venting operations have been taking place since November 2020 in preparation for sail-away of the FPV in 2Q 2021. Future decommissioning activities are planned in the area to remove the subsea infrastructure and to plug and abandon all wells.



Balmoral field schematic

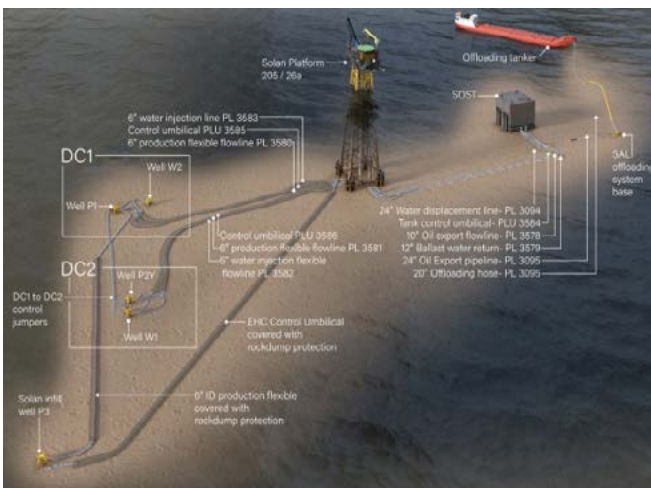


Balmoral FPV and Balmoral FPV location

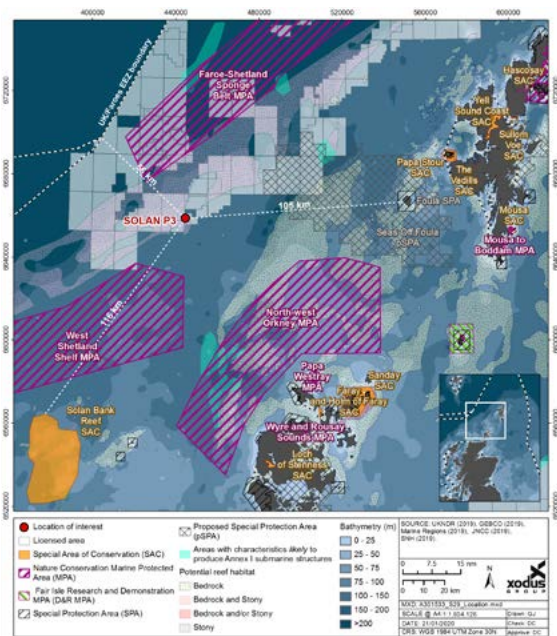
Solan

Solan is a single steel-jacket structure located West of Shetland in Block 205/26a of the UKCS. It lies 60 miles (96 kilometres) from the Scottish coast and 35 miles (56 kilometres) from the UK/Faroes median line in a water depth of approximately 138 metres.

The facility is designed to process fluids from two production wells supported by two water-injector wells. It has a peak production flow rate of 28,000 barrels of oil per day (bbl/d). Separated crude accumulates in a subsea oil-storage tank prior to offloading to a tanker. Produced gas is used for power generation with excess gas flared from the installation. Sea water and ballast water are treated and injected to maintain reservoir pressure. Produced water is treated through dedicated produced-water treatment facilities and discharged to the sea.



Solan field schematic



Solan location

Huntington

The *Voyageur Spirit* floating, production, storage and offloading (FPSO) vessel was the host installation for the Huntington field. The FPSO sat in approximately 89 metres of water in UKCS Block 22/14 of the central North Sea. The field lies approximately 126 miles (204 kilometres) from the Scottish coast and 17 miles (27 kilometres) from the UK/Norwegian median line.

The FPSO was located approximately 1.2 miles (1.9 kilometres) to the north of the Huntington drilling template. It was moored by 13 anchors, with flexible risers from the seabed entering the turret. The field development consisted of four production and two water-injection wells. The production wells were tied back to the *Voyageur Spirit* FPSO processing and export facility via a single flexible production flowline.

Crude oil was exported via a dynamically positioned shuttle tanker, and gas was exported via the Central Area Transmission System (CATS) pipeline.

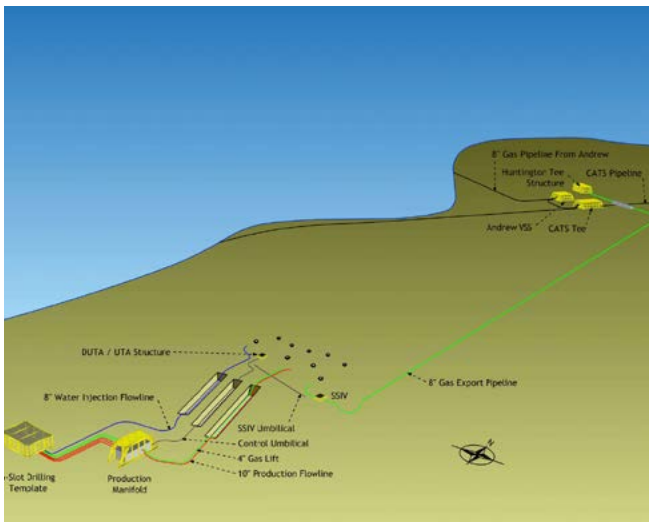
Voyageur LLC is the FPSO owner and Altera Voyageur Production Limited (Altera) was the appointed operator under the Offshore Installations (Offshore Safety Directive) (Safety Case etc.) Regulations 2015 (SCR 2015).

Altera was therefore responsible for the day-to-day health, safety and environmental management of the facility, including all environmental permitting requirements for production operations, including pollution prevention and control (PPC), chemical permits (CPs), and oil discharge permits (ODP).

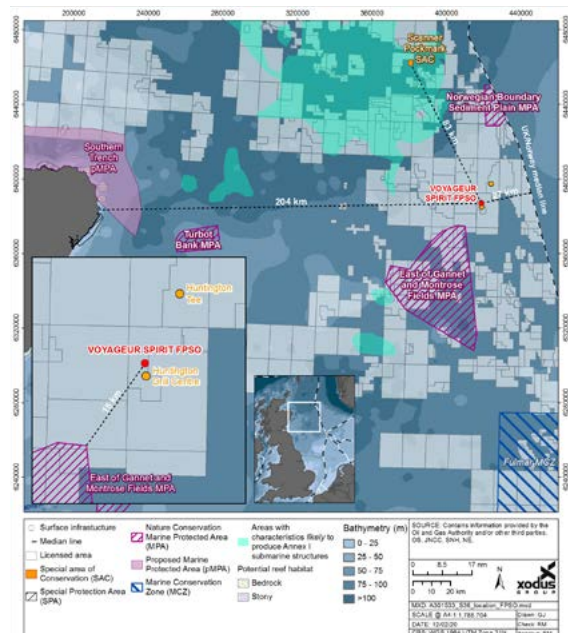
Premier Oil is the licensee, pipeline and well operator of the Huntington field. We are consequently responsible for the management of all HSES-related matters associated with these activities. From an environmental permitting and management perspective, we were responsible for the FPSO's greenhouse gas (GHG) permits and the Huntington field flare and vent consents.

The data presented in this document relates to our responsibilities for the Huntington field. Altera will submit its own OSPAR report describing Altera-managed activities.

Production from the Huntington field ceased in April 2020, and the *Voyageur Spirit* FPSO was removed from the field in July 2020. The subsea arrangement continues to be under our management. Future decommissioning activities are planned to remove subsea infrastructure and plug and abandon all wells in the area.



Huntington field schematic



Huntington field location

Catcher

The *BW Offshore Catcher* floating, production, storage and offloading (FPSO) vessel is the host installation for the Catcher, Burgman and Varadero fields. These are collectively referred to as the Catcher Area development. The FPSO is located in UKCS Block 28/9a of the UK central North Sea in approximately 90 metres of water.

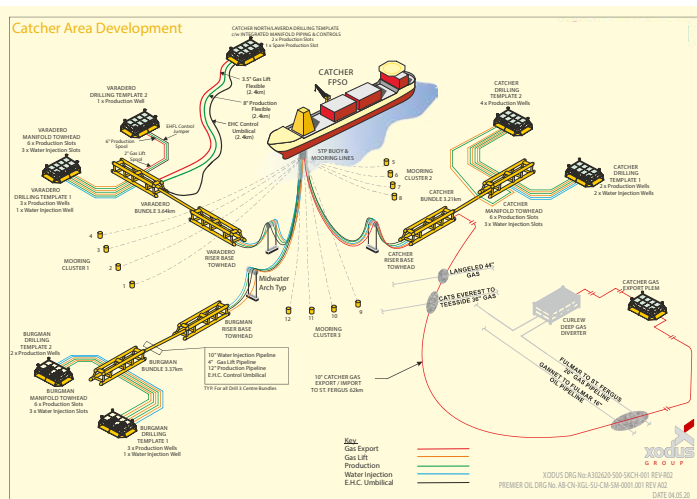
Three reservoirs are tied back to the FPSO processing and export facility, which can process approximately 66,000 barrels of oil per day (bbl/d). Separated crude is stored in the vessel's cargo tanks prior to being offloaded to an export tanker. Gas is exported via the 38-mile (62-kilometre) gas export pipeline (which extends into Block 28/10c) into the Fulmar gas line.

The FPSO arrived in the field in mid-October 2017. Subsea and topsides commissioning activities started, and first oil was achieved in December 2017.

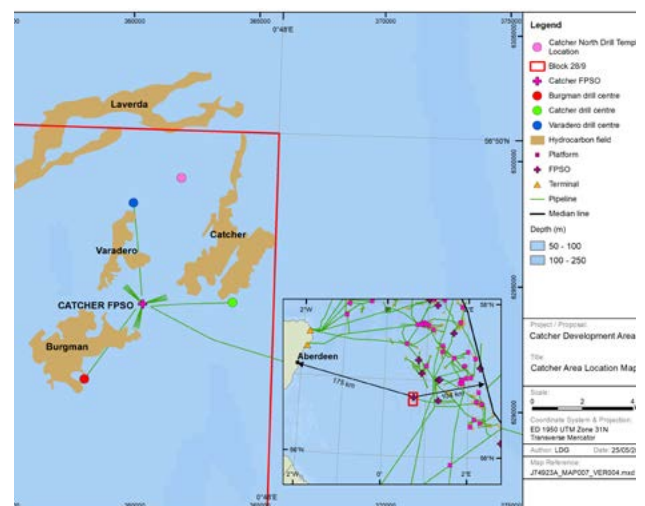
BW Offshore Catcher UK Limited (BWOCUK) is the FPSO owner and the appointed production installation operator of the FPSO. BWOCUK is responsible for the day-to-day health, safety and environmental management of the facility including all environmental permitting requirements for production operations including the PPC, chemical and ODP permits etc.

Premier Oil is the licensee, pipeline and well operator for the Catcher Area development. We are consequently responsible for the management of all HSE-related matters associated with these activities. From an environmental permitting and management perspective, we are responsible for the FPSO GHG permit and the flare and vent consents.

The data presented here relates to our activities for the Catcher Area development. BWOCUK will submit its own OSPAR report describing BWOCUK-managed activities.



Catcher development schematic



Catcher field development

Project activity

Balmoral decommissioning

The Balmoral late-life project started in late 2015 to prepare for the decommissioning of the *Balmoral* FPV, subsea infrastructure and wells associated with the Balmoral, Glamis, Stirling, Brenda and Nicol fields.

The decommissioning programme will be executed in three phases:

- **Phase 1** – removal of the FPV, the associated risers and mid-water arches, and disconnect moorings.
- **Phase 2** – decommissioning of the subsea infrastructure.
- **Phase 3** – plugging and abandonment of wells.

Production ceased in November 2020. Various diving support-vessel work scopes were completed in 2020, which included flushing and disconnection of topsides and subsea infrastructure in preparation for the FPV leaving the field in 2021.

Huntington decommissioning

The Huntington late life project started in 2017 to prepare for the decommissioning of the *Voyageur Spirit* FPSO, subsea infrastructure and wells associated with the Huntington field.

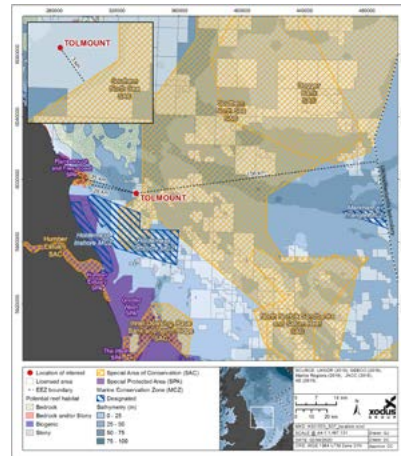
The decommissioning programme will be executed in three phases:

- **Phase 1** –
 - Removal of the FPSO, the associated risers and mid-water arches, and disconnect moorings.
 - Altera Voyageur Production Limited as the appointed operator will be responsible for the removal of the vessel and disconnection of its moorings.
 - Premier Oil as licensee, pipeline and well operator for the field, will be responsible for the flushing of subsea infrastructure and removal of the risers and mid-water arches.
- **Phase 2** – decommissioning of the subsea infrastructure.
- **Phase 3** – plugging and abandonment of wells.

Production from the Huntington field ceased in April 2020. The *Voyageur Spirit* FPSO was removed from the field in July 2020 leaving the subsea arrangement under our management. Other work undertaken in 2020 included the flushing and disconnection of the topsides and subsea infrastructure in preparation for the FPSO departure, and future removal of infrastructure from the field.

Tolmount area development

Tolmount is located in the southern North Sea (SNS) in Block 42/28d. It lies approximately 22 miles (36 kilometres) east of Flamborough Head and 96 miles (156 kilometres) from the UK/Netherlands median line.



Tolmount field location

Following successful well tests proving viable reserves of gas, our plan is to develop Tolmount in conjunction with our 50% equity partner, Dana Petroleum.

We expect gas to be produced from four offshore production wells. This gas will be routed via a minimum facilities platform prior to export via a new 20" export pipeline (piggybacked with a 3" methanol pipeline) to new reception facilities at Centrica Storage Limited's (CSL's) Easington Terminal. An initial environmental statement for the scheme was approved in 2018 for development at Perenco's Dimlington Terminal. Shortly after, the onshore development concept changed to CSL's Easington Terminal. This required submission of a new pipeline environmental statement to OPRED in November 2018, which was subsequently approved in mid-2019 in conjunction with onshore planning permission approvals.

Work under our onshore planning approvals began in January 2020 and the pipeline was installed in 3Q 2020. We have extensively engaged with stakeholders in relation to environmental sensitivities in the onshore project area, and the potential for impacts to the Holderness Inshore Marine Conservation Zone (MCZ) from pipeline installation activity. In conjunction with the regulator, OPRED, we have had open and constructive dialogue with Natural England (case owners for the MCZ, which continued through 2020).

Tolmount drilling

Drilling activity started at Tolmount in October 2020 from the *Enasco 123* jack-up drilling rig. The Tolmount project is on course to deliver first gas in 2021.

We are drilling four development wells. The data presented in this statement relates to the drilling of the first development well, Tolmount NW well. ODE Asset Management Limited was appointed as the Tolmount Installation Operator in 2020, in advance of production start-up in 2021.



Enasco 123 drilling rig



Location of Tolmount

Catcher Area development

Further project activity was carried out in the Catcher development area in 2020 to drill production well Varadero (VP1) and to prepare for future well tie-ins.

Catcher VP1 drilling and VP1 tie-in DSV campaign

The drill centre for the Varadero field is located c. 2.5 miles (4.0 kilometres) north of the *Catcher* FPSO. VP1 well is the first production well to be drilled from Varadero template two (VDT2). In 2020, VP1 well was drilled to completion by the *Rowan Gorilla VI*. Following successful completion of the VP1 well, the *Seven Atlantic* diving support vessel mobilised in September 2020 to perform tie-in and commissioning support for first oil from the VP1 well in September 2020.

Catcher North and Laverda

Future planned production wells in the Catcher North and Laverda fields will tie-back to the *Catcher* FPSO via infrastructure associated with the Varadero field. Two wells (one for Laverda and one for Catcher North) will be drilled in 2021/22 from a single drilling template (referred to as the Catcher North/Laverda (CN/L) drilling template). Production from both fields will be co-mingled and transported back to the existing *Catcher* FPSO via the existing Varadero pipeline bundle.

In 2020 the existing CN/L drilling template was repositioned using the *Seven Arctic*, and the CN/L infrastructure (to Varadero drill centre manifold towhead and CN/L template). It was laid in position by the *Seven Acergy*. This work was carried out to allow the future Catcher North/Laverda production well tie-ins.

Solan P3 drilling and P3 tie-in DSV campaign

Solan P3 well was drilled to completion in July 2020 using the *Transocean Leader* semi-submersible MODU. The P3 development will facilitate more production from the area. It connects the existing P1 well via a daisy-chain configuration.

Following successful completion of the drilling campaign, the DSV *Seven Atlantic* was mobilised in August 2020. It installed a 6" flexible production flowline from well P3 to P1 where it is connected to the existing 6" production pipeline that runs from P1 to the Solan platform. First oil from P3 was achieved September 2020.

Johnston DSV campaign

The Johnston field is located in the southern North Sea. It consists of a subsea template with four production wells (J1, J2, J3 and J4) and two further satellite wells (J4 and J5), which are tied back to the main template. In 2020, subsea well operations were carried out at Johnston to replace the subsea control module (SCM).

Huntington DSV campaign

As part of cessation of production at the Huntington field that commenced in March 2020, the DSV *Seven Falcon* was mobilised to prepare the field's infrastructure for the departure of the *Voyageur Spirit* FPSO. This was carried out in four phases:

- **Phase 1** - isolation and barrier testing of the gas export system from the CATS pipeline, flushing of rigid spools between the manifold and template and flushing of the production flowline and riser using a chemical gel pig.
- **Phase 2** - barrier testing and disconnection of risers and the dynamic umbilical, recovery of drop-down spools, cutting the water-injection riser below the FPSO and repositioning mattresses.
- **Phase 3** - barrier and gasket testing at the CATS tee, flushing the gas export pipeline using a chemical gel pig from a DSV to the *Voyageur Spirit* FPSO, disconnecting and cutting the remaining risers (production, gas lift and gas export) and the control umbilical below.
- **Phase 4** - riser recovery and recovery of remaining mattresses.

During the subsea campaign, the DSV *Seven Falcon* completed phases 1-3 in June 2020, while the OSCV *Siem Spearfish* completed Phase 4 in October 2020.



2020 Objectives

We outlined several environmental focus and improvement areas in our 2020 Health, Safety, Environmental and Quality (HSEQ) Plan.



2020 Objectives

In 2020, we successfully completed the following objectives:

2020 key environmental areas	2020 progress
Use the 'environmental hopper' process to identify and rank opportunities for further investment	The 'environmental hopper' process has been defined and embedded within the UK business, with suggestions ranked and progressed.
Develop greenhouse gas metrics and KPIs	Greenhouse gas (GHG) intensity is now calculated and recorded in our group GHG emissions and presented as a KPI.
Understanding the carbon costs of process efficiencies	A scope of work was developed with Solan A+ - production loss reporting will be expanded in 2021 to include CO ₂ the cost of Solan power generation (fuel gas and diesel).
Flaring/venting strategy for our UK operations	A UK business flare and venting strategy was elevated to a Group Standard, for further definition and delivery in 2021.
Develop a contract strategy to ensure carbon reductions are included/committed to	This is now embedded within our UK business Climate Change Strategy, and is aligned with our supply chain for delivery and roll out in 2021.
ETS progress to ensure Phase IV new entrant reserves	Phase IV free allocation has been successfully confirmed.

2020 Performance

Environmental performance for
Premier Oil's UK operations in 2020.



The data presented here relate only to our activities e.g. subsea, drilling, EU Emissions Trading Scheme (EU ETS) reportable (greenhouse gas carbon dioxide) emissions, flare and venting. Assets where we have appointed a third-party operator, oily discharges, chemicals, combustion emissions associated with power generation, will be reported separately by the respective company in their annual environmental statements.

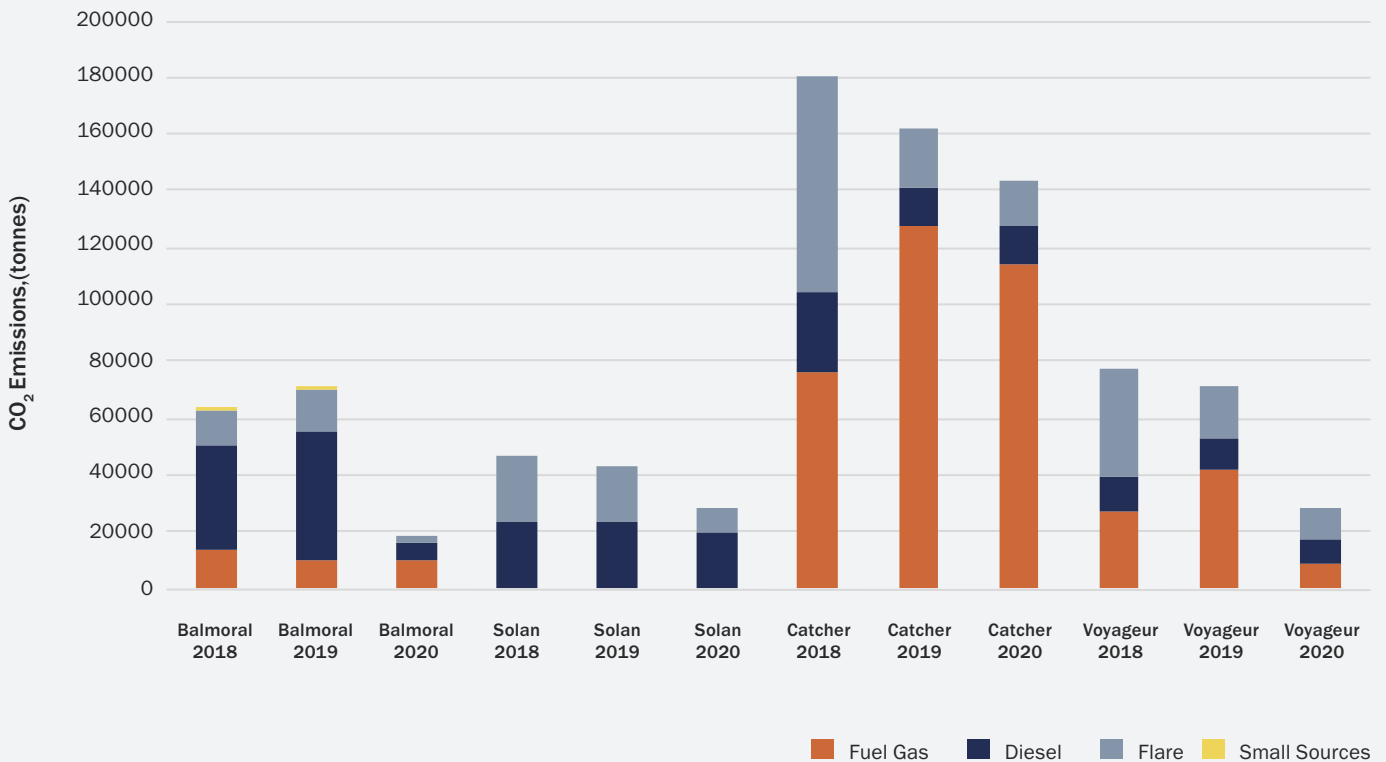
Atmospheric emissions

Atmospheric emissions arise during offshore drilling and production operations, predominantly as a result of fuel combustion for power generation and gas-flaring activities.

The graph below shows the year-on-year EU ETS reportable CO₂ emissions for our operated and leased assets (past three years). Diesel was the prominent source of the largest proportion of CO₂ emissions from our operated assets (Balmoral and Solan), with our leased assets (*Catcher* FPSO and *Voyageur Spirit*), apportioning the largest amount of CO₂ emissions to fuel gas combustion.

We reported no atmospheric EEMS returns for *Catcher* FPSO and *Voyageur Spirit*. This falls under the responsibility of the third-party owner (BWO and Altera, respectively).

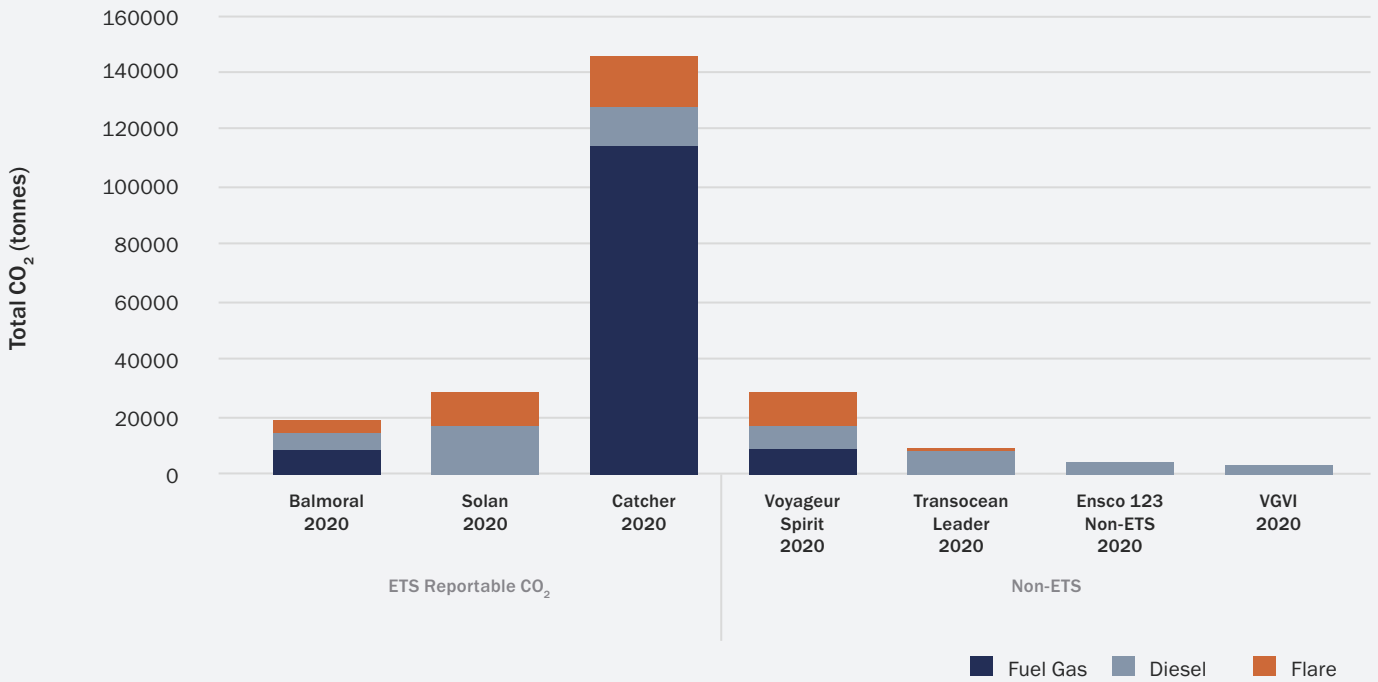
Total EU ETS CO₂ emissions per asset 2018-2020



Total CO₂ emissions

Across our 2020 activities on the UK continental shelf, we recorded a total of 234,003.92 tonnes of CO₂ from combustion on our operated/leased assets and drilling operations (*Ensko 123*, *Transocean Leader* and the *Rowan Gorilla VI*), with the most significant quantity coming from fuel gas use on the *Catcher* FPSO.

CO₂ emissions, 2020



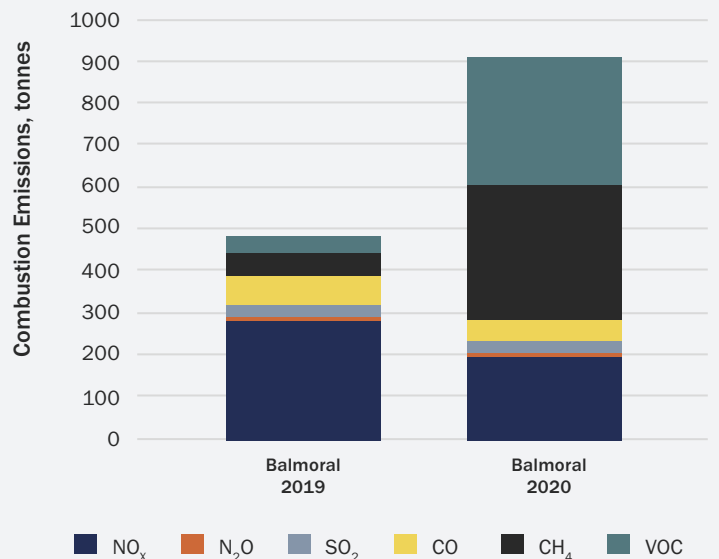
Pollution, prevention and control

The *Balmoral* FPV is regulated under the PPC Regulations as large combustion installation. As such, the installation has set limits on atmospheric emissions of nitrous oxides (NO_x), sulphur oxides (SO_x), carbon monoxide (CO), methane (CH₄) and volatile organic compounds (VOCs).

Between 2019 and 2020, there was a clear increase in the quantity of VOC and CH₄ at Balmoral due to increased diesel usage.

We reported no PPC emissions for the *Voyageur Spirit* or the *Catcher* FPSO. This data will be reported by the operator in their 2020 OSPAR report. Solan is beneath the PPC requirement threshold. It is therefore not eligible for a PPC permit.

Balmoral NO_x, N₂O, SO₂, CO, CH₄, VOC Emissions 2019-2020



Oil in produced water

During normal production, water is produced when extracting hydrocarbons from the reservoir. Despite treatment, produced water still contains traces of oil and, as such, produced water discharge is controlled via a permitting system managed by the UK regulatory authority, OPRED.

Oil discharge permits allow installations to discharge produced water and ballast water, provided the hydrocarbon concentration is within the limit set out in the permit.

Balmoral

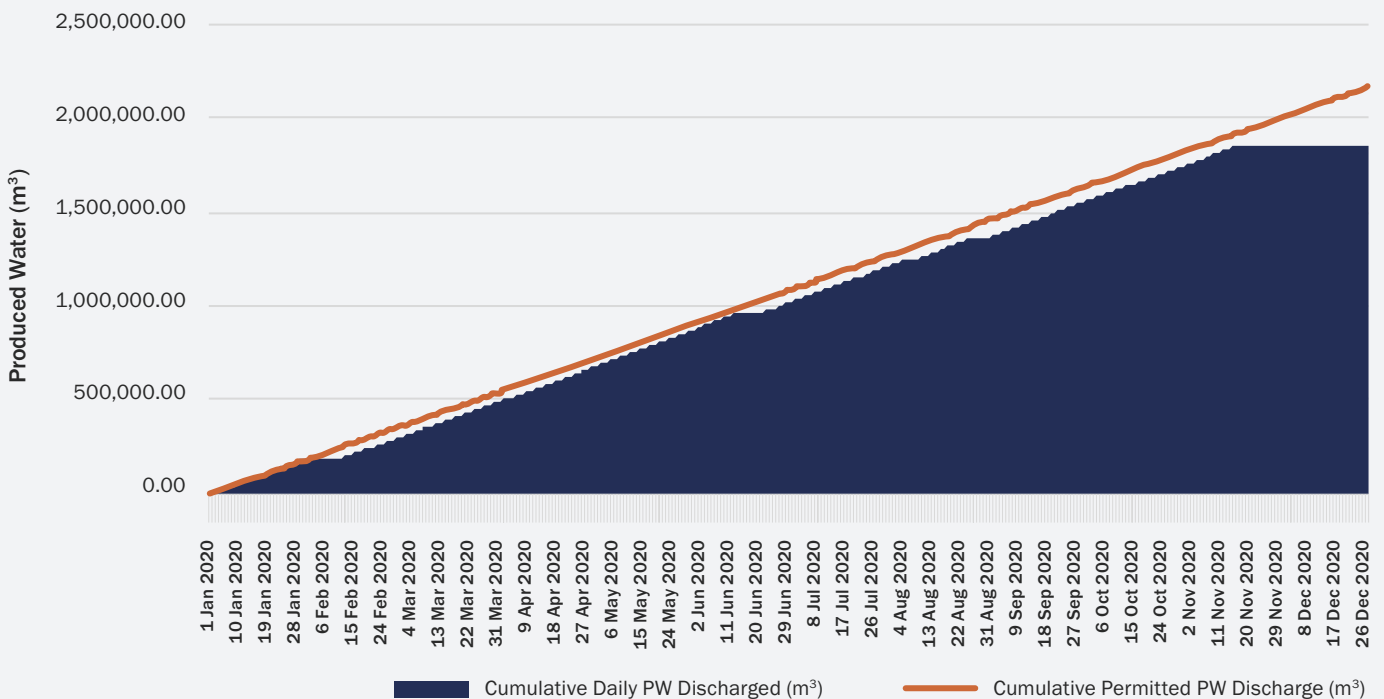
The *Balmoral* FPV discharges produced water overboard via a dedicated caisson. The water is separated and routed through hydro-cyclones and a tilted plate separator to remove entrained oil.

The total volume of produced water discharged to sea from the *Balmoral* FPV was 1,864,951m³ against the permitted volume of 2,163,818 m³. This equates to a discharge of 86% of the *Balmoral* FPV permit produced-water volume limit.

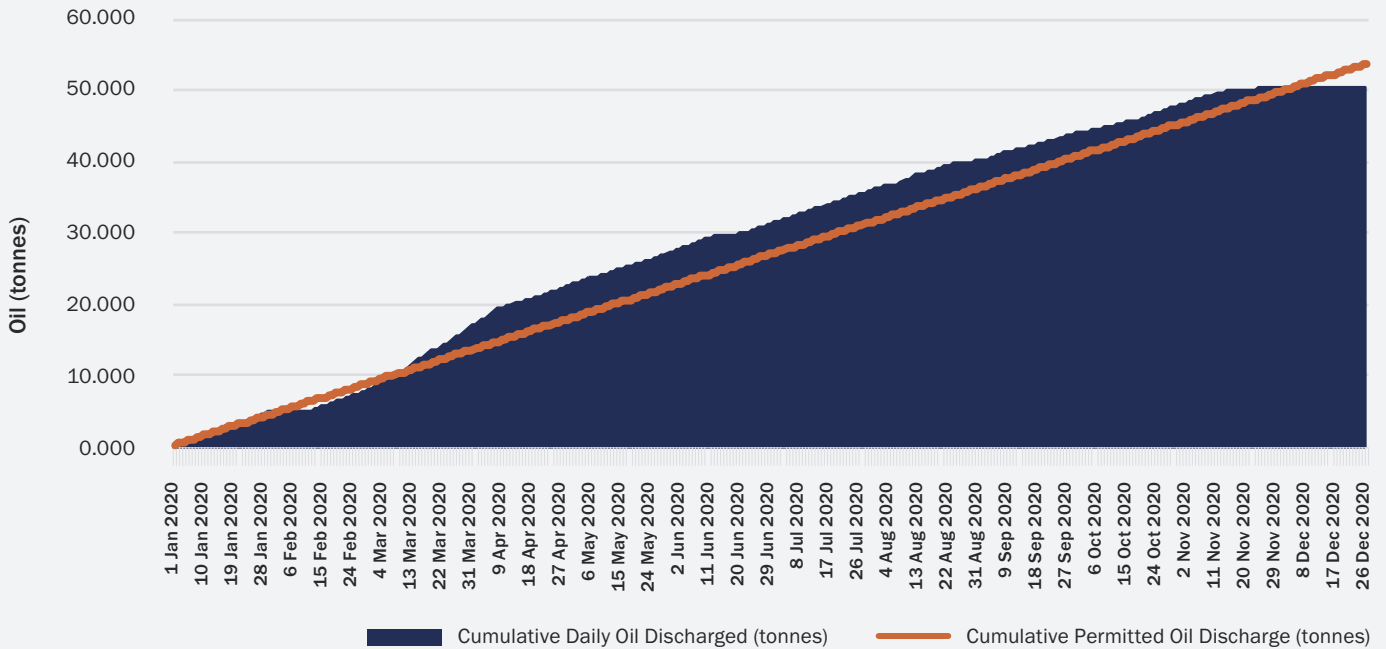
The total mass of oil in produced water (OIW) discharged to sea from the *Balmoral* FPV in 2020 was 50.481 tonnes, an increase from 26.9 tonnes in 2019.



Cumulative produced water discharge from Balmoral, 2020

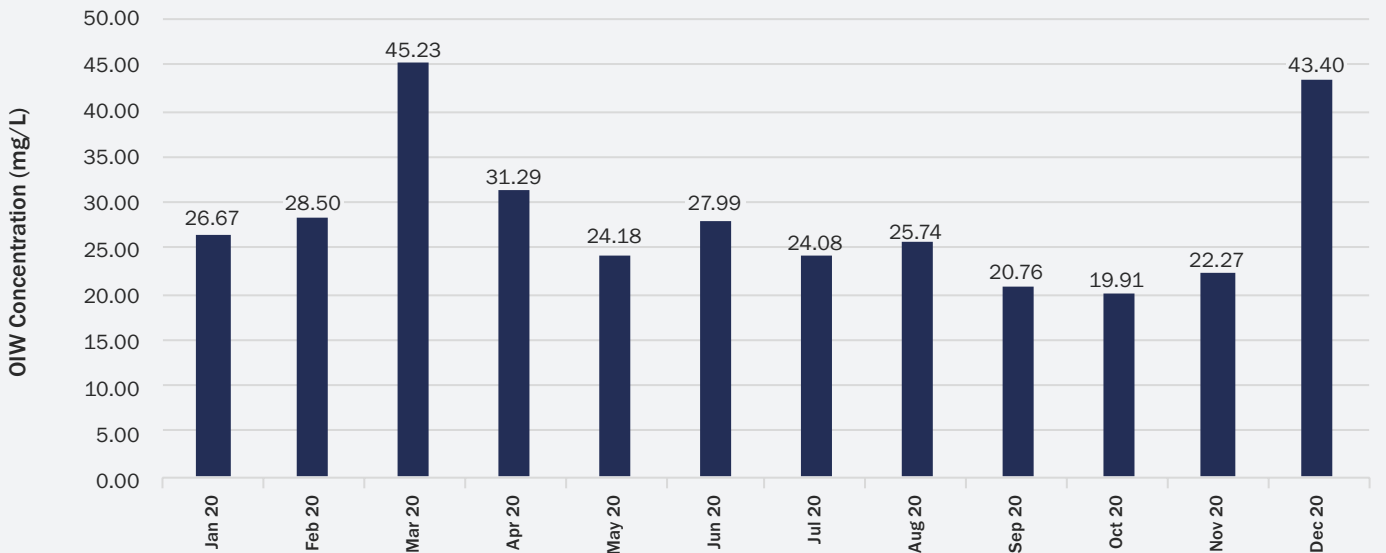


Mass of oil discharged in produced water from Balmoral, 2020



The average concentration of oil discharged in produced water for Balmoral in 2020 was 28.33 mg/l.

Average oil in water concentration for Balmoral, 2020



Higher OIW was seen throughout 2020 at Balmoral, which was attributed to the B29 well coming online in May 2019. There was a requirement for higher dosage of corrosion inhibitor to be used on this well and the subsea infrastructure, which interfered with the OIW separation process. We trialled a de-oiler chemical, but this did not improve the OIW. Further optimisation of corrosion inhibitor dosage resulted in lower OIW figures.

There were higher readings in December due to flushing operations following cessation of production and the start of subsea flushing. Further flushing operations have also utilised wells for discharging downhole, rather than overboard.

Solan

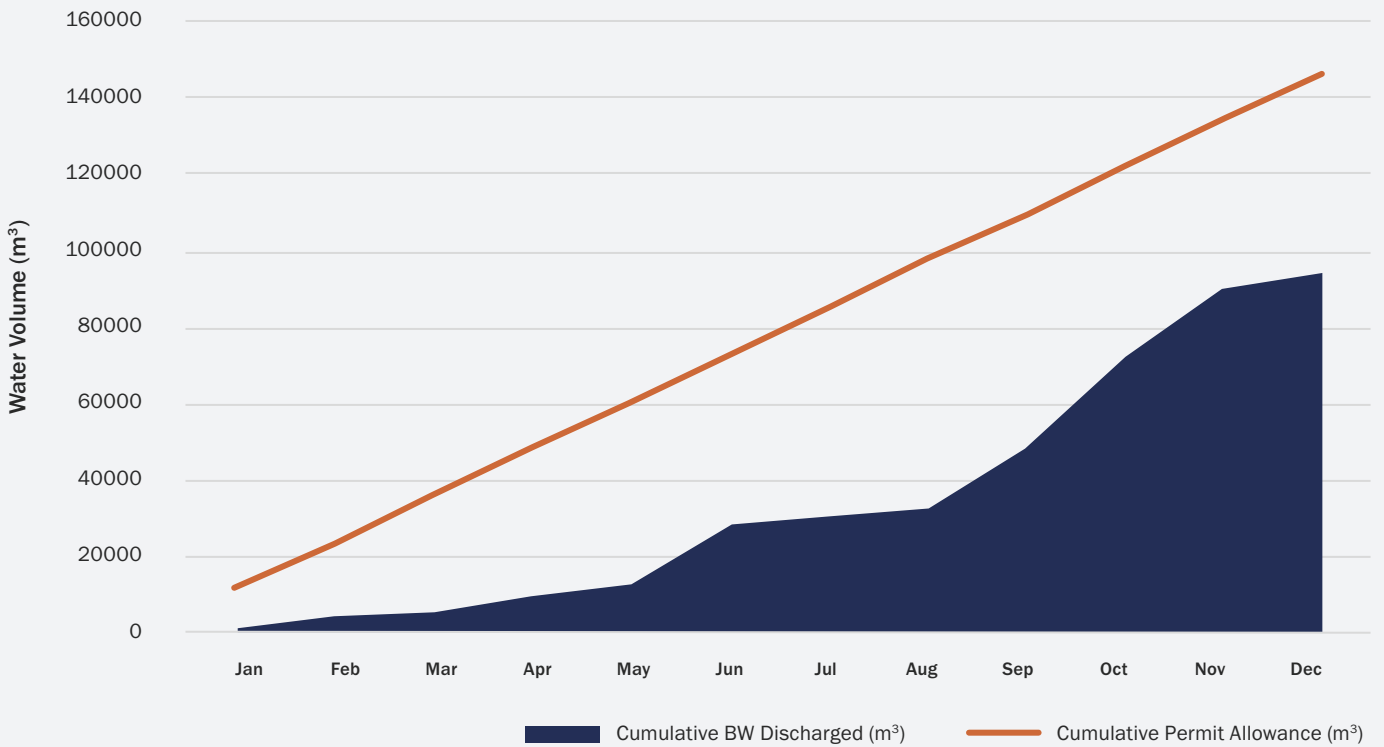
Produced water broke through the Solan reservoir in early 2017. From November 2017 this was discharged overboard via a bespoke produced-water treatment package. Ballast water from oil displacement within the subsea oil storage tank (SOST) may also be discharged or injected once treated, through the dedicated ballast water filters.

Solan has two options for disposal of ballast water - overboard via a dedicated disposal caisson or re-injected into the reservoir via two dedicated water injection wells, W1 and W2. Produced water is treated through a dedicated treatment (PWT) package consisting of hydro-cyclones, booster pumps and compact floatation units, and is discharged to sea through the dedicated disposal caisson.

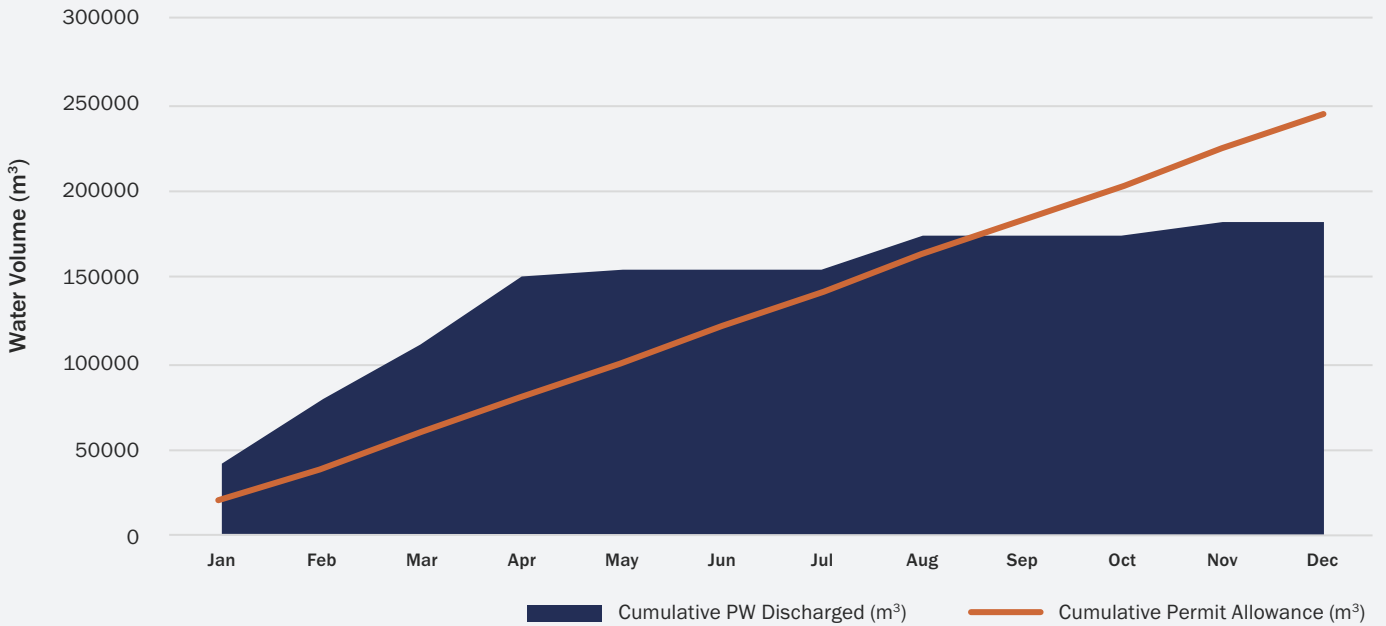
Ballast water with small concentrations of hydrocarbons is injected by preference or discharged overboard once treated, through the dedicated ballast-water absorption filters. A total of 93,890 m³ of ballast water was discharged from the platform in 2019 against a permitted volume of 146,643 m³.

Produced water with low concentrations of hydrocarbon is discharged overboard once treated, through the PWT. A total of 181,339 m³ of produced water was discharged against a permitted volume of 244,711 m³. The table shows the total volume of ballast and produced water discharged from Solan in 2020.

Cumulative ballast water discharge from Solan, 2020

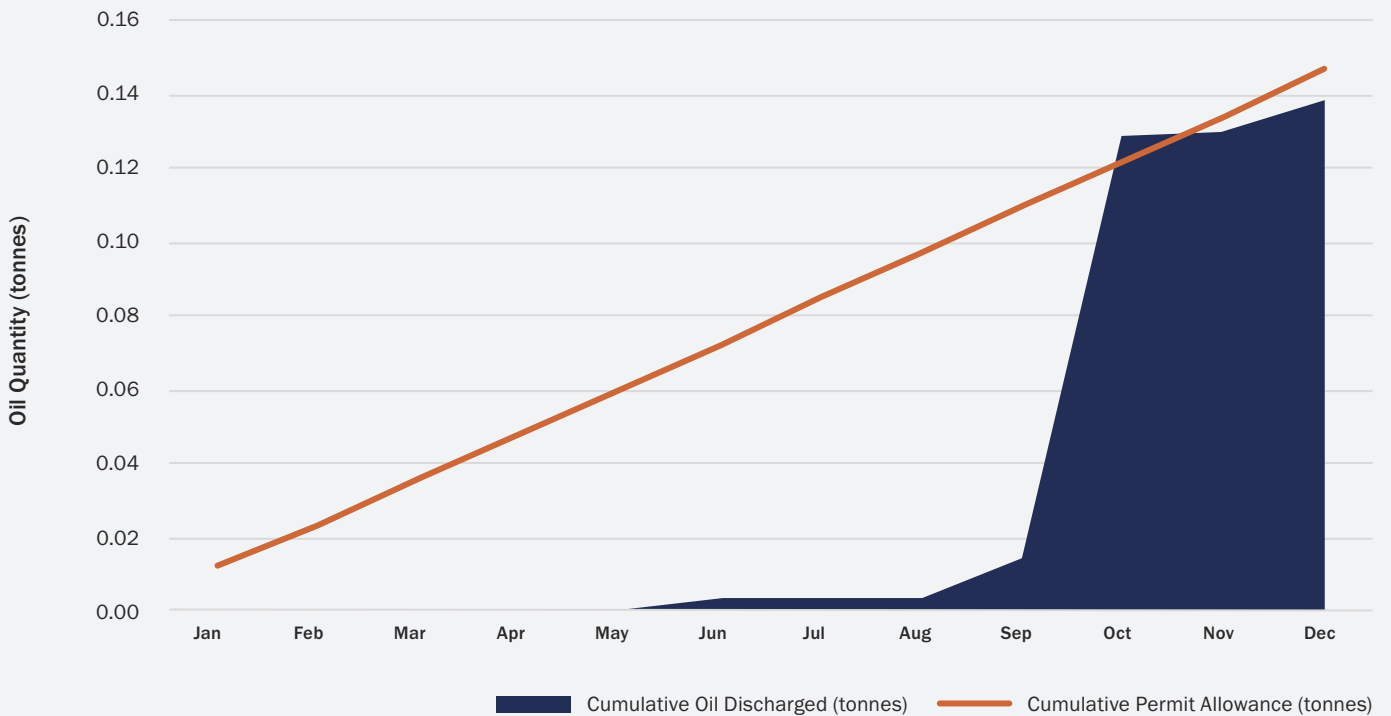


Cumulative produced water discharge from Solan, 2020

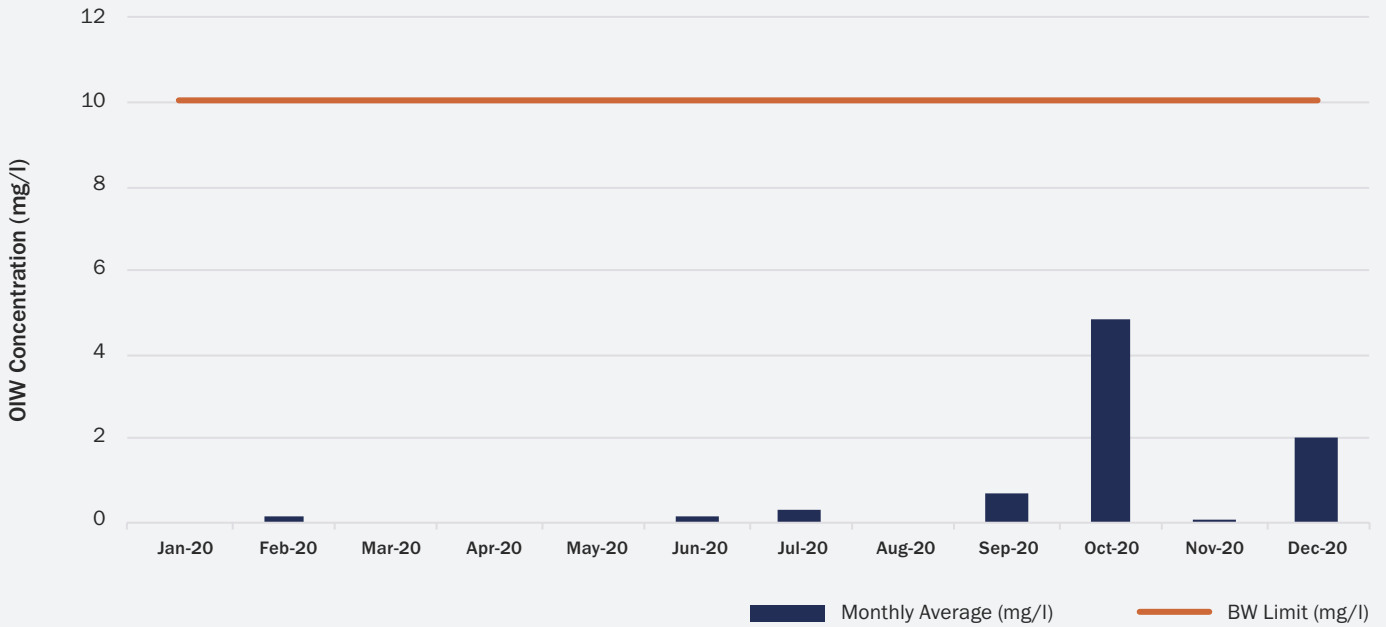


Solan was permitted to discharge a total of 0.147 tonnes of hydrocarbon from ballast water in 2020, equating to an average of 10 mg/l oil in water concentration. The platform discharged a total of 0.139 tonnes of hydrocarbon, with an average concentration of 0.69 mg/l within the ballast water, due to good interface management within the SOST, and treatment through the ballast-water filtration package.

Cumulative mass of oil discharged in ballast water from Solan, 2020

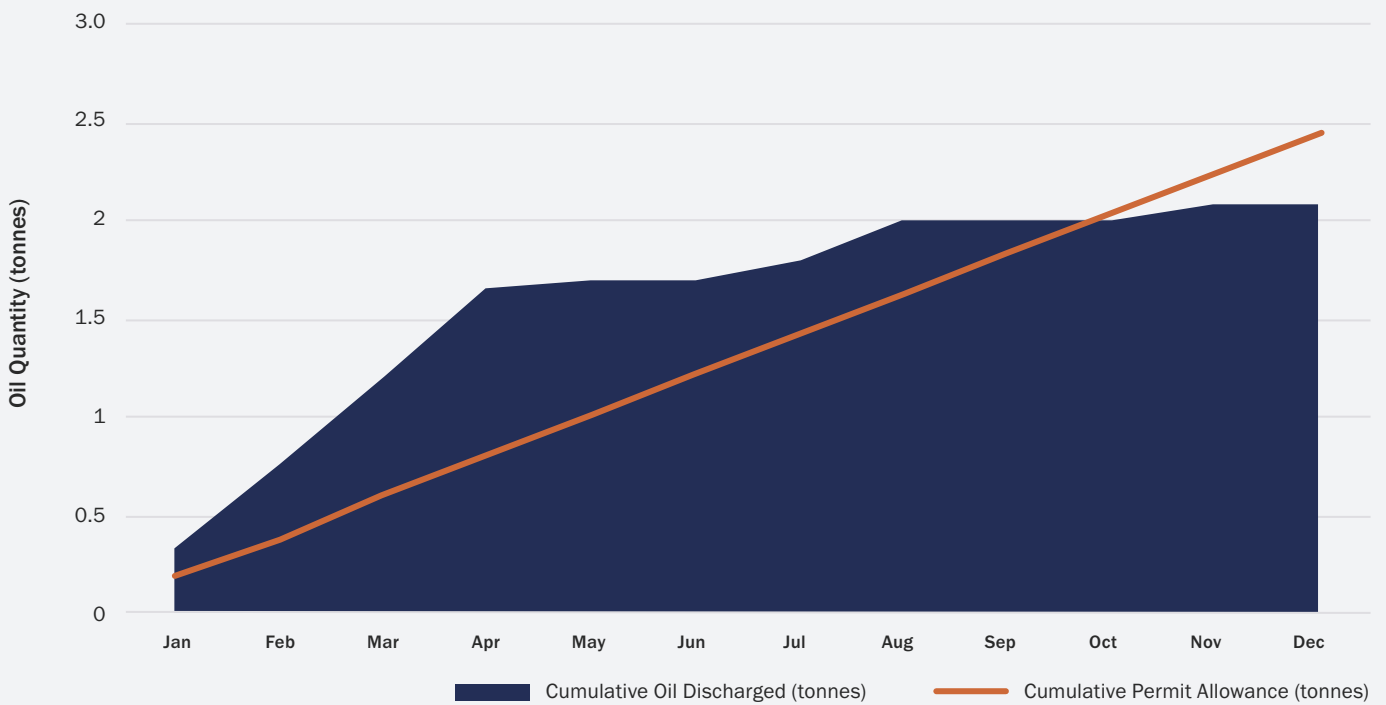


Average oil in water concentration in ballast water for Solan, 2020



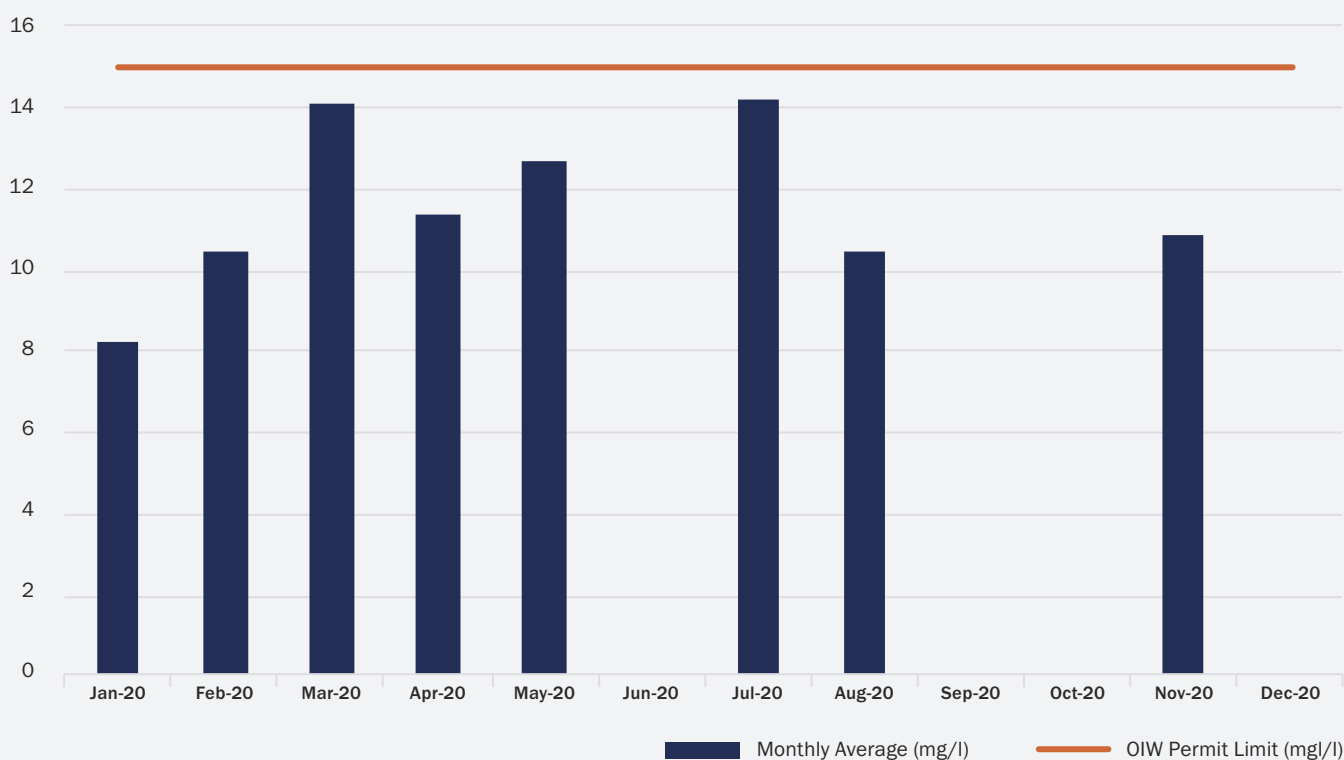
Solan was permitted to discharge a total of 2.45 tonnes of hydrocarbon in produced water in 2020, equating to an average of 15 mg/l oil in water concentration. The platform discharged a total of 2.09 tonnes of hydrocarbon with an average concentration of 7.69 mg/l.

Mass of oil discharged in produced water from Solan, 2020





Average oil in water concentration in produced water for Solan, 2020



Chemical use and discharge

Various chemicals are used offshore in drilling, production, subsea and well intervention operations.

Any chemical used offshore must, in line with the Offshore Chemical Regulations 2002 (OCR), first be approved by the Centre for Environment, Fisheries and Aquatic Sciences (CEFAS). The chemicals are subject to strict environmental risk assessment and, once approved, their use is controlled and monitored through a permit granted by OPRED.

Some chemicals are regarded as PLONOR (PLO), which means that they have been determined to pose little or no risk to the environment.

Any chemicals which have been identified as posing potential environmental risks (such as bioaccumulation or slow biodegradation) are subject to controls, under which their use must first be approved by OPRED. This is backed up by a detailed justification for use of the chemical. Such chemicals carry a 'substitution warning' (SUB) which aims to encourage the phase-out of the use of these chemicals.

Our contractors and chemical suppliers work on a continuous basis to find suitable alternatives to replace products with SUB warnings.



Balmoral

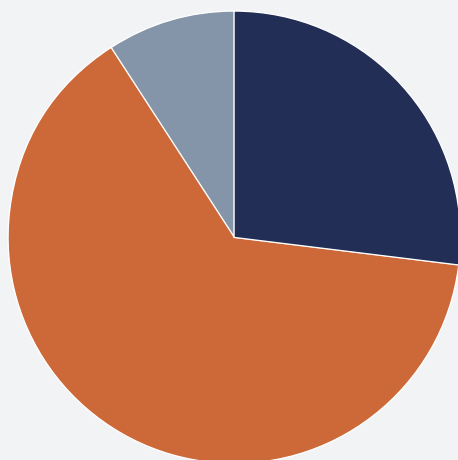
A total of four chemicals with SUB warnings were permitted for use on *Balmoral* FPV in 2020. All were used and discharged to sea.

SUB chemicals permitted for use in Balmoral FPV operations	
Chemical and OCNS category	Summary of change out review
CRW85406 (Baker Hughes Limited), Gold	A corrosion inhibitor that is applied to the Burghley produced fluids to prevent system corrosion; this has not been replaced
RX-9025 (Roemex), Gold	Used in operations to detect a leak of hydraulic fluid through the subsea hydraulic system as reported in PON1/8494
SICI11231A (Champion X) Gold	A combined corrosion and scale inhibitor that is injected into the Brenda/Nicol gas lift supply upstream of the flexible subsea riser; this has now been replaced
CLAR16036A	A de-oiler used as trial for oil in water reduction; this has now been replaced

53,739kg of SUB chemicals were used on *Balmoral* FPV in 2020. This is an increase from 2019 but reflects specific work-scopes and process requirements. Corrosion inhibitor CRW85406 significantly increased our use of SUB warning chemicals.

The chemicals used on the *Balmoral* FPV in 2020 have been grouped by OCNS category. 8.9% of the chemicals used are rated 'poses little or no risk' to the environment and 27.2% carried SUB warnings.

Balmoral chemical use during operations, by OCNS category, 2020



■ SUB: 53739kg | 27.2% ■ Other: 126498kg | 63.9%
 ■ PLO: 17690kg | 8.9%

Solan

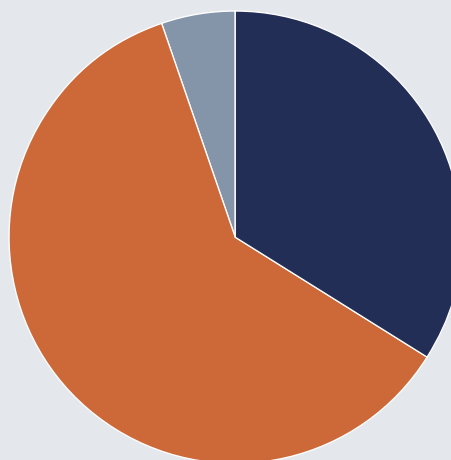
Two SUB warning chemicals were permitted for use on Solan in 2020.

SUB chemicals permitted for use in Solan operations	
Chemical and OCNS category	Summary of change out review
BIOC16718A, ChampionX, Biocide, Gold	Alternative biocides are available, but they are not as effective for application to the SOST and able to penetrate biofilms as effectively; the manufacturer continues to research alternative greener technologies
Oceanic HW443, MacDermid Offshore Solutions, OCNS 'D'	This product was replaced with Oceanic HW443R in 2020

A total of 37,161kg of SUB warning chemicals were used, with the elevated use of BIOC16718A for SOST integrity considerations in 4Q.

The chemicals used on Solan in 2020 have been grouped by OCNS category, with 5.1% of all the chemicals used rated 'poses little or no risk' and 34.2% carrying SUB warnings.

Solan chemical use during operations, by OCNS category, 2020



■ SUB: 37162kg | 34.2% ■ Other: 66073kg | 60.8%
 ■ PLO: 5524kg | 5.1%

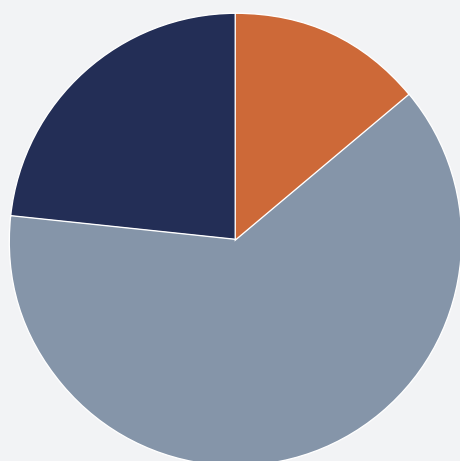
Pipelines

A total of three SUB warning chemicals were permitted for our pipeline and subsea activity in 2020. All were used, and two were discharged to sea.

SUB chemicals permitted for use in pipeline operations	
Chemical and OCNS category	Summary of change out review
Glycolube Gel, Sannucus Limited, Gold	Product with SUB warning remains more effective in application than SUB-free variant, so no change
Hydrosure Fluorodye UK Stick	No suitable alternatives identified
Hydrosure Corrosion Inhibitor Stick	No suitable alternatives identified

The quantity of SUB chemicals used during our 2020 pipeline operations was approximately 3849.9 kg, of which only 0.69 kg was discharged to sea during the year. The figure shows the percentage of SUB and PLO chemicals used relative to other chemicals. These figures group the chemicals by OCNS category and demonstrate that 62.76% of all the chemicals used and 56.64% of those discharged, were rated PLO. Only 23.08% of chemicals used were SUB chemicals, of which none were discharged.

Chemical use during vessel (pipeline and workover) activity, by OCNS category, 2020



■ SUB: 3849.49kg | 23.08% ■ Other: 2353.35kg | 14.10%
 ■ PLO: 10470kg | 62.76%

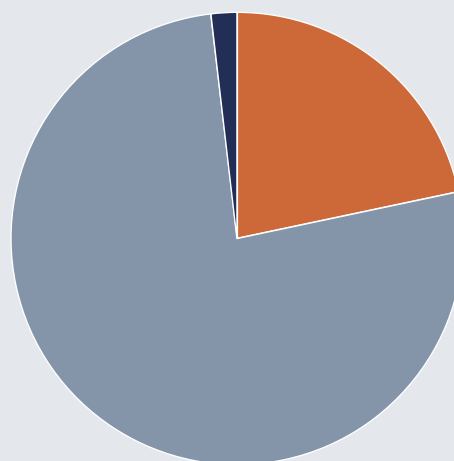
Drilling

Drilling activity includes Solan P3 well drilling (*Transocean Leader*) and Varadero VP1 drilling (*Rowan Gorilla VI*). Tolmount drilling has been excluded, as the DRA term permit for the NW well drilling continued from 2020 into 2021. Drilling chemicals will therefore be reported in our 2021 OSPAR annual statement for the Tolmount drilling campaign.

A total of 39 chemicals with SUB warnings were permitted for use in our drilling operations in 2020. Of the 39 SUB warning chemicals permitted, 26 were used and 11 were discharged to sea.

The quantity of SUB chemicals used in our 2020 operations was approximately 107,704 kg, of which 132.78kg was discharged to sea during the year. The figure shows the percentage of SUB and PLO chemicals used relative to other chemicals. These figures group the chemicals by OCNS category and demonstrate that 76.44% of all the chemicals used and 99% of those discharged, were rated PLO. Only 1.87% of chemicals used were SUB chemicals, of which 0.01% were discharged.

Chemical use during drilling operations, by OCNS category, 2020



■ SUB: 107,704kg | 1.87% ■ Other: 1,247,633kg | 21.69%
 ■ PLO: 4,397,844kg | 76.44%

Waste

Waste is categorised as hazardous or non-hazardous, depending on whether it has one or more of the 15 hazardous constituents specified in Annex III of the EU revised Waste Framework Directive (WFD, European Directive 2008/98/EC).

Directive waste is divided into three main categories: recycled, non-hazardous and hazardous waste.

Waste generated from our offshore operations is transported onshore for re-use, recycling, treatment or disposal.

On both production and drilling installations, waste is segregated into categories before back-loading. As much waste as possible is sent for recycling. This includes wood, scrap metals, paper/cardboard, glass and plastics.

Waste that cannot be recycled is sent to landfill. Certain types of waste that are harmful to the environment (special waste) are sent ashore to be processed and disposed of by licensed handlers, in accordance with the relevant legislation.

We work with contract waste-management companies to reduce waste, and to recycle and reuse items wherever possible. Non-hazardous waste types include packaging, galley and accommodation wastes, scrap metal and wood. Examples of hazardous waste include bulk liquid wastes from mobile accommodation or drilling units on hire, process sludges, oily rags, used chemicals, paint, batteries, fluorescent light tubes and electrical and electronic equipment.

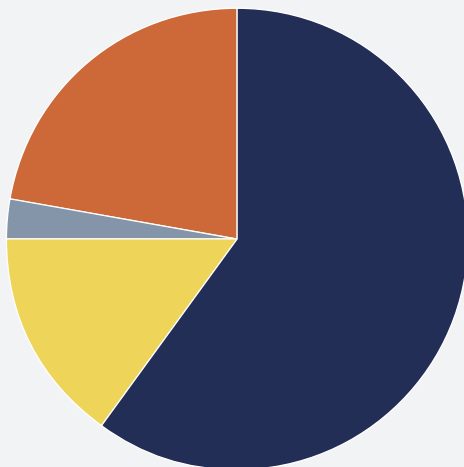
We continue to target areas where we can further reduce the amount of waste we generate.

Balmoral

A total of 105.7 tonnes of waste was disposed of from the *Balmoral* FPV in 2020, compared to 219.8 tonnes in 2019.

The *Balmoral* FPV recycled approximately 60% of its waste during the year. The chart shows the fate of waste produced from the *Balmoral* FPV in 2020.

Balmoral waste disposal routes, 2020



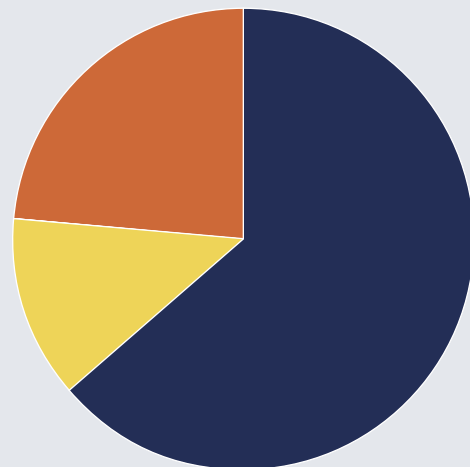
Reuse 0te | 0.0% Recycle 63te | 60.0%
 Waste to Energy 16te | 15.2%
 Incineration 3te | 2.6% Landfill 23te | 22.2%
 Treatment 0te | 0.0% Other 0te | 0.0%

Solan

A total of 108.5 tonnes of waste was generated on Solan in 2020, compared to 78.4 tonnes in 2019.

Of this, 23.5% was sent to landfill and 63.9% was recycled.

Solan waste disposal routes, 2020



Reuse 0te | 0.0% Recycle 69te | 63.9%
 Waste to Energy 14te | 12.6%
 Incineration 0te | 0.1% Landfill 25te | 23.5%
 Treatment 0te | 0.0% Other 0te | 0.0%

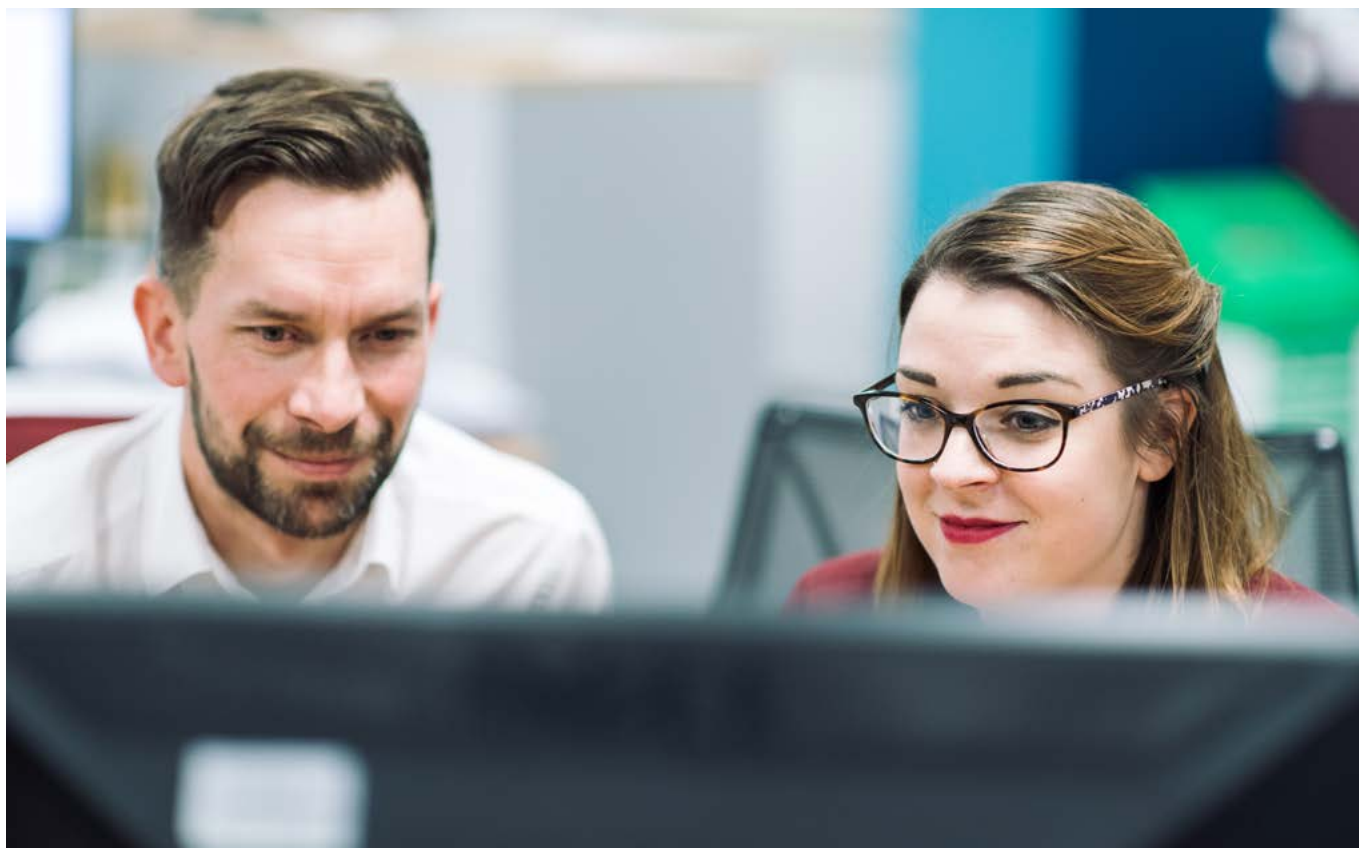
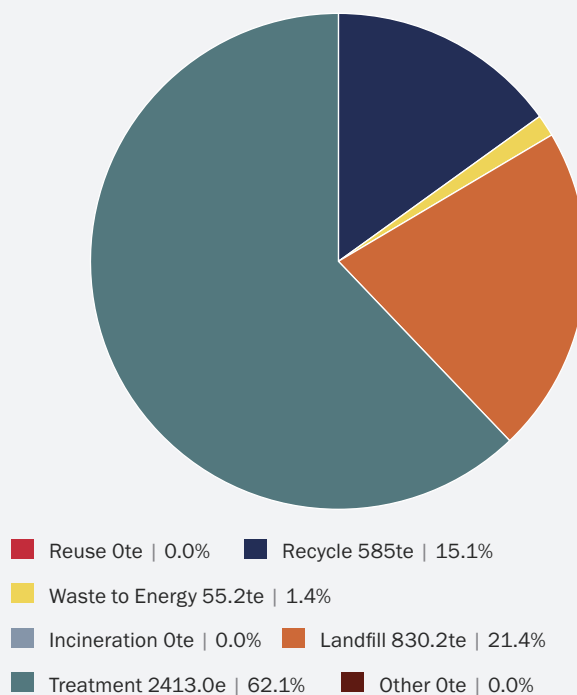
Drilling campaigns

In 2020, 3,883.6 tonnes of drilling waste (e.g. back-loaded drill cuttings) were generated during drilling.

operations, of which 585 tonnes (15.1%) was recycled. In addition to this, 830.2 tonnes of solid waste was sent to landfill and 55.2 tonnes (1.4%) of waste was 'used for energy'.

The chart shows the amount of waste per EEMS category from all our drilling activities in 2020.

Total drilling waste disposal routes, 2020



Incidents

We strive to prevent the unplanned release of hydrocarbons and chemicals. On occasion however, accidental releases do occur. All unplanned releases of hydrocarbons and chemicals to sea from offshore oil and gas installations and pipelines, regardless of size, are reported to OPRED and other statutory agencies via the Petroleum Operations Notice 1 (PON1) form. Permitted Discharge Notifications (PDNs) are also submitted using PON 1 forms, when permitted discharges are in breach of conditions/limits associated with the installation’s oil discharge permit.

Numerous processes are in place to prevent unplanned releases and these include planned maintenance of equipment, asset integrity inspections, activity risk assessment, area inspections, pre-acceptance drill rig and routine audits, procedural controls and training and competency for individuals interacting with process plant. Oil Pollution Emergency Plans (OPEPs) approved by OPRED cover all operational assets including third-party drilling installations. We exercise these plans regularly and follow them if an unplanned release does occur. These ensure the incident is reported in a timely fashion and that contingency and mitigation measures are in place.

Unplanned releases – PON 1

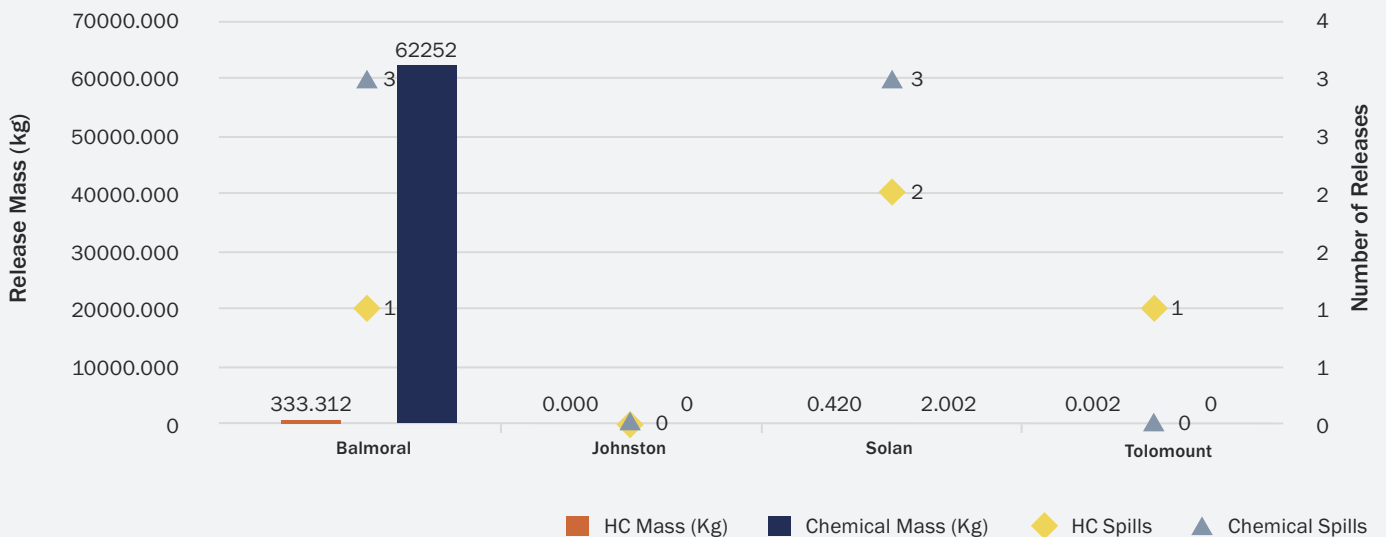
In 2020, we submitted a total of 10 PON1s to the regulator for the unplanned releases of hydrocarbon or chemicals to the sea. All incidents were attributable to our assets. These releases equate to a total of 0.333 tonnes of hydrocarbon, and 62.25 tonnes of chemical released.

2020 showed a slight increase in PON1 events from 2019, from nine to 10 incidents, but performance was significantly better than 2018 where 19 PON1 incidents were recorded. This is attributed to a continued focus on spill prevention, ongoing hazard awareness training and improvements in operational control procedures.

The mass of hydrocarbon release increased in 2020 as compared to 2019 (0.333 tonnes as compared to 0.053 tonnes) and the mass of chemical released increased from 35.25 tonnes in 2019 to 62.25 tonnes in 2020. Most of the chemicals released via a PON1 are attributed to the Balmoral PON1/8949. This relates to an ongoing subsea release of Pelagic 100 from the B29 umbilical, which originated in 2019.

The 2020 Pelagic 100 subsea hydraulic fluid was classified as an OCNS E-rated product. We conducted Environmental Impact Assessments to assess the impact of the worst-case loss of these fluids and the reports concluded that the release rate encountered resulted in no significant impact on the environment. We made a commitment in 2019 to rectify this release in 3Q 2020. In early 2020, cessation of production from this Balmoral field was announced. The B29 flowline will be decommissioned as part of this activity.

Unplanned releases, 2020



Regulatory non-compliances

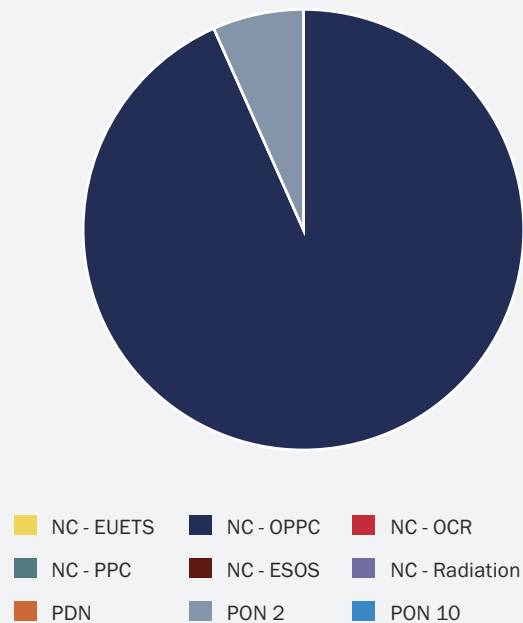
A total of 14 non-compliances were raised in relation to environmental legislation or permit condition breaches in 2020 – an increase beyond the four submitted in 2019.

All 14 non-compliances were raised in relation to Oil Pollution Prevention and Control (OPPC) legislation. 10 related to oil in water (OIW) content in produced-water (PW) samples exceeding 100mg/l for the Balmoral asset, two relate to OIW monthly average over 30mg/l on the *Balmoral* FPV, and the remaining two relate to a PW meter being out of spec, and routing of PW through a system not identified on the oil discharge permit.

Finally, a PON2 was submitted in relation to the loss of a 25kg lift bag from the *Seven Atlantic* DSV, which was working in the Balmoral field.

We thoroughly investigate all unplanned releases and non-compliances and report these internally and, where required, to the regulator. We identify corrective and preventative actions and track them via our incident investigation and reporting tool, Synergi. We communicate any cross-asset learnings to the wider business unit via an alerts process.

Non compliances by type, 2020



2021 Objectives

We will engage in and prioritise integration across the Harbour Energy business throughout 2021, including our HSE activities.



Environmental performance against targets

The focus for 2021 is to integrate the legacy Chrysaor and Premier Oil businesses as Harbour Energy. This will include revising documents within our Business Management System (BMS) to reflect the new organisation.

- HSES integration activity of legacy Premier Oil within Harbour Energy - 2/3 Q.
- Delivery of 2021 Environmental Strategy – 1Q – 4Q.
- Delivery of Climate Change Strategy – 1Q – 4Q.
- Ensuring ongoing good environmental performance and compliance with our licence to operate commitments.



Abbreviations

Topic	
Bbl/d	Barrels of oil per day
BLLP	Balmoral late life project
BWOCUK	BWOCUK BW Offshore Catcher UK Limited
CATS	Central Area Transmission System
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CFU	Compact floatation unit
CH ₄	Methane
CHARM	Chemical hazard and risk management
CN/L	Catcher North/Laverda
CO	Carbon monoxide
CO ₂	Carbon dioxide
COP	Cessation of production
CSL	Centrica Storage Limited
DSV	Diving support vessel
ES	Environmental statement
EU ETS	European Union Emissions Trading Scheme
FPS	Forties Pipeline System
FPSO	Floating production storage and offloading vessel
FPV	Floating production vessel
GHG	Greenhouse gas
HLLP	Huntington late life project
HSES	Health, Safety, Environment and Security
ISO	International Standards Organisation
IOGP	International Association of Oil and Gas Producers
MCZ	Marine conservation zone
mg/l	Milligrams per litre
MODU	Mobile offshore drilling unit
NO _x	Nitrous oxides
OCNS	Offshore Chemical Notification Scheme
OCR	Offshore chemicals regulations
ODP	Oil discharge permit
OHSAS	Occupational health and safety assessment series
OPEPs	Offshore pollution emergency plans
OPPC	Oil pollution prevention and control
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OSCV	Offshore support and construction vessel
OSPAR	The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention)
OIW	Oil in water
PDN	Permitted discharge notification
PLONOR	Poses little or no risk (to the environment)
PON	Petroleum operations notice
PPC	Pollution, prevention and control
PWT	Produced water treatment
SCM	Subsea control module
SCR	Offshore Installations (Offshore Safety Directive) Safety Case Regulations
SNS	Southern North Sea
SO _x	Sulphur oxides
SOST	Subsea oil storage tank
SUB	Chemicals rated for substitution
UKCS	United Kingdom Continental Shelf
VOCs	Volatile organic compounds

