

Premier Oil UK 2019 ENVIRONMENTAL STATEMENT



**HEALTH, SAFETY
& ENVIRONMENT.
WE'RE ALL RESPONSIBLE.**
NO SHORT CUTS. NO EXCEPTIONS. NO INCIDENTS.



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ABBREVIATIONS

Bbl/d	Barrels of Oil per Day
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CFU	Compact Floatation Unit
CH₄	Methane
CHARM	Chemical Hazard and Risk Management
CO	Carbon Monoxide
CO₂	Carbon Dioxide
CSL	Centrica Storage Limited (CSL)
DECC	Department of Energy & Climate Change
E-Reps	Environmental Representatives
ECE	Environmentally Critical Equipment
EU ETS	European Union Emissions Trading Scheme
FPS	Forties Pipeline System
FPSO	Floating Production Storage and Offloading Vessel
FPV	Floating Production Vessel
HSES	Health, Safety, Environment and Security
ISO	International Standards Organisation
IOGP	International Association of Oil and Gas Producers
mg/l	Milligrams per Litre
NCN	Non Compliance Notice
NCR	Non Conformance Report
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
OIW	Oil in Water
OSD	Offshore Safety Directive
PDN	Permitted Discharge Notification
PLO	Poses Little or No Risk
PON	Petroleum Operations Notice
PPC	Pollution, Prevention and Control
ROV	Remotely Operated Vehicle
RQ	Risk Quotient
SEGAL	Shell Esso Gas and Associated Liquids
SO_x	Sulphur Oxides
SOST	Subsea Oil Storage Tank
SUB	Chemicals Rated for Substitution
UKCS	United Kingdom Continental Shelf
VOCs	Volatile Organic Compounds

INTRODUCTION

Premier Oil conducts its business in the United Kingdom Continental Shelf (UKCS) through three different legal entities, Premier Oil UK Limited, Premier Oil E&P UK Limited and Premier Oil E&P UK EU Limited, hereinafter collectively referred to as “Premier UK”. Each of the entities comprising Premier UK are wholly owned subsidiaries of the United Kingdom publicly listed oil and gas company Premier Oil Plc, a leading independent exploration and production company with oil and gas interests in the North Sea, South East Asia and the Falkland Islands, as well as exploration interests in Brazil and Mexico.

Premier UK’s North Sea position was transformed in 2009 with the acquisition of Oilexco North Sea Ltd which added a production base, including operatorship capability, and a broader development and exploration portfolio in the UK North Sea. Premier’s portfolio was further expanded in 2016 with acquisition of E.ON UK’s North Sea Assets including the Babbage, Huntington, Johnston and Hunter/Rita field developments.

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 2017 the Premier UK Business Unit achieved successful re-certification to the international environmental management system standard, ISO 14001 and the Occupational Health and Safety Standard OHSAS 18001.

This statement provides information on Premier UK’s 2019 UKCS offshore operations and the environmental performance of these operations. For the purpose of this statement, data included covers all production and drilling activities undertaken in compliance with Premier UK held permits and consents.

OVERVIEW OF OPERATIONS

Production Operations

Balmoral Floating Production Vessel

The Balmoral Floating Production Vessel (FPV) is located in Block 16/21a in the Central North Sea, approximately 125 miles north-east of the Aberdeen and 20 miles west of the UK/Norway trans-boundary line in a water depth of approximately 147m (*Figure 1*).

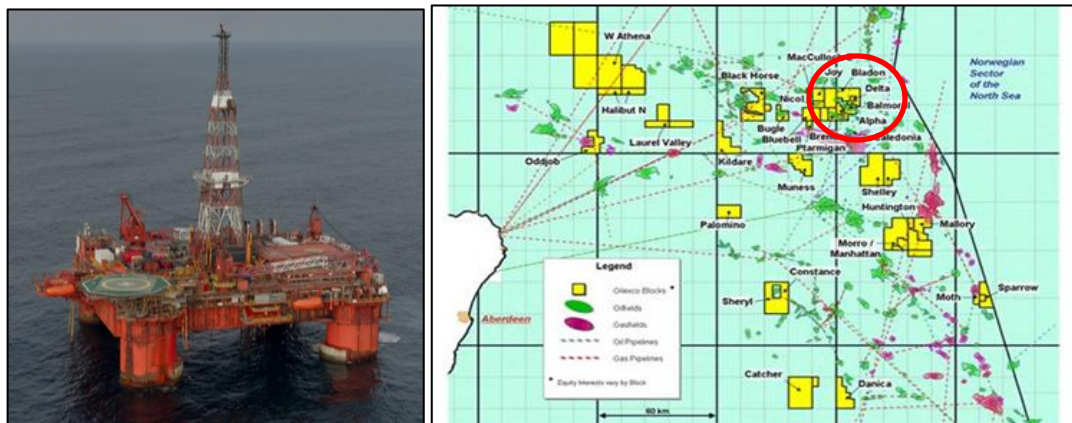


Figure 1– Balmoral FPV and Balmoral FPV Location

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

Balmoral processes fluids from the Balmoral, Stirling, Brenda, Nicol, Burghley and Beaully fields, with the crude oil transported to shore via the Ineos-operated Forties Pipeline System (FPS) to the Kinneil reception terminal on the Firth of Forth (*Figure 2*). Produced gas is used for power generation and gas lift, with excess gas flared from the installation. The water phase is treated to meet the regulatory standard for Oil in Water (OIW) and is then discharged overboard.

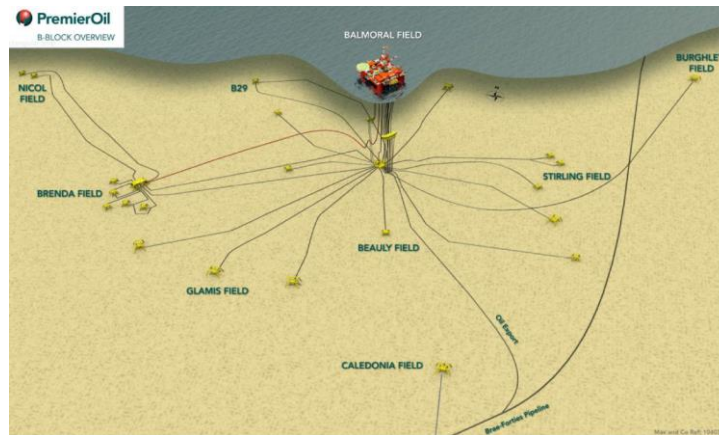


Figure 2– Balmoral Field Schematic

Solan

The Solan platform (Figure 3) is a single steel jacket structure located West of Shetland in Block 205/26a of the UKCS, 60 miles from the Scottish coast and 35 miles from the UK/Faroes median line in a water depth of approximately 138m (Figure 4).

The facility is designed to process fluids from two production wells supported by two water injector wells. It is capable of producing a peak flowrate of 28,000 Barrels of Oil per Day (bbl/d) with separated crude accumulating in a Subsea Oil Storage Tank prior to offloading to a tanker (Figure 5). Produced gas is used for power generation with excess gas flared from the installation. Seawater and ballast water is treated and injected to maintain reservoir pressure. Produced water is treated through the dedicated Produced Water Treatment facilities and discharged to sea.



Figure 3 – Solan Installation

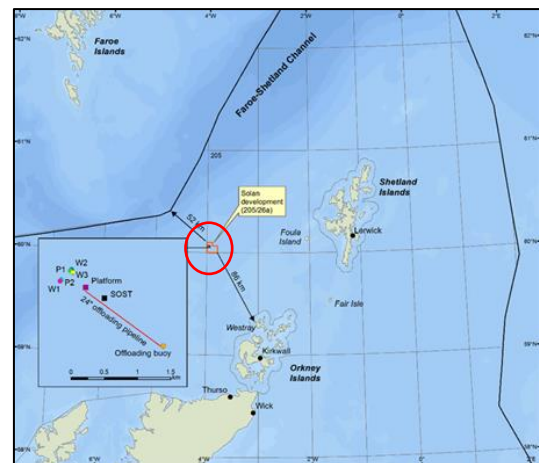


Figure 4 – Solan Location

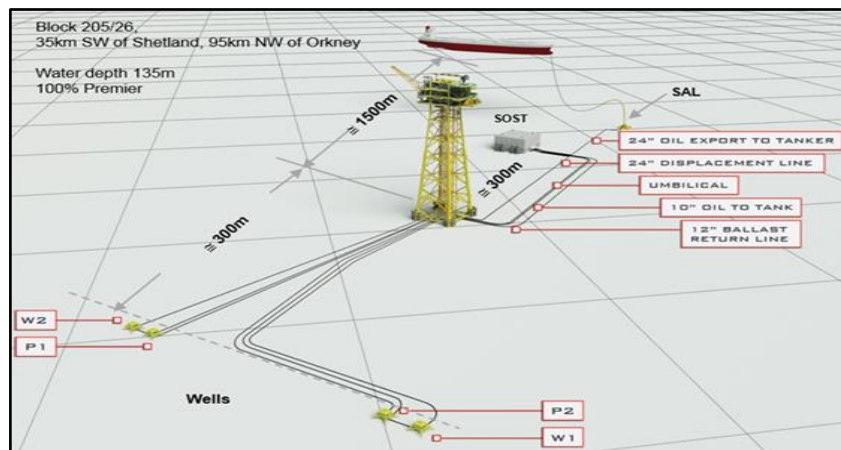


Figure 5 – Solan Field Schematic

Voyageur Spirit (Huntington Field)

The Voyageur Spirit Floating, Production, Storage and Offloading vessel (FPSO) is the host installation for the Huntington Field. The FPSO lies in approximately 89 m of water and is located in UKCS Block 22/14 of the central North Sea (Figure 6), approximately 204 km from the Scottish coast and 27 km from the UK/Norwegian median line.

The FPSO is located approximately 1.9 km to the north of the Huntington drilling template, and moored by a pattern of 13 anchors with flexible risers from the seabed entering the turret (Figure 6). The Huntington field development consists of 4 production wells and 2 water injection wells. The production wells are tied back to the Voyageur Spirit FPSO processing and export facility via a single flexible production flowline.

The crude oil is exported via a dynamically positioned shuttle tanker and gas is exported via the Central Area Transmission System (CATS) pipeline.

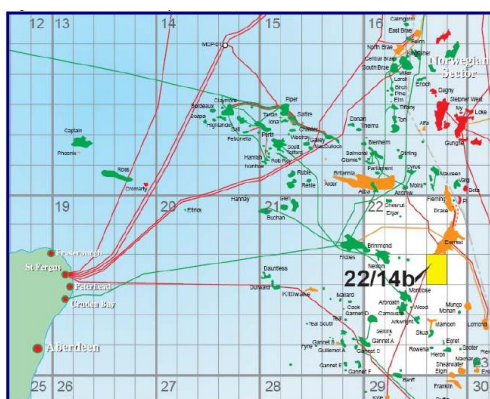


Figure 6 - Huntington field location and field schematic

Altera Infrastructure is the FPSO owner and the appointed Production Installation Operator under the Offshore Installations (Offshore Safety Directive) (Safety Case etc.) Regulations 2015 (SCR 2015). Accordingly, Altera is responsible for the day to day HSE management of the facility, including all environmental permitting requirements for production operations including the Pollution Prevention and Control (PPC), Chemical Permit (CPs), Oil Discharge Permit (ODP) etc.

Premier E&P UK Limited is the Licensee, Pipeline and Well Operator of the Huntington Field and is consequently responsible for the management of all HSE related matters associated with these activities. From an environmental permitting and management perspective, Premier UK is responsible for the FPSO Greenhouse Gas (GHG) Permit and the Huntington field Flare and Vent consents.

The data presented in this document relates to Premier UK's responsible activities for the Huntington Field. Altera will submit their own OSPAR report describing Altera managed activities.

Catcher

The BW Catcher Floating, Production, Storage and Offloading (FPSO) vessel (Figure 7) is the host installation for the Catcher, Burgman and Varadero Fields, 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 m of water. Figure 8 and Figure 9 illustrate the location of the Catcher Area Development and the overall field layout.



Figure 7 - Catcher FPSO in field

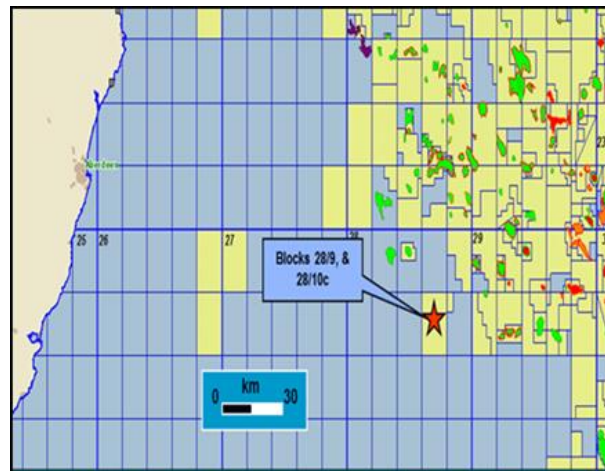


Figure 8 – Catcher Field Location

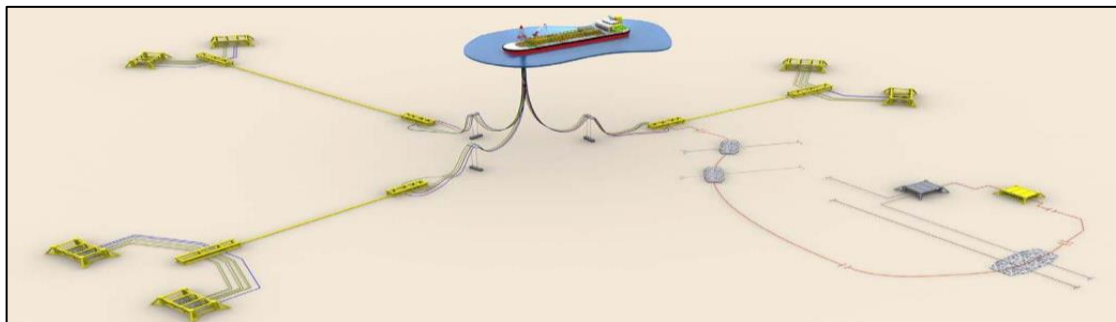


Figure 9 – Catcher Development Schematic

The three reservoirs are each tied back to the BW Catcher FPSO processing and export facility which is currently processing 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. Excess gas is exported via the 62 km gas export pipeline (which extends into Block 28/10c) into the Shell UK Limited operated Fulmar Gas Line.

The BW Catcher FPSO arrived in the field in mid-October 2017 from when subsea and topsides commissioning activities commenced. First oil was achieved on the 23rd December 2017 and FPSO commissioning was largely completed during 2018.

BW Offshore Catcher UK Limited (BWOCUK) is the FPSO owner and appointed Production Installation Operator of the BW Catcher FPSO. Accordingly, BWOCUK is responsible for the day to day HSE management of the facility including all environmental permitting requirements for production operations including the PPC, Chemical and ODP permits etc.

Premier UK is the Licensee, Pipeline and Well operator for the Catcher Area Development and is consequently responsible for the management of all HSE related matters associated with these activities. From an environmental permitting and management perspective, PMO is responsible for the FPSO GHG permit and the Flare and Vent consents.

The data presented here relates to Premier UK's responsible activities for the Catcher Area Development. BWOCUK will submit their own OSPAR report describing BWOCUK-managed activities.

Projects

Balmoral Late Life Project

The Balmoral Late Life Project (BLLP) was kicked off in late 2015 to prepare for decommissioning of the Balmoral FPV, subsea infrastructure and wells associated with the Balmoral, Glamis, Stirling, Brenda and Nicol fields.

The Balmoral decommissioning programme will be executed in three distinct phases;

- Phase 1 – Removal of the Balmoral FPV and associated risers and mid-water arches and disconnection of the FPV moorings.
- Phase 2 – Decommissioning of subsea infrastructure.
- Phase 3 – Plug and abandonment of wells.

Work completed in 2019 included further environmental data gathering for the wider Balmoral field. Towards the end of 2018 the economic field life for Balmoral was extended, though Late Life Project supporting activities were still continued into 2019. Various field scoping activities occurred at Balmoral which included well intervention and subsea works in Q1 – Q3. This resulted in three wells being returned to service (B29, D1 and D4). It is expected that the BLLP will continue into 2020 and 2021.

Huntington Late Life Project

The Huntington Late Life Project (HLLP) commenced in 2017 to prepare for the decommissioning of the Voyageur Spirit FPSO, subsea infrastructure and wells associated with the Huntington field.

The Huntington decommissioning programme will be executed in three distinct phases:

- Phase 1 – Removal of the FPSO, associated risers and mid-water arches and disconnection of moorings.
 - Altera as the appointed Installation Operator will be responsible for the removal of the vessel and disconnection of its moorings.
 - Premier as Licensee, Pipeline and Well operator for the Huntington Field, will be responsible for the flushing of subsea infrastructure and removal of the risers and mid-water arches.
- Phase 2 – Decommissioning of subsea infrastructure.
- Phase 3 – Plug and abandonment of wells.

Work completed in 2019 included identifying and kicking of preparation of relevant permit requirements, licences, authorisations, notifications and consents for execution of the decommissioning phase 1 activities in 2020.

Tolmount

The Tolmount Field is located in the Southern North Sea (SNS), Block 42/28d, approximately 36km east of Flamborough Head and 156km from the UK/Netherlands median line (Figure 10).

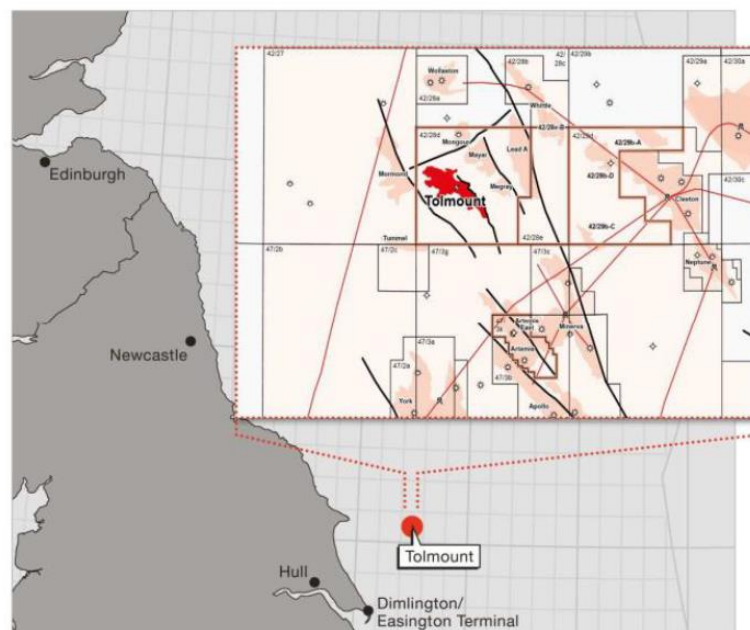


Figure 10 – Tolmount Field Location

Following successful well tests proving viable reserves of gas, Premier UK plans to develop the Tolmount Field in conjunction with its 50% equity partner, Dana Petroleum.

Gas is expected 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 (CSL)'s Easington Terminal. An initial ES for the scheme was approved in 2018 for development at Perenco's Dimlington Terminal, shortly thereafter the onshore development concept changed to CSL's Easington Terminal. This required submission of a new pipeline ES to OPRED in November 2018 which was subsequently approved in mid-2019 in conjunction with onshore planning permission approvals.

Work under the onshore approvals began at Easington Terminal and in the nearshore environment in October 2019. Permits and consents to support the pipeline installation works were submitted to OPRED and OGA in Q4 2019 in order to allow approval and commencement of pipeline installation works in Q2 2020.

Premier UK continues to engage with key onshore and offshore stakeholders on the Tolmount project, primarily in relation to environmental sensitivities in the onshore project area, and the potential for impacts to the Holderness Inshore Marine Conservation Zone from pipeline installation activity. In conjunction with the regulator, OPRED, Premier has an open and constructive dialogue with Natural England (case owners for the MCZ) which will continue through 2020.

Catcher Projects

During 2019, the Catcher Projects team completed the Catcher North / Laverda Define phase studies. Following a period of public consultation, the Laverda Environmental Statement was accepted by OPRED and the overall development approved by OGA. The Catcher North and Laverda fields will be drilled from a new drill 4-slot template to be installed in 2020. Production from both fields will be co-mingled and transported back to the existing BW Catcher FPSO via the existing Varadero pipeline bundle. In preparation for this installation activity, the Consent to Locate application for installation of the drilling template was approved. Two marine surveys (geophysical and geotechnical) of the Catcher area were also performed in support of the 2020 subsea installation works (drill template, pipe/umbilical lay and rock dump).

Drilling, Well Intervention and DSV Operations

Tolmount Drilling

Drilling operations in the Tolmount area included the drilling of an appraisal well at the Tolmount East location in Q3 – Q4 of 2019 employing the Ensco 123 jack-up drilling rig (Figure 2.14). Vertical Seismic Profiling (VSP) was also undertaken as a part of the 2019 operations. A Subsea Protective Structure (SSPS) was also installed to cover the 30 inch conductor stub. The data presented in this statement, relates to the one appraisal well drilled and completed in 2019.



Figure 11 - Ensco 123 Drilling Rig

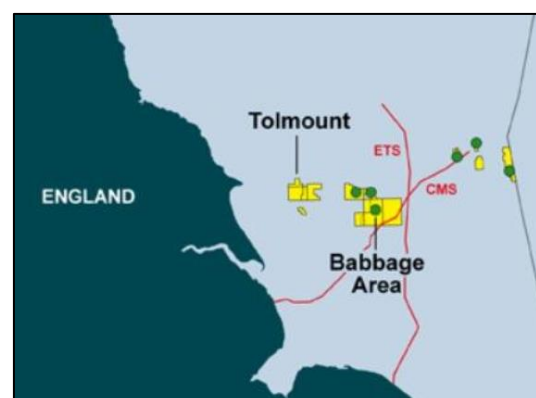


Figure 12 - Location of Tolmount

Babbage and Cobra Well Intervention

On the 5th December 2018 the Babbage Platform was sold to Spirit Energy, with well abandonment commitments for 2019 remaining with Premier Oil. Well intervention operations to abandon the Babbage well (48/02-1) were conducted in Q3 – Q4 of 2019 alongside the abandonment of the Cobra well (48/02c-1). Both of these wells are located in the Southern North Sea (SNS) and utilised the Ensco 123 heavy-duty jack-up drilling rig.

Johnston DSV Campaign and Well Intervention

The Johnston field is located in the SNS which 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. During 2019 well intervention operations were conducted at Johnston to replace the Subsea Control Module (SCM). Additionally, well abandonment operations on the 43/27-1 well were also undertaken as part of the final abandonment processes which will be undertaken in 2023 – 2024 to be fully compliant with Oil and Gas UK Decommissioning Guidelines.

Huntington DSV Campaign and Well Intervention

The Huntington drill template is operated by Premier Oil E&P UK Limited and tied back to the Huntington Production manifold which is connected to the Voyager Spirit FPSO. The Voyager FPSO is owned by Altera. A milling and scale squeeze operation on the H5 well located within the Huntington drilling template was carried out in 2019. This operation is in conjunction with the HLLP decommissioning activities due to commence in 2020 and through into 2021.

Balmoral DSV Campaign and Well Intervention

Various field scoping activities occurred at Balmoral which included well intervention and subsea works in Q1 – Q3. This resulted in three wells being returned to service (B29, D1 and D4).

D4 well intervention operations occurred to reinstate gas lift. The design of the gas lift was changed in order to bring the well back online.

B29 well intervention operations occurred to complete inspection work scopes on the wellhead. The B29 well was shut in until assurance checks were completed in 2019.

HSES MANAGEMENT SYSTEM

Premier UK is focused on protecting the environment in line with our stated commitment to reduce our impact to a level that is as low as reasonably practicable. This involves ongoing assessment, monitoring and reporting on environmental impacts of all our operations.

The Premier Oil Health, Safety, Environment and Security Management System (HSES-MS) exists to provide a systematic approach to the management of HSES issues in order to protect people and the environment and comply with UK legislation.

Premier UK considers that health, safety, environment and security have equal status with other primary business objectives and are of strategic importance to Premier UK. Safe working practices and due consideration of environmental impact are vital to the overall efficiency and continued success of the business. The HSES policy forms the basis for the HSES-MS and is presented in Figure 13.

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

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NO SHORT CUTS. NO EXCEPTIONS. NO INCIDENTS.

Figure 13 – Premier HSES Policy

The HSES-MS has a hierarchical document structure as illustrated in Figure 14. 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 and Occupational Health and Safety Assessment Series (OHSAS) 18001 international standards.

Figure 14 shows the structure of the HSES-MS, which is comprised of;

- Premier’s HSES Policy;
- The Premier Corporate Expectations. These are owned by the CEO and issued by the Group HSES manager. The corporate expectations apply to all Premier Business Units;
- The tools to allow for implementation of the Corporate Expectations e.g. Business Unit and Asset Specific procedures.

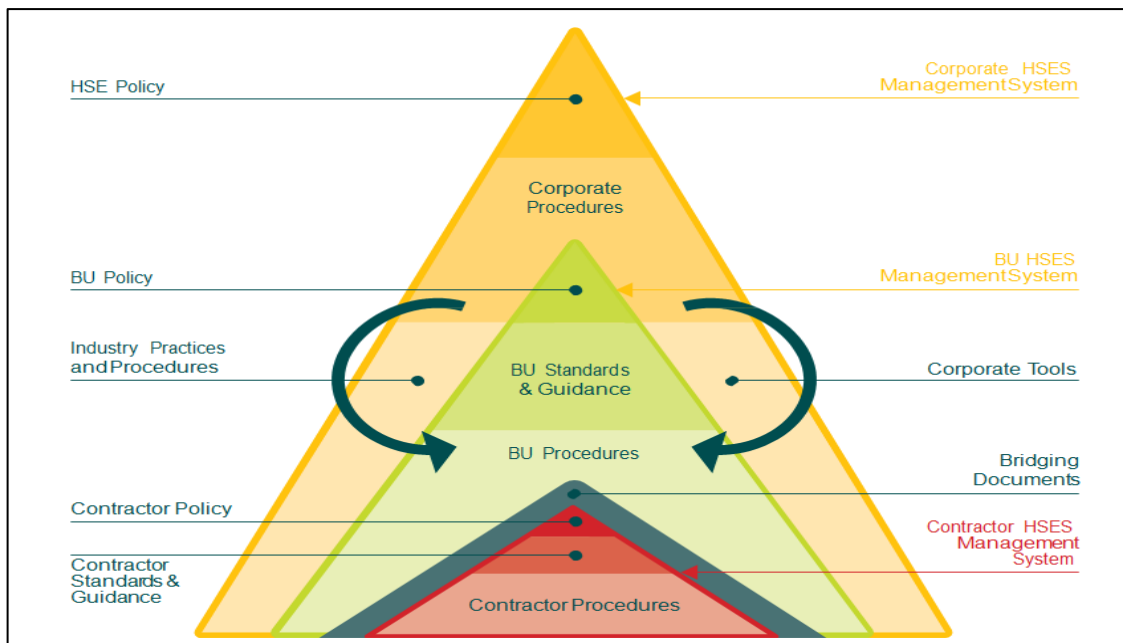


Figure 14 – HSES-MS Structure

The Premier HSES Management System has 10 individual Elements. Each Element contains a set of concise expectations that are mandatory for implementation and maintenance within all the constituent parts of the Premier Oil group of companies (the Group). They define ‘what’ is expected by the Group in order to manage HSES risk during execution of work activities.

Figure 15 below shows the ten elements that make up the Premier Oil HSES Management System.

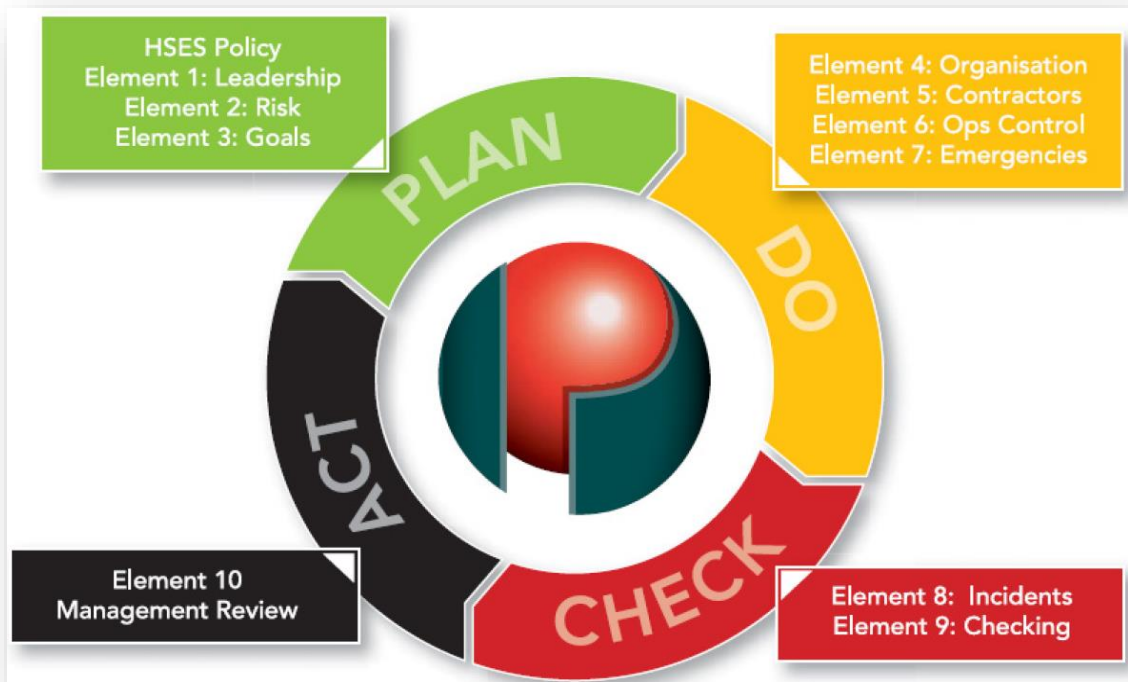


Figure 15 – HSES-MS Framework

ENVIRONMENTAL PERFORMANCE

Environmental performance for assets operating during 2019 is detailed below. For the Huntington Field and Catcher Area Developments, the data presented here only relates to the PMO managed activities (for example, subsea, drilling, European Trading Scheme reportable (GHG Carbon Dioxide) emissions, flare and venting). Those activities managed by the Voyageur Spirit and BW Catcher Installation Operators (for example, oily discharges, chemicals, combustion emissions associated with power generation etc.) will be reported separately by the respective company in their Environmental Statements.

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 after the water has been separated and then routed through hydro-cyclones and the tilted plate separator to remove entrained oil.

Figure 16 shows the cumulative produced water discharges from Balmoral FPV during 2019. The total volume of produced water discharged to sea from the Balmoral FPV was 1,829,307 m³ against the permitted volume of 2,600,000 m³.

This equates to a discharge of 70.4% of the Balmoral FPV permit produced water volume limit which is an increase in the total amount discharged as compared with 2018 (1,536,840 m³). Produced water volumes are expected to increase every year (due to the fact that as wells mature, the percentage of water cut from the reservoir fluids naturally increases).

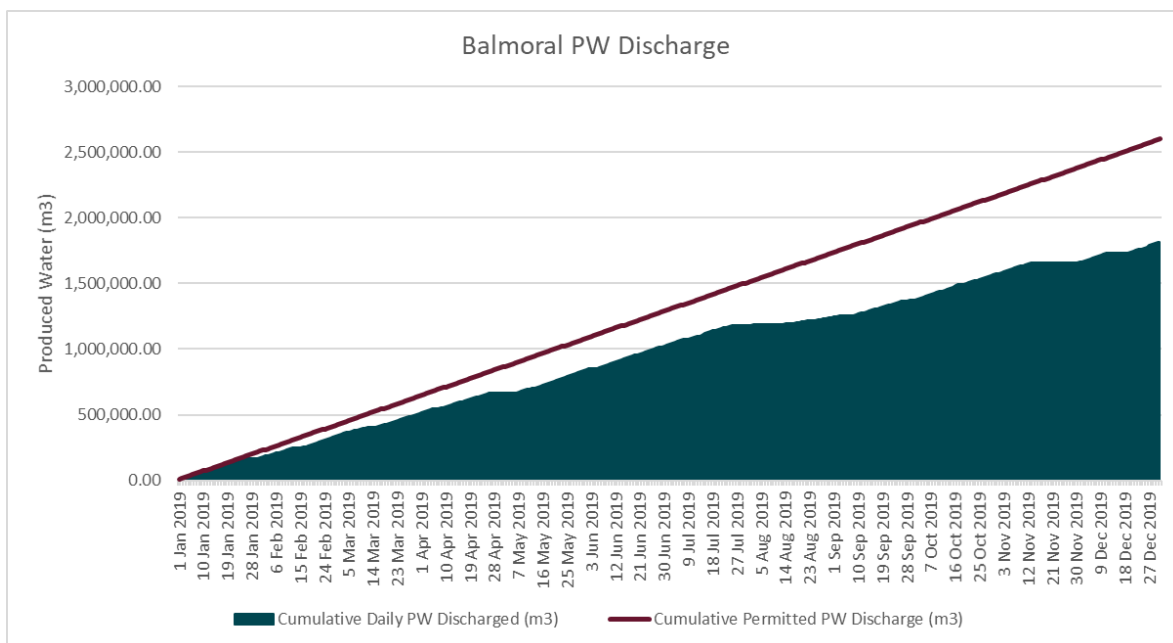


Figure 16 – Cumulative Produced Water Discharge from Balmoral in 2019

Figure 17 shows the total mass of oil in produced water discharged to sea from the Balmoral FPV in 2019 was 26.9 tonnes. This is a 44% increase when compared with oil discharge from 2018 (15.17 te).

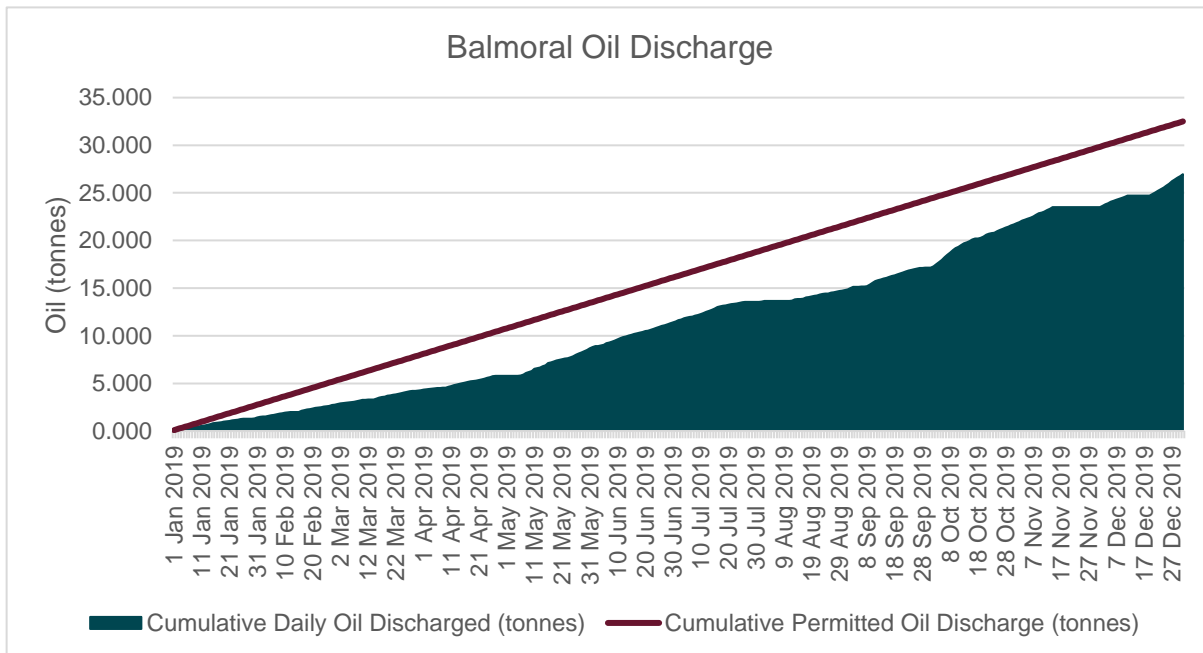


Figure 17 – Mass of Oil Discharged in Produced Water from Balmoral in 2019

The average concentration of oil discharged in produced water for Balmoral in 2019 was 15.3 mg/l. Monthly average oil in water concentrations are shown in Figure 18.

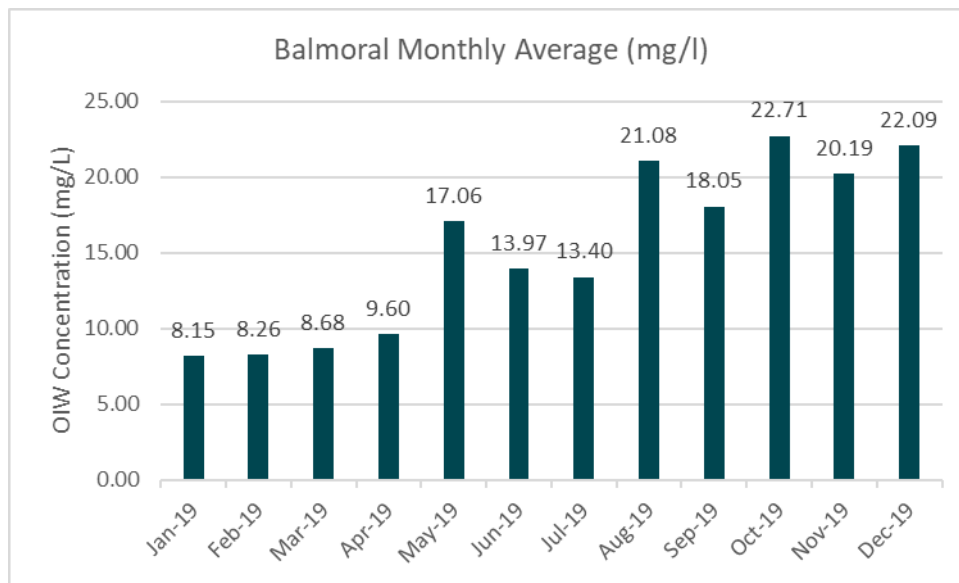


Figure 18 – Average Oil in Water Concentration for Balmoral in 2019

Whilst the 2019 average is 50% higher than in 2018, it is directly related to the operations carried out during Q1 – Q3 of 2019 (well intervention and subsea works). This resulted in three wells being returned to service (B29, D1 and D4) which have contributed an increased volume of produce water (approximately 19,000 bbls/day) being processed through the Balmoral FPV. Therefore, the average OIW has increased since these well have been brought back online. Premier UK continue to look for the best way to practise continued good performance by the optimised management of the produced water treatment equipment and the highly efficient chemicals used to remove oil from the produced water before discharge.

Techniques used on Balmoral towards both lowering the concentration of oil in produced water and reducing the amount of oil passed to sea continue to be monitored.

Solan

Produced water broke through the Solan reservoir early 2017 and was discharged overboard from November 2017 via a bespoke produced water treatment package (PWT). 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.

The Solan Platform has two options for disposal of ballast water; over board via a dedicated disposal caisson or re-injected into the reservoir via two dedicated water injection wells, W1 and W2. The produced water is treated through a dedicated treatment package consisting of Hydrocyclones, booster pumps and compact floatation units (CFUs) and is discharged to sea through the dedicated disposal caisson.

Ballast water with small concentrations of hydrocarbons are injected by preference or discharged overboard once treated through the dedicated ballast water absorption filters. A total of 87,712 m³ of ballast water was discharged from the platform in 2019 against a permitted volume of 101,500 m³.

Produced water with low concentrations of hydrocarbon are discharged overboard once treated through the PWT. A total of 413,231 m³ of produced water was discharged against a permitted volume of 539,846 m³. Figure 19 and Figure 20 shows the volume of ballast and produced water discharged in 2019.

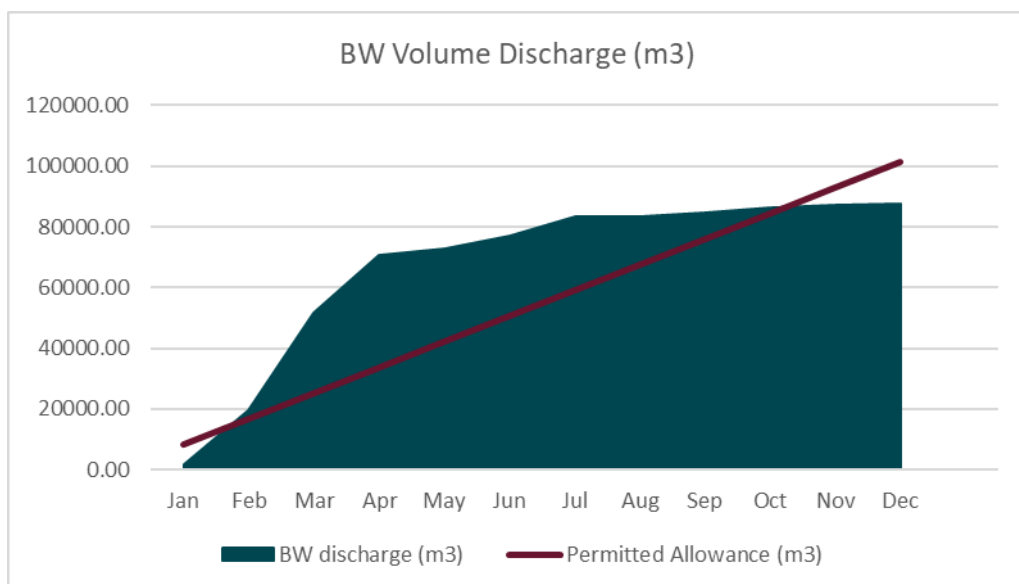


Figure 19 – Cumulative Ballast Water Discharge from Solan in 2019

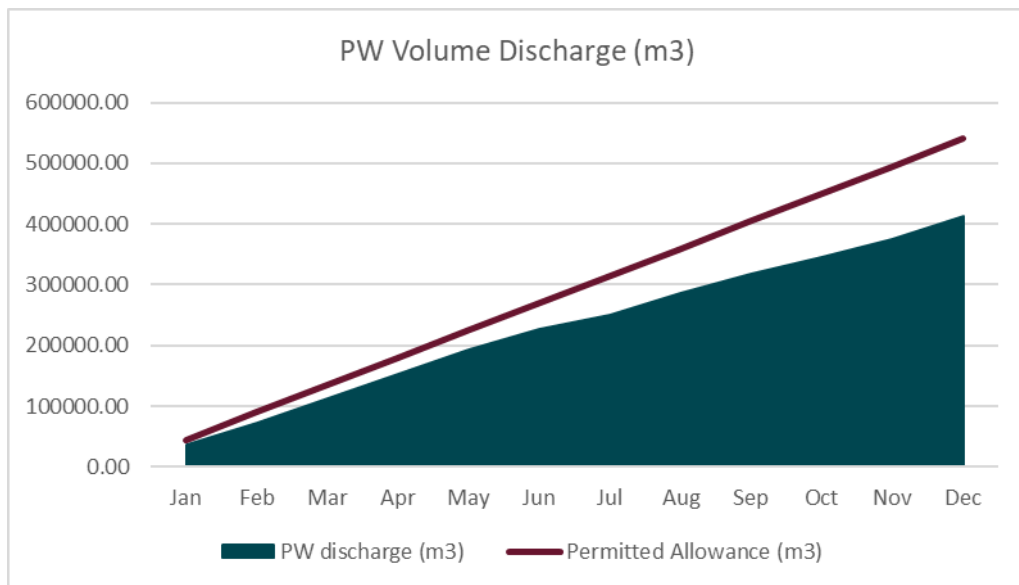


Figure 20 – Cumulative Produced Water Discharge from Solan in 2019

Solan was permitted to discharge a total of 0.101 tonnes of hydrocarbon in ballast water in 2019, equating to an average of 10 mg/l oil in water concentration. The platform discharged a total of 0.0066 tonnes of hydrocarbon (Figure 21) with an average concentration of 0.03 mg/l (Figure 22) within the ballast water due to good interface management within the SOST and treatment through the ballast water filtration package.

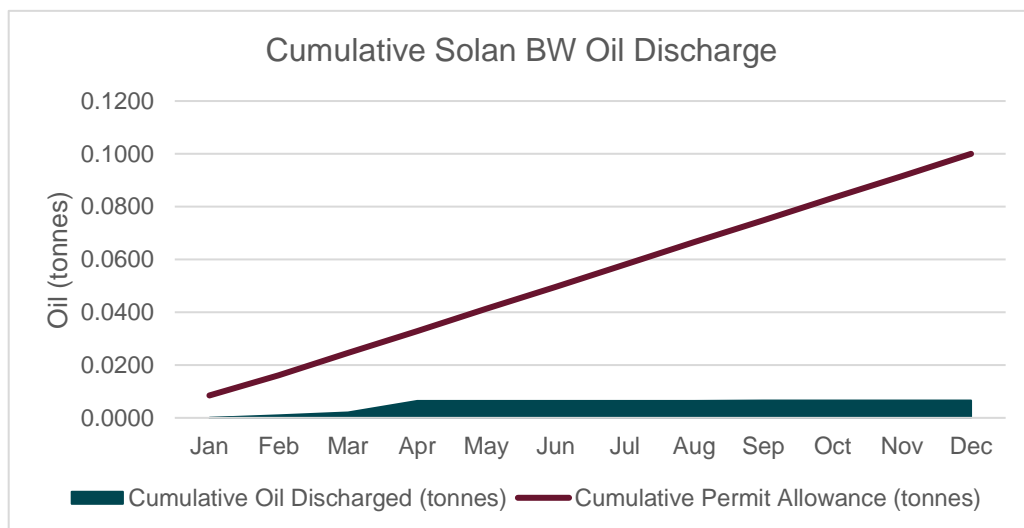


Figure 21 – Cumulative mass of Oil Discharged in Ballast Water from Solan in 2019

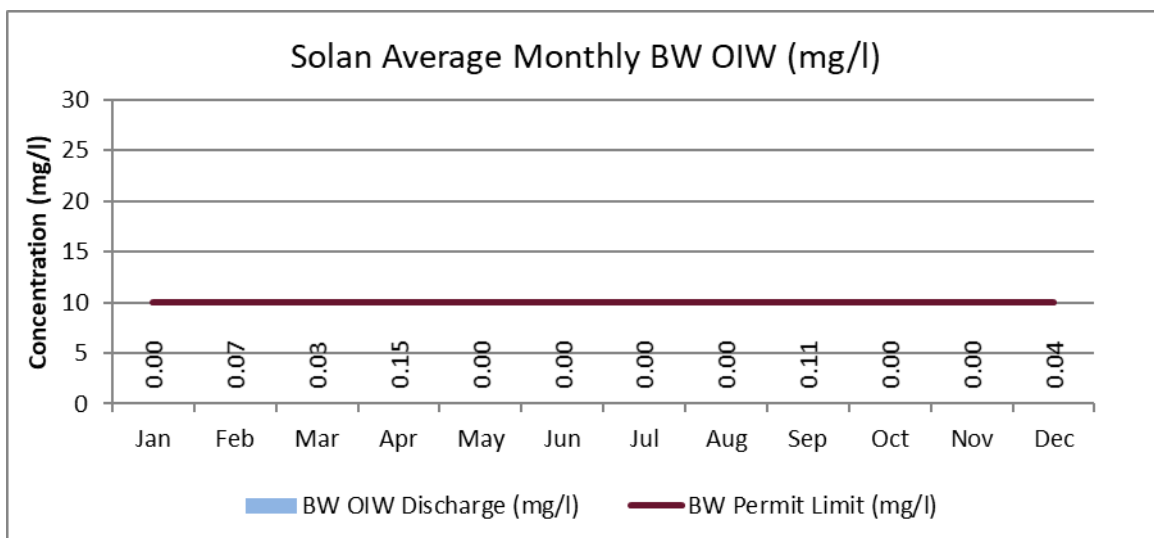


Figure 22 – Average Oil in Water Concentration in Ballast water for Solon in 2019

Solon was permitted to discharge a total of 3.78 tonnes of hydrocarbon in produced water in 2019 equating to an average of 15 mg/l oil in water concentration. The platform discharged a total of 3.16 tonnes of hydrocarbon (Figure 23) with an average concentration of 7.68 mg/l (Figure 24).

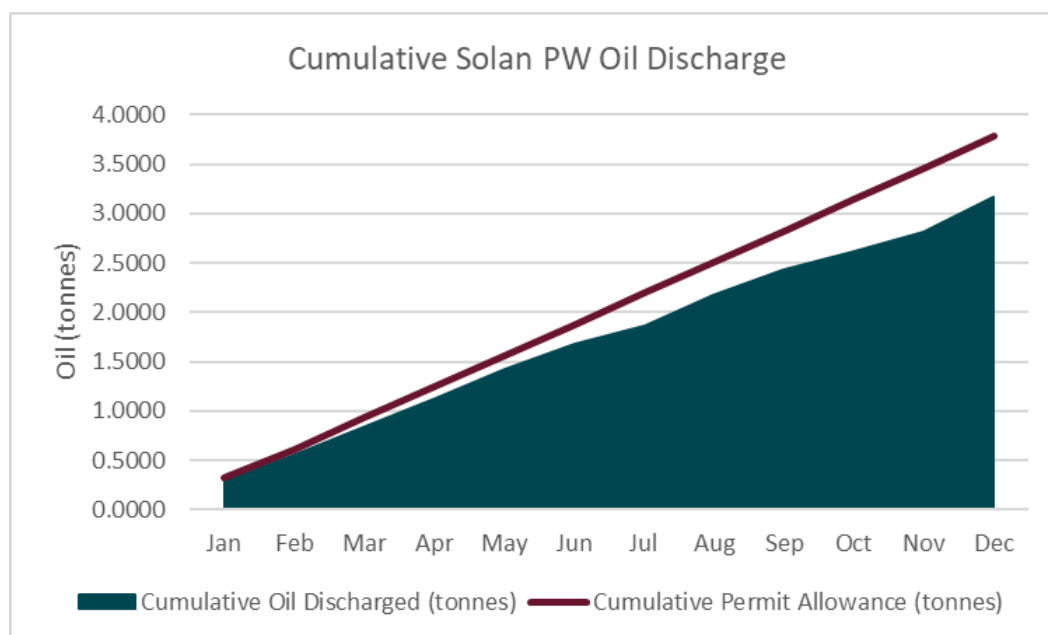


Figure 23 – Mass of Oil Discharged in Produced Water from Solon in 2019

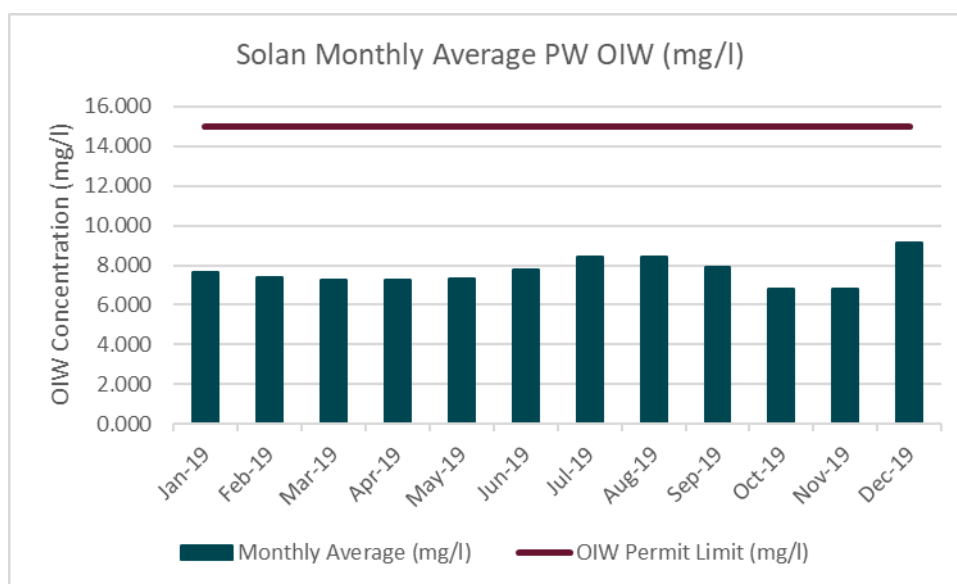


Figure 24 – Average Oil in Water Concentration in Produced water for Solon in 2019

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, first be approved by the Centre for Environment, Fisheries and Aquatic Sciences (CEFAS). The chemicals are subject to robust environmental risk assessment and once approved, their use is controlled and monitored through a permit granted by OPRED.

Under the Offshore Chemical Notification Scheme (OCNS), chemicals are ranked according to the assessed hazard to the environment and are given a lettered heading E, D, C, B or A, with E representing the lowest and A the highest hazard category.

Using the Chemical Hazard and Risk Management (CHARM) model, a colour band is used to show which chemicals pose the highest hazard. These bands are Gold, Silver, White, Blue, Orange or Purple with Gold representing the lowest hazard and Purple the highest.

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.

Premier UK, its contractors and its chemical suppliers work on a continuous basis to find suitable alternatives to replace the products with SUB warnings.

Balmoral FPV

One chemical with a SUB warning was permitted for use on Balmoral in 2019 as detailed in Table 1.

Chemical & OCNS Category	Summary of Change Out Review
SICI11231A, ChampionX (Champion Technologies Ltd), Gold	<p>This Corrosion Inhibitor is injected into the Brenda/Nicol gas lift supply in order to inhibit subsea scale formation and mitigate against corrosion.</p> <p>Discussions are ongoing with ChampionX to progress the trial and eventual change out of this SUB product.</p>

Table 1 – SUB Chemicals Permitted for use in Balmoral FPV operations

18,792 kg of SUB chemicals were used on Balmoral in 2019 this was 79% of what was permitted for use during 2019 (23,697 kg). The use of SUB chemicals in 2019 was 33% less than SUB chemicals used in 2018.

In Figure 25 the chemicals used on Balmoral FPV during 2019 have been grouped by OCNS category. This figure shows that 0.6% of all the chemicals used are rated PLONOR (Poses Little or NO Risk).

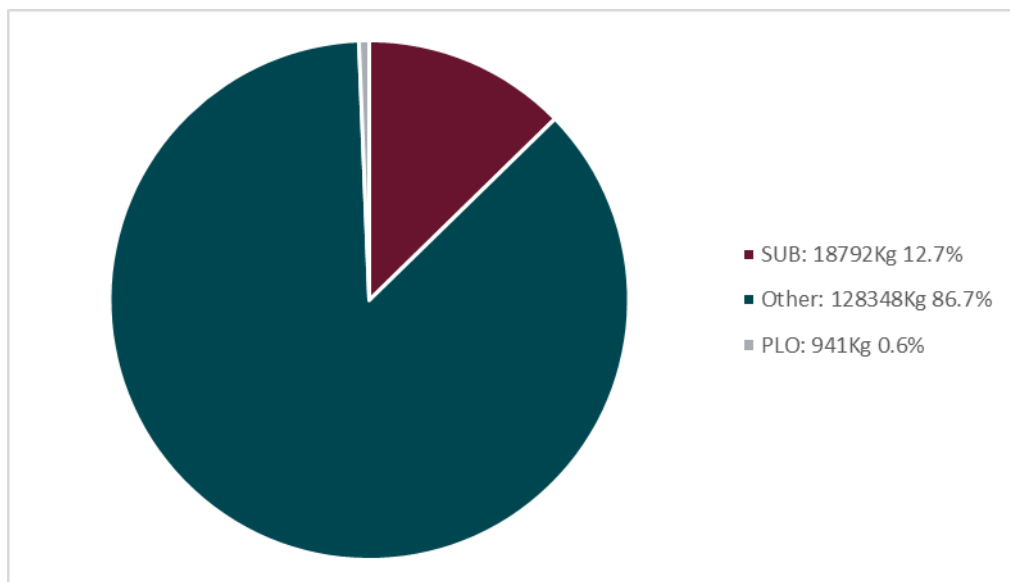


Figure 25 – Balmoral Chemical Use during operations, by OCNS Category

Solan

A total of 3 chemicals identified for substitution were used and / or discharged from Solan in 2019 (Table 2). 23,117 kg of chemical identified for substitution were discharged from Solan in 2019.

Chemical & OCNS Category	Summary of Change Out Review
EC6718A, ChampionX, Biocide, Gold	Alternative biocides are available but not as effective for application to the SOST and able to penetrate biofilms as effectively. Manufacturer continues to research alternative greener technologies.
BIOC16718A, ChampionX, Biocide, Gold	This product is the new ChampionX name for EC6718A. This product will be used in the same way as described above.
Oceanic HW 443, MacDermid, Hydraulic Fluid, OCNS D	Although greener alternatives are available the component which attracts the substitution warning is the fluorescent dye which has been deemed as important aspect to monitoring of the subsea infrastructure on Solan and therefore the fluid will remain in use.

Table 2 – SUB Chemicals Permitted for use in Solan operations

In Figure 26 the chemicals used on Solan during 2019 have been grouped by OCNS category. This figure shows that 2.1% of all the chemicals used are rated PLO.

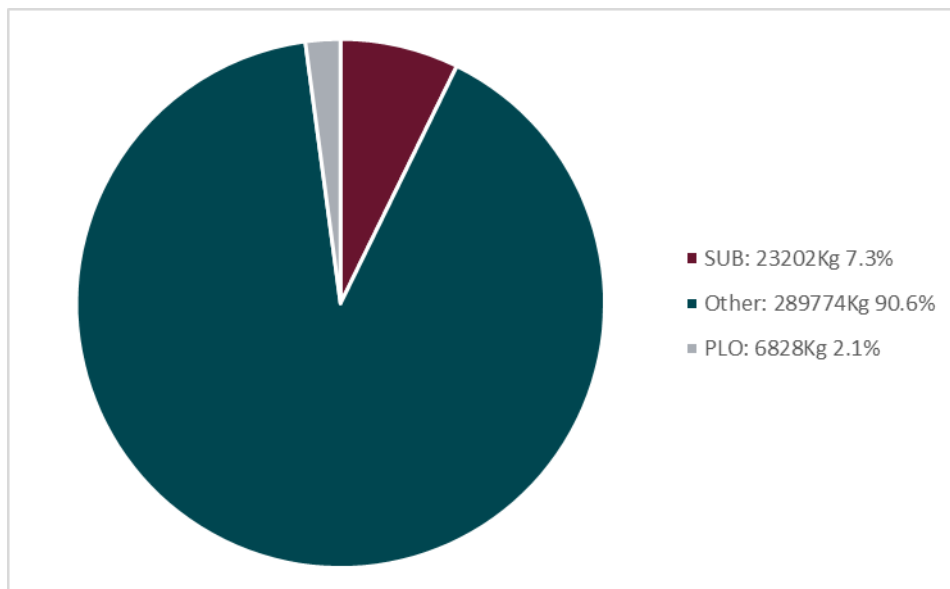


Figure 26 – Solan Chemical Use during operations, by OCNS Category

Tolmount Drilling (Ensco 123)

A total of 24 chemicals with SUB warnings were permitted for use during the Tolmount East drilling operations for the appraisal well completed in 2019. Of the 24 chemicals, 9 were actually used during the drilling operations.

The quantity of SUB chemicals used during the 2019 drilling operations was approximately 4 kg, of which only 3,019 kg was discharged to sea during the year. Figure 27 and Figure 28 show the percentage of SUB and PLO chemicals used and discharged relative to other chemicals. These figures group the chemicals by OCNS category, and demonstrate that 73.4% of all the chemicals used and 7.6% of those discharged, were rated PLO. Additionally, only 4.3% of chemicals used were SUB chemicals, of which only 0.1% were discharged.

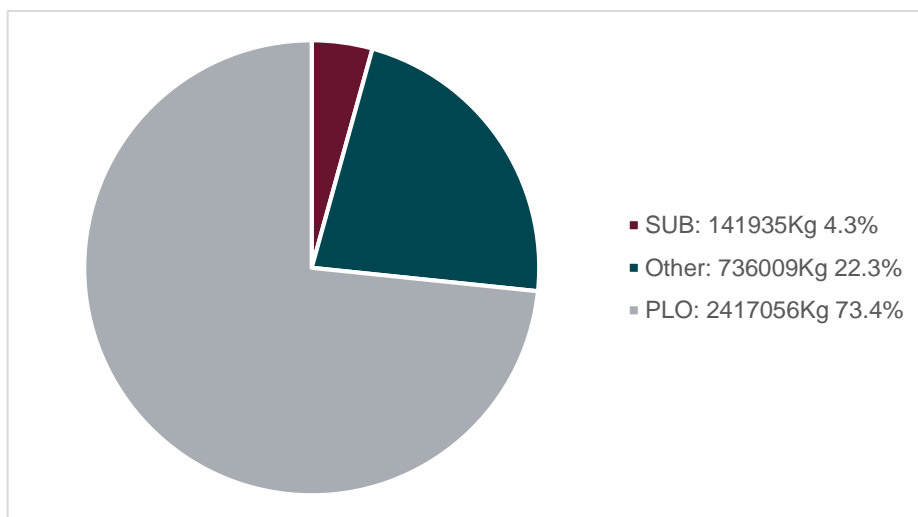


Figure 27 – Chemical Use during drilling operations by OCNS

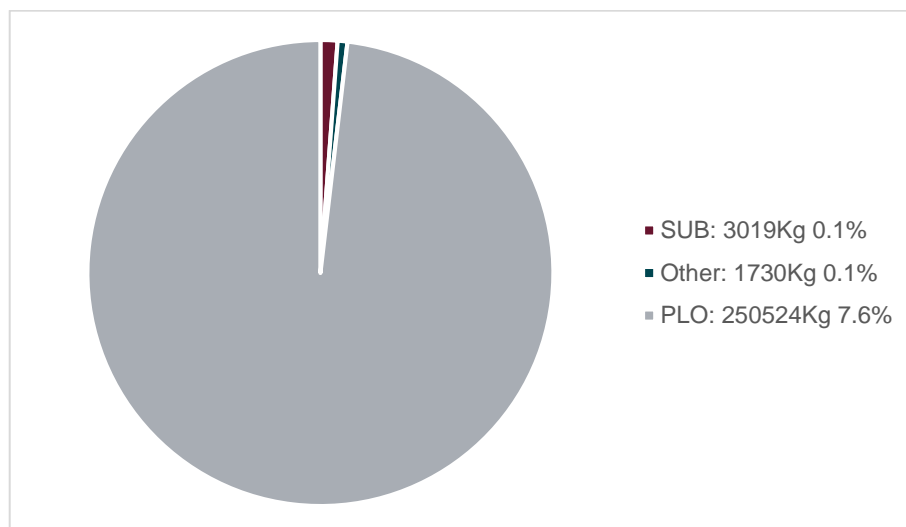


Figure 28 – Chemicals Discharged during drilling operations by OCNS

Well Interventions

The quantity of SUB chemicals used during 2019 Well Interventions was approximately 48,944 kg of which only 26,092 kg were discharged to sea during the year. Figure 29 and Figure 30 show the percentage of SUB and PLO chemicals used and discharged relative to other chemicals. These figures group the chemicals by OCNS category, and demonstrate that 41.7% of all the chemicals used were rated PLO.

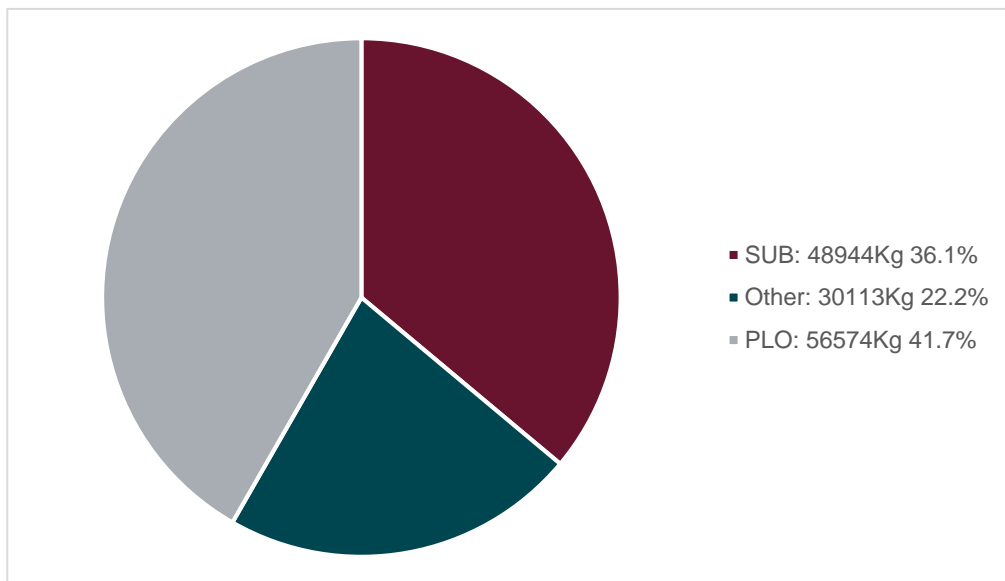


Figure 29 - Chemical used during Well Interventions in 2019

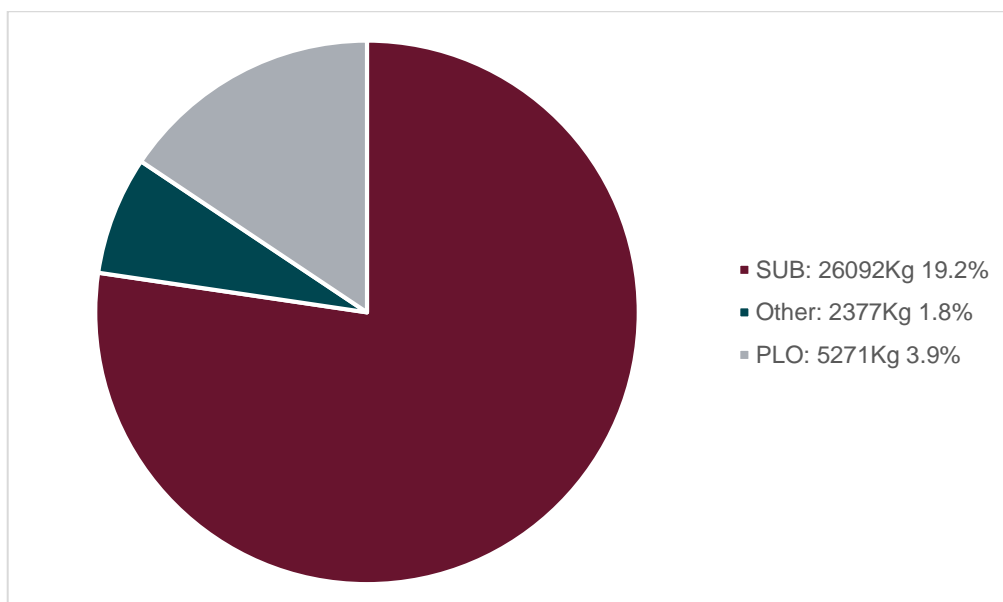


Figure 30 - Chemical discharge during Well Interventions in 2019

Waste

Waste is generated from offshore operations and 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.

Premier UK continues to target areas where the amount of waste generated can be further reduced. E-reps are actively involved in continuous awareness raising and reduction initiatives.

Balmoral

A total of 219.8 tonnes of waste was disposed of from the Balmoral FPV in 2019 compared to 198.7 tonnes in 2018.

Balmoral recycled about 72% of its waste during the year. This is a 10% increase in recycling contribution compared to 2018 where 65% of waste was recycled. Throughout 2019 participation of Environmental Representatives (E-reps) and continuous waste management awareness raising contributed in good overall performance. Figure 31 shows the fate of waste produced from the Balmoral FPV in 2019.

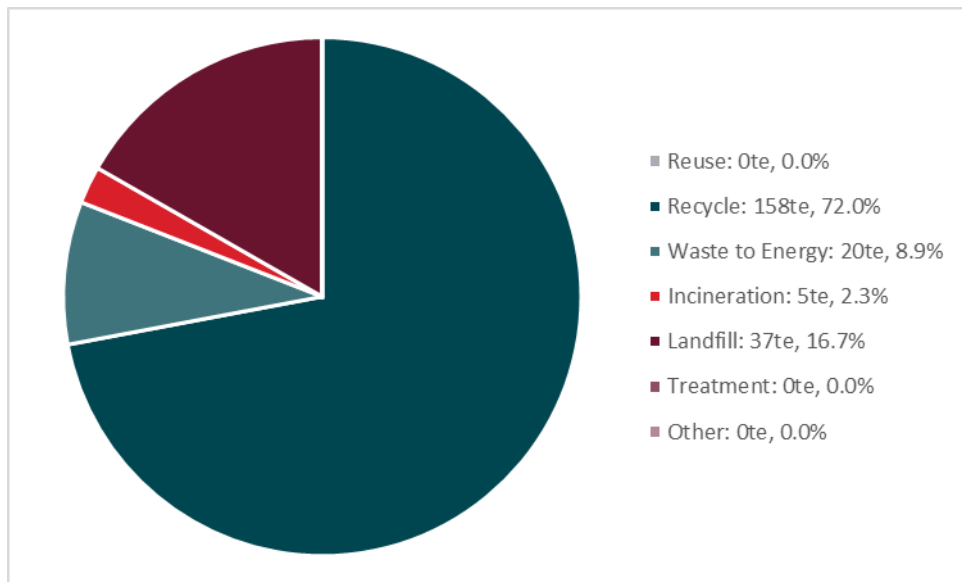


Figure 31 – Balmoral Waste Disposal Routes for 2019

Solan

A total of 78.4 tonnes of waste was generated on Solan in 2019. Of this 23% was sent to landfill and 70.5% was recycled (Figure 32).

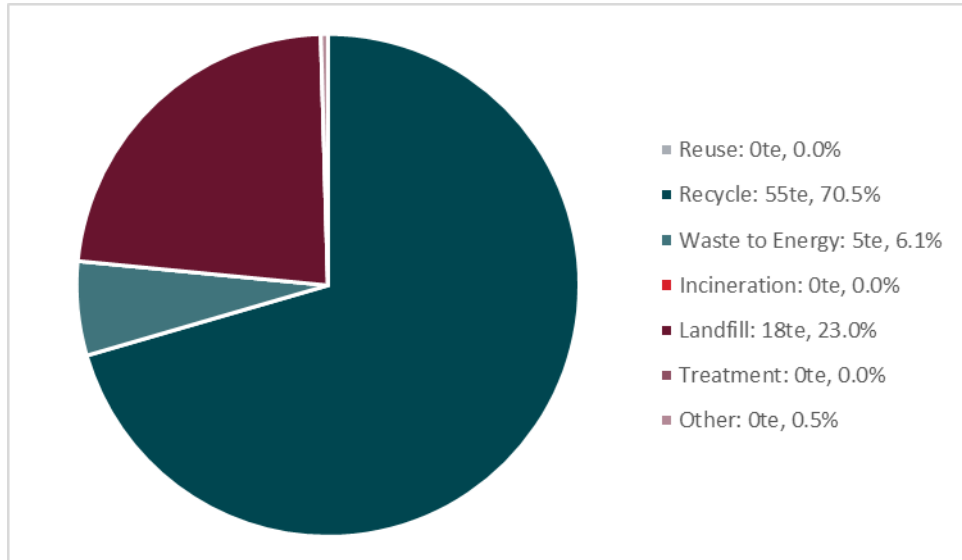


Figure 32 - Solan waste disposal routes for 2019

Tolmount Drilling (Ensco 123)

During 2019, 245.2 tonnes of drilling waste (e.g. back loaded drill cuttings) was generated during drilling operations, of which 7.1 tonnes (2.9%) of oil was recycled. In addition to this, 218.1 tonnes of solid waste was sent to landfill and 20 tonnes (8.2%) of waste was use for energy.

Figure 33 shows the Operational Waste from the Ensco 123 drilling activities during 2019.

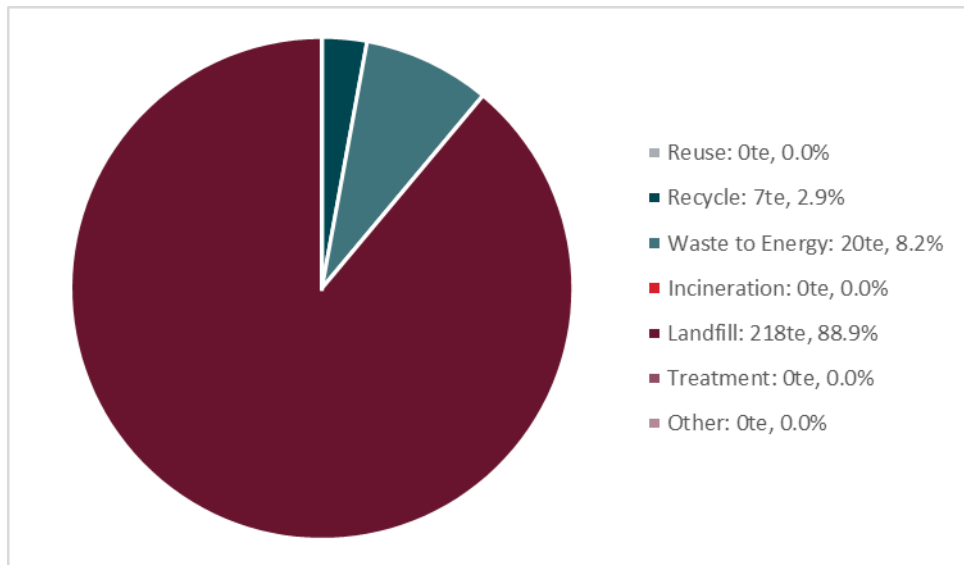


Figure 33 – Ensco 123 Waste Disposal Routes

Atmospheric Emissions

European Union Emissions Trading System (EU ETS)

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

Below represents the year on year CO₂ emissions for the Premier UK Operated and Leased Assets (past 3 years). Diesel continues to be the prominent source of the largest proportion of CO₂ emissions from our Operated Assets; Balmoral and Solan, with our Leased Assets, Catcher and Voyageur Spirit, apportioning the largest amount of CO₂ emissions to fuel gas combustion (Figure 34). It should be noted that no atmospheric EEMS returns were reported for Catcher and Voyageur Spirit by Premier UK, this falls under the responsibility of the third party owner (BWO and Altera, respectively).

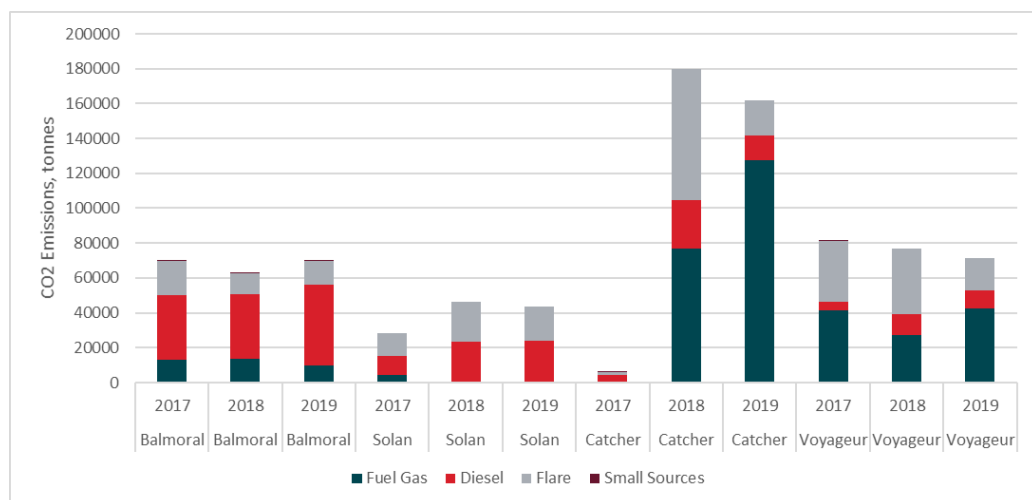


Figure 34 - Total CO₂ emissions per asset 2017-2019

Pollution, Prevention and Control

Balmoral and Voyager Spirit are regulated under the PPC Regulations as large combustion installations. As such, the installations have set limits on atmospheric emissions of nitrous oxides (NO_x), sulphur oxides (SO_x), carbon monoxide (CO), methane (CH₄) and volatile organic compounds (VOCs).

Figure 35 shows an increase on Balmoral from 2018-2019 which is attributed to well intervention activities which brought back online three wells (B29, D1 and D4). Solan shows an increase in all emissions due to a further reliance on diesel generation as the field becomes gas deficient.

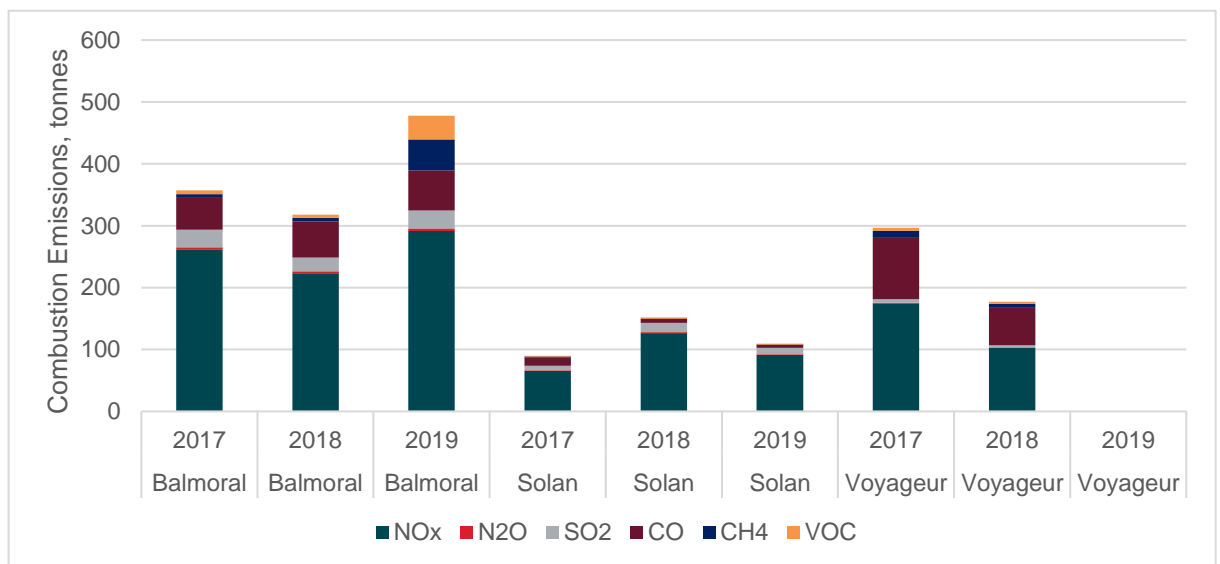


Figure 35 - Operated Assets NO_x, N₂O, SO₂, CO, CH₄, VOC Emissions 2017-2019

Catcher is operated by BW Offshore who are the holder of the PPC Large Combustion permit therefore no data has been included.

Note: historic Voyager Spirit emissions are included here for when Premier UK was the Duty holder. Altera took over as installation operator in 2018 hence the reduced emissions for 2018 and none for 2019. These will be included in the Altera OSPAR report.

Tolmount Drilling (Ensco 123)

The Ensco 123 carried out the drilling of an appraisal well at Tolmount East in 2019. Combustion emissions from the Ensco 123 in 2019 are shown in Figure 36. In addition, 3,571.20 tonnes of CO₂ were released during these operations, as shown in Figure 37. No flaring took place during the drilling operations at Tolmount East.

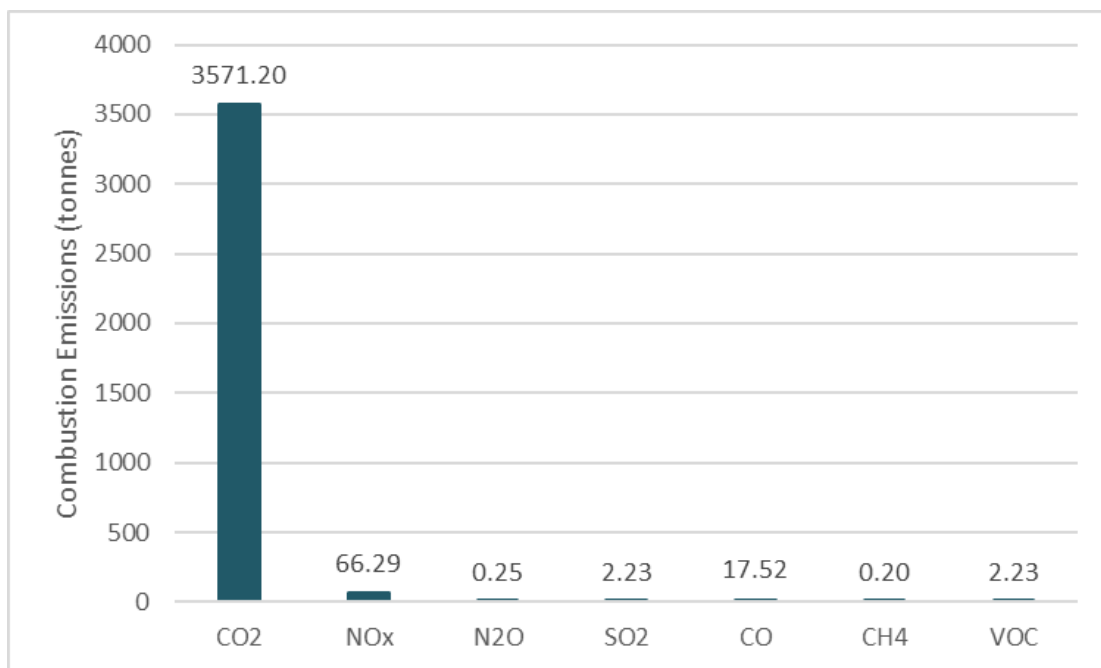


Figure 36 – Combustion Emissions for Ensco 123

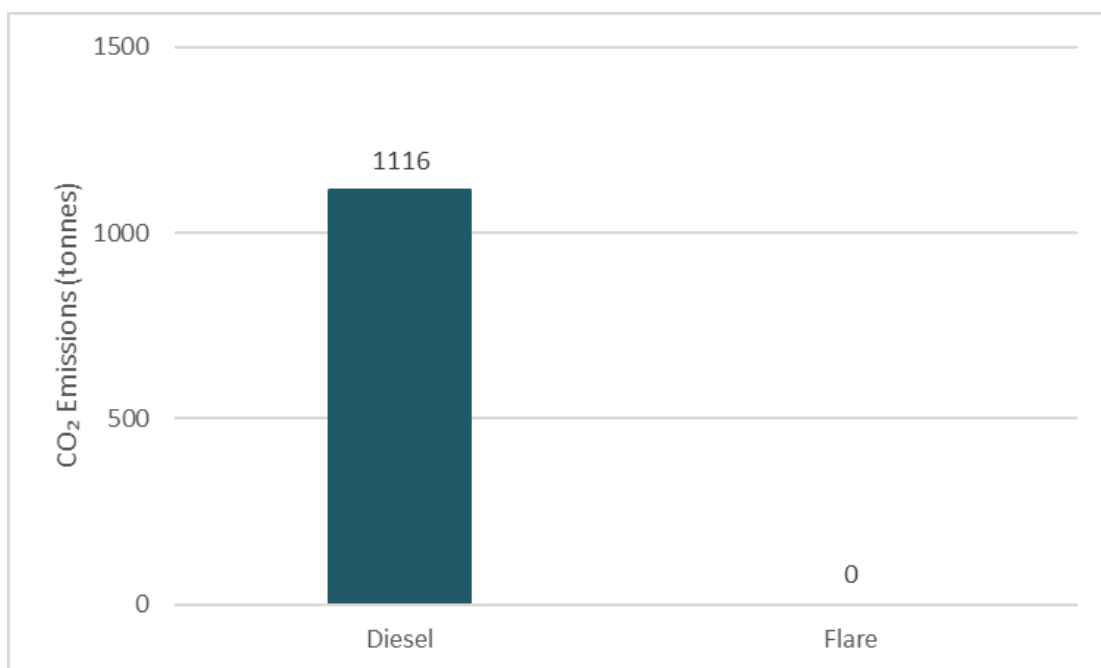


Figure 37 – Carbon Dioxide Emissions for Ensco 123

INCIDENTS

Premier UK strives to prevent the unplanned release of hydrocarbons and chemicals, however, on occasion 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 installations Oil Discharge Permit.

A number of 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 are in place covering all operational assets including third party drilling installations. These plans are exercised on a regular basis and followed in the event that an unplanned release does occur, to ensure that the incident is reported in a timely fashion and that contingency and mitigation measures are in place.

Unplanned Releases – PON 1

During 2019, a total of 9 PON1s were submitted to the regulator for unplanned releases. The majority of these reports were attributable to assets directly operated by Premier UK or operated by Installation Operators (IOs) appointed by Premier UK (Figure 38). These releases equate to a total of 0.053 tonnes of hydrocarbon and 35.25 tonnes of chemical released.

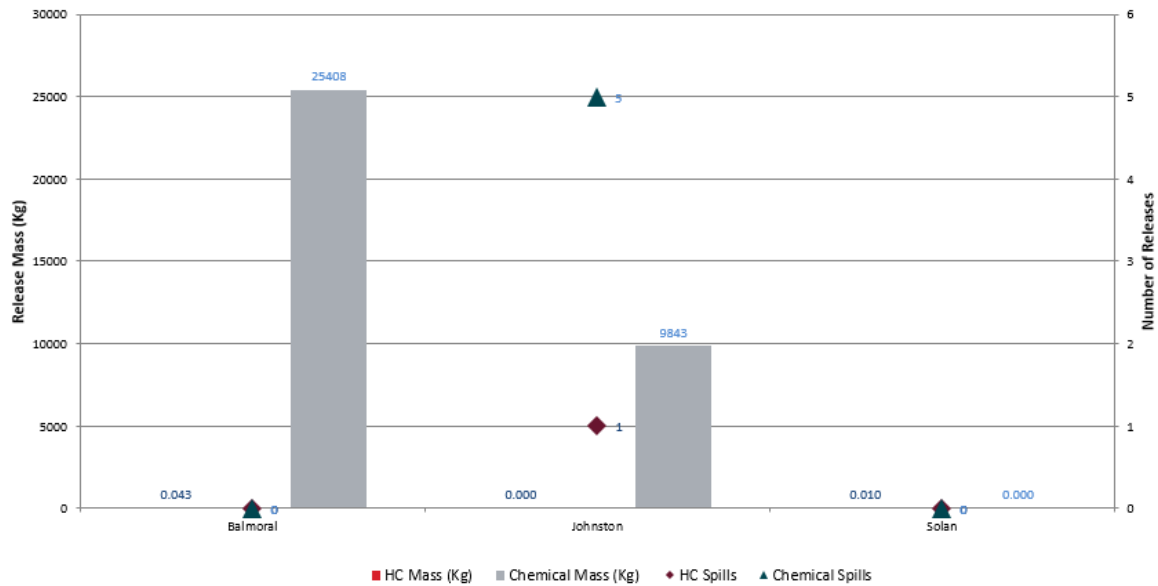


Figure 38 - Unplanned releases from Premier Operated Assets during 2019

During 2019 there was a significant reduction in the number of releases reported as opposed to 2018 (9 as compared to 19). 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 was less in 2019 as compared to 2018 (0.053 tonnes as compared to 0.38 tonnes). However, the mass of chemical released increased from approximately 17 tonnes in 2018 to 35.25 tonnes in 2019. The majority of this release mass was attributed to two subsea hydraulic fluid releases. This included approximately 25 tonnes of Pelagic 100 from the Balmoral field and approximately 10 tonnes of AQUALINK HT804F VER2 from the Johnston field.

The Pelagic 100 subsea hydraulic fluid is an OCNS E rated product and the AQUALINK HT804F VER2 is a D rated product. Environmental Impact Assessments were conducted 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. In addition, Premier UK continuously monitored the release whilst a rectification plan was developed. The Johnston release was repaired in Q1 2020. After a previous unsuccessful attempt to rectify the Balmoral release, this is now scheduled for Q3 2020.

Regulatory Non-Compliance (NC)

A total of four non-compliances (Figure 39) were raised in relation to environmental legislation or permit condition breaches during 2019 which is five less than were submitted in 2018.

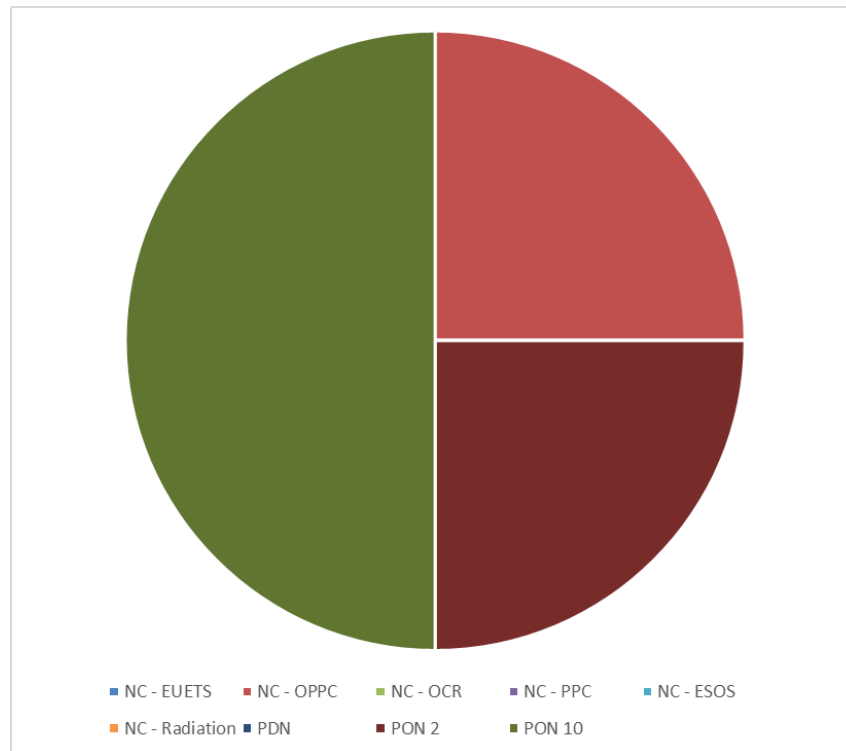


Figure 39 - Non compliances by type

A non-compliance was raised in relation to Oil Pollution Prevention and Control (OPPC) legislation for the Balmoral asset. Following a process upset, a single sample over 100 mg/l was taken.

Additionally, there were two PON10s associated with navigation equipment failures:

- Failure of the Port side installation signage lighting on the Balmoral.
- Failure of battery tests to prove capability of operating for 96 hours on the Solan.

Both of these were rectified and compliance restored.

Finally, there was a PON2 related to a survey vessel snagging on a previously sunken waverider buoy in the Solan field. The waverider buoy was retrieved and the PON2 closed.

All unplanned releases and non-compliances are thoroughly investigated by Premier UK and reported both internally and where required to the regulator. Corrective and preventative actions are identified and tracked via the company's incident investigation

and reporting tool Synergi and any cross asset learnings are communicated to the wider business unit via an alerts process.

ENVIRONMENTAL PERFORMANCE AGAINST TARGETS

Table 3 details the Objectives and Targets for 2019 against progress.

Objective/Target	Progress
Complete submission of ESOS Phase 2	Successful submission of Energy Savings Opportunities Scheme Phase 2
Complete EU ETS Phase IV NIMs submissions for UKBU	All EU ETS Phase IV submissions made to OPRED for applicable assets
Carry out Beach Clean at an Aberdeenshire location	Beach Clean day carried out with UKBU in April 2019 at Cairnbulg Beach with over 4tonnes of waste removed.
Improve Flare and Vent management within the UKBU	Roll out of flaring and venting management to applicable UKBU Asset teams and documentation of required process for management and reporting of consents completed.
Raise level of environmental awareness amongst the workforce	Environmental representative engagement sessions are continually held in collaboration with safety reps to promote collaborative working and help to promote environmental awareness throughout the workforce. In addition additional HSE Global Day sessions are held featuring specific environmental topics such as waste awareness, oil spill response, permit compliance etc.
Review and develop internal oil spill response capabilities	Work continues on the development of tactical response plans and wider response capabilities for unplanned releases. Premier UK 'Environmental Unit' further enhancement and training with specific technical response capabilities was developed.
Standardisation of Global GHG reporting	Works completed to standardise GHG reporting and tracking within the UKBU including EU ETS and Total CO ₂ e.

Table 3 – Premier UK 2019 Performance against Objectives and Targets