Premier Oil UK
2018 ENVIRONMENTAL STATEMENT

HEALTH, SAFETY
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PremierOil

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ABBREVIATIONS

Bbl/d	Barrels of Oil per Day
DBEIS	Department of Business Enterprise & Industrial Strategy
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CFU	Compact Floatation Unit
CH_4	Methane
CHARM	Chemical Hazard and Risk Management
CO	Carbon Monoxide
CO_2	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 & 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 UK consists of assets owned by three different legal entities, Premier Oil UK Limited, Premier Oil E&P UK Limited and Premier Oil E&P UK EU Limited, hereafter collectively referred to as Premier UK. Premier UK is the UK subsidiary of the 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, 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 United Kingdom Continental Shelf (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 report provides information on Premier UK's 2018 offshore operations and the environmental performance of these operations. For the purpose of this report, data included covers all production and drilling activities undertaken in compliance with Premier UK held permits and consents.

OVERVIEW OF OPERATIONS

Production Operations

Babbage

The Babbage platform is located in Block 48/02a in the Southern North Sea, approximately 50 miles West of Easington and 57 miles west of the UK/Norway transboundary in a water depth of approximately 42m (Figure 2.1).

The Babbage field produces gas and condensate from five development wells drilled into the Babbage reservoir; the most recent 2 wells being drilled in 2013. Produced gas from Babbage is exported via a 28 km pipeline tied-back to a subsea tee at the West Sole Bravo (WSB) platform. The reservoir fluids pass into the West Sole System where they commingle with other fluids before being routed to the Dimlington Terminal for processing. The field produced a dry gas and initially produced water break through was not anticipated during the life field. However, water break through was first observed in 2010 and produced water discharges to sea subsequently commenced in 2013. Since April 2017 all produced water was sent onshore for treatment and disposal.

The Babbage platform is designed with minimum facilities, with processing limited to gas separation and hydrate inhibitor storage and injection. No processing of the gas occurs at the WSB platform, with combined gas reception and compression taking place at the onshore Dimlington Terminal.

In 2017 the platform changed its mode of operation to Not Permanently Attended Installation (NPAI), only manned for one week in every four.

On 5th December 2018 the Babbage Platform was sold to Spirit Energy, with one well abandonment commitment (48/02-01 well) for 2019 remaining with Premier Oil.

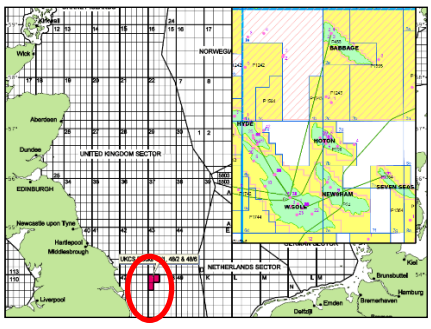

Figure 2.1 – Babbage Field System

Balmoral Floating Production Vessel

The Balmoral Floating Production Vessel (FPV) (Figure 2.2) 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 2.3).

Figure 2.2 – Balmoral FPV

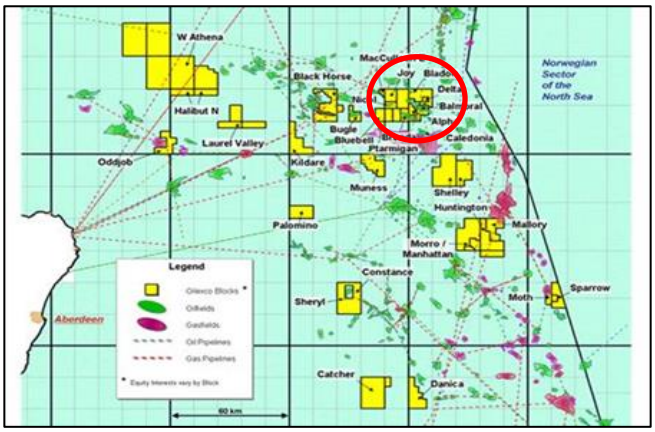

Figure 2.3 – Balmoral FPV Location

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 Beauly 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 2.4). 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..

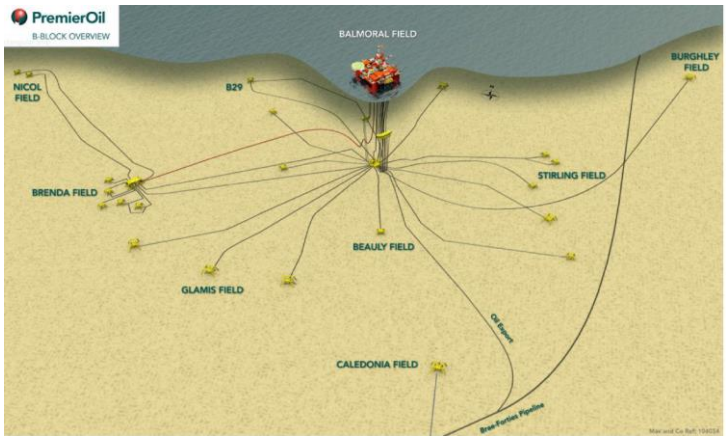

Figure 2.4 – Balmoral Field Schematic

Solan

The Solan platform (Figure 2.5) 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 2.6).

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 2.7). 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 2.5 – Solan Installation

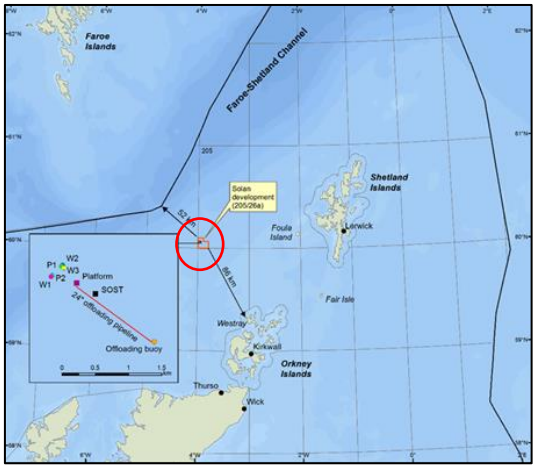

Figure 2.6 – Solan Location

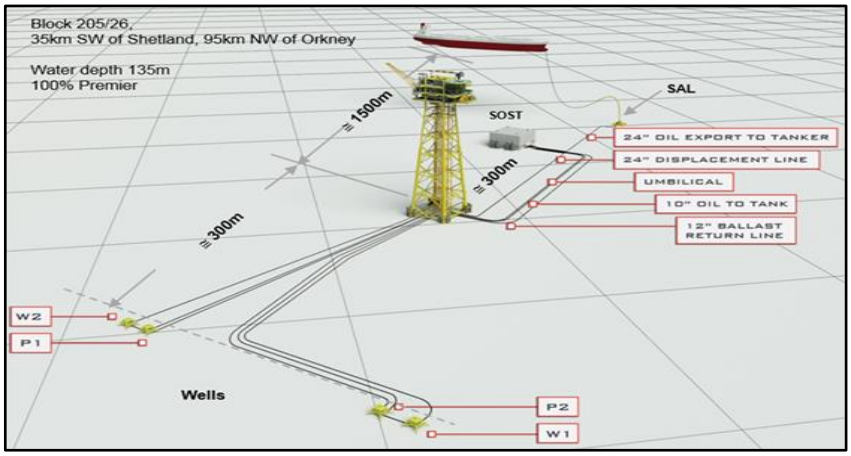

Figure 2.7 – Solan Field Schematic

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 2.8), 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 2.9). The Huntington field development consists of 4 production wells and two 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.

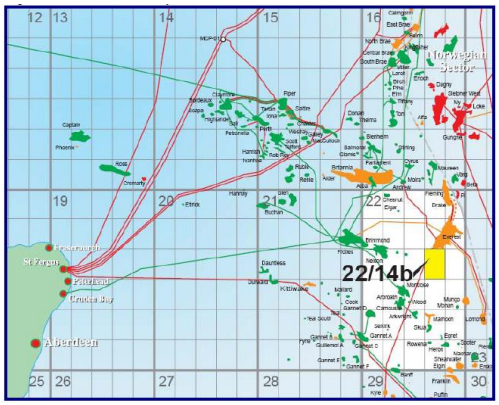

Figure 2.8 – Huntington field location

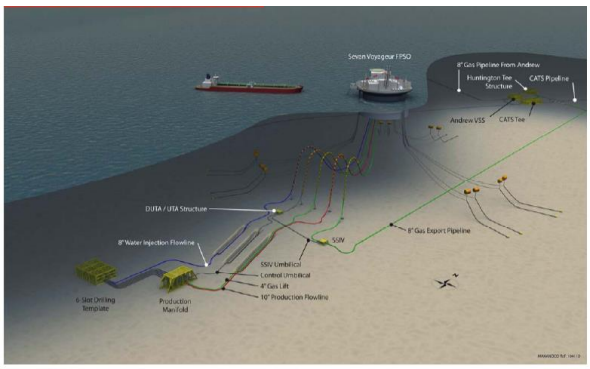

Figure 2.9 – Huntington field schematic

Teekay Petrojarl 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, Teekay 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 UK 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 installation Flare and Vent consents.

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

Catcher

The BW Catcher Floating, Production, Storage and Offloading (FPSO) vessel (Figure 2.10) 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. Figures 2.11 and 2.12 illustrate the location of the Catcher Area Development and the overall field layout.

Figure 2.10 – Catcher FPSO in field

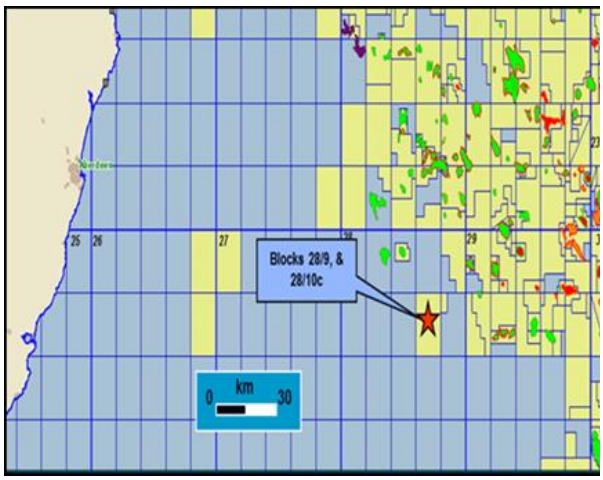

Figure 2.11 – Catcher Field Location

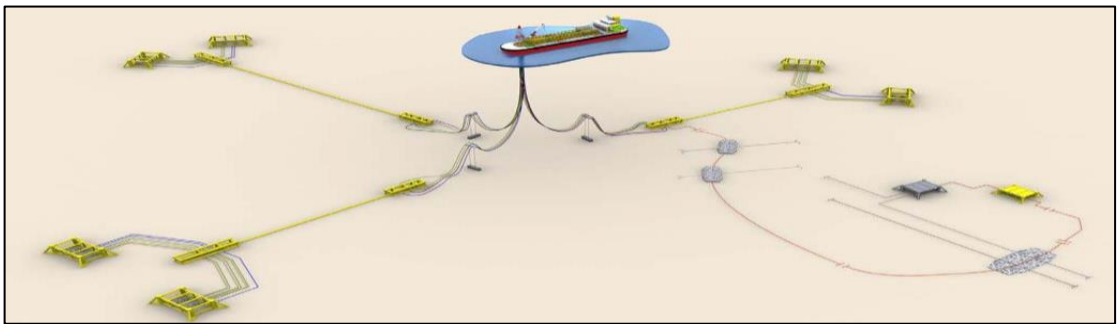

Figure 2.12 – Catcher Development Schematic

The three reservoirs are each tied back to the BW Catcher FPSO processing and export facility which is designed to process a peak flowrate of 60,000 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.

During 2018, the Premier UK managed offshore works, in support of the Catcher Area Development, included:

- Tie in of production spools and control lines.

- Drilling of five development wells.

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 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 to 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 relate 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 2018 included further environmental data gathering for the wider Balmoral field. The comparative assessment (CA) process; a detailed process that weighs up the pros and cons of various subsea infrastructure decommissioning options also commenced in 2018. Towards the end of 2018 the economic field life for Balmoral was extended, though Late Life Project supporting activities will continue in 2019.

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.
    - Teekay 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 2018 included preparation of project HSE and Regulatory documentation, and a PLANC Register identifying relevant permits, licences, authorisations, notifications and consents for execution of the decommissioning project phases. Late life studies will progress in 2019 in order to support the eventual decommissioning of the Huntington Field.

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.

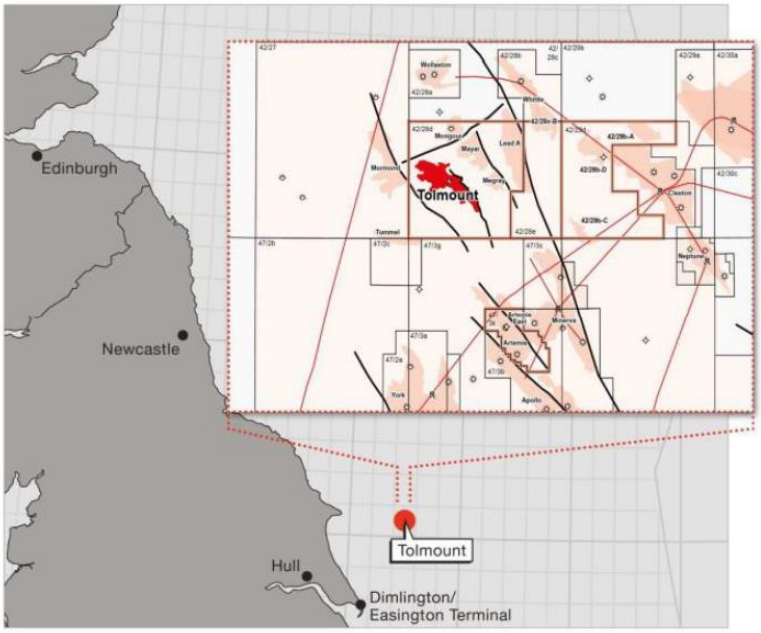

Figure 2.13 – Tolmount Field Location

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 within an existing onshore Terminal. During 2017 the Offshore Environmental Statement and Onshore Planning Applications for development at Perenco’s Dimlington Terminal were submitted to regulatory authorities for the development, and were subsequently approved in 2018.

In early 2018, Centrica Storage Limited (CSL) approached Premier with favourable commercial terms for development of Tolmount via Easington Terminal. The Project was sanctioned and Final Investment Decision (FID) committed in August 2018 for a development to Easington Terminal. .

The Tolmount to Easington Pipeline Environmental Statement was submitted to DBEIS in November 2018, with approval expected in 2019. Tolmount first gas is currently expected in Q4 2020

Drilling, Well Intervention and DSV Operations

Catcher Drilling

Drilling operations in the Catcher Field commenced during 2015 employing the Ensco 100 jack-up drilling rig (Figure 2.14). Each year since 2015 the Ensco 100 drilling rig has been continuously drilling. Over the period 2015 - 2018, a total of eighteen production and injector wells were drilled across the Catcher area (Figure 2.15). In 2018, five production wells were successfully drilled and completed. The data presented in this report, relates to the five wells drilled and completed in 2018.

Figure 2.14 – Ensco 100 Drilling Rig

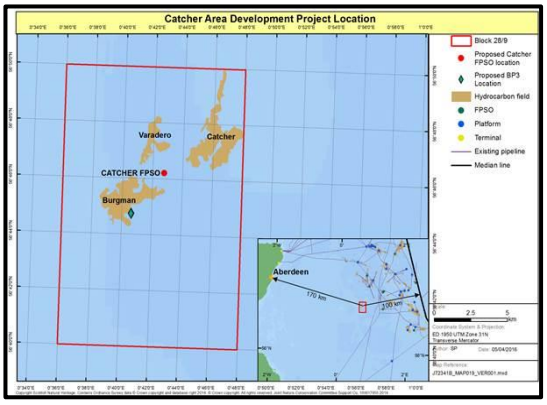

Figure 2.15 – Location of Catcher wells

Balmoral and Caledonia DSV Campaigns and Well Intervention

In Q2 2018 a Dive Support Vessel (DSV) campaign was carried out by the Seven Falcon vessel to prepare for abandonment of a number of production and water injector wells within the Greater Balmoral field. DSV operations included flushing and disconnection of the gas lift and production pipelines to the A2, B29, A27 and A26 wells.

Additionally, in Q2 2018 a Dive Support Vessel (DSV) campaign was carried out by the Well Enhancer to prepare for abandonment of the Caledonia well. DSV operations included flushing and disconnection of the gas lift and production pipelines between the Britannia platform and Caledonia well.

Well intervention operations were conducted at 3 wells during Q3 2018 by a Light Weight Intervention Vessel, the MSV Seawell. These operations were conducted in order to make the wells safe, to minimise any potential leak paths and to prepare the wells for future abandonment campaigns. The operations also helped to gather

information on the physical status of the well, including pressure and temperature characteristics, and condition of production tubing.

Huntington Well Intervention and DSV Campaign

In Q3 a Well Intervention Campaign was carried out by the Island Offshore vessel “Island Constructor” to carry out preparatory works in order to convert the H2 well from oil production (via gas lift) to water injection. In Q4 a Dive Support Vessel campaign was carried out by the Seven Atlantic to complete works in support of the conversion of the H2 well from oil production to water injection.

Johnston and Rita DSV Campaign and Well Intervention

During Q1 2018 a DSV campaign conducted sensor replacement and hydraulic leak rectification work at the Johnston template (tied back to Ravenspurn North platform). The subsea control module was replaced during this campaign.

Also in Q1 of 2018 a DSV campaign was carried out to restore the functionality of the Rita (tied back to the Murdoch platform) control system jumpers.

HSES MANAGEMENT SYSTEM

Premier 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 considers that health, safety, environment and security have equal status with other primary business objectives and are of strategic importance to Premier. 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 below.

HEALTH, SAFETY, ENVIRONMENT & SECURITY POLICY

Premier Oil is committed to operating responsibly and will never knowingly compromise 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 and protect the environment by minimising our environmental impacts.

To achieve this we will:

- Provide strong, visible leadership and commitment at all levels of the Company;
- Effectively identify hazards, and 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 clean, safe, healthy and secure workplaces;
- Maintain 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 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.

We must be completely professional in accordance with our established Group Values and in every part of our business.

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

Achieving these goals goes beyond legal compliance: it is imperative that we all 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, continually seek to improve our HSES management, intervene when we see acts or circumstances which could be unsafe and report all hazards and incidents.

This is the right thing to do and a fundamental part of everyone's job. It underpins the respect that we are all required to show to our colleagues, partners, neighbours and the environment around us.

We must all work together to ensure we continually improve the HSES performance in all our operations and make Premier Oil a safe place to work for our staff, contractors and the support companies we rely on to help us deliver our objectives.

Tony Durrant
Chief Executive Officer
Premier Oil plc
July 2018

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

Figure 3.1 – Premier HSES Policy

The HSES-MS has a hierarchical document structure as illustrated in Figure 3.2. 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 3.2 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.

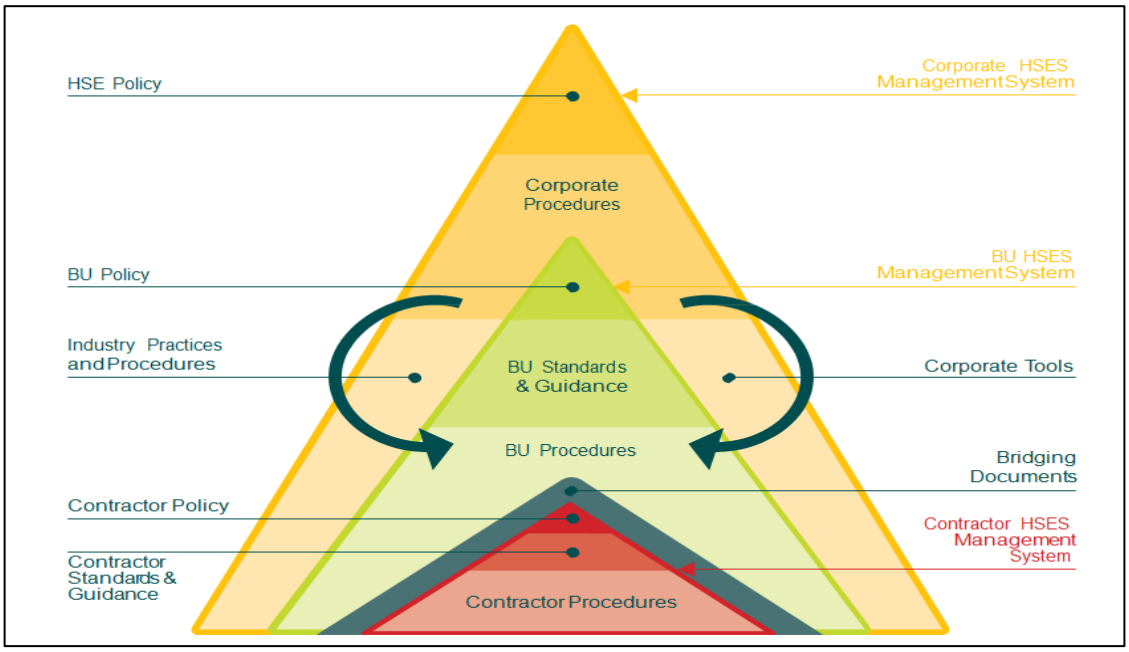

Figure 3.2 – HSES-MS Structure

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

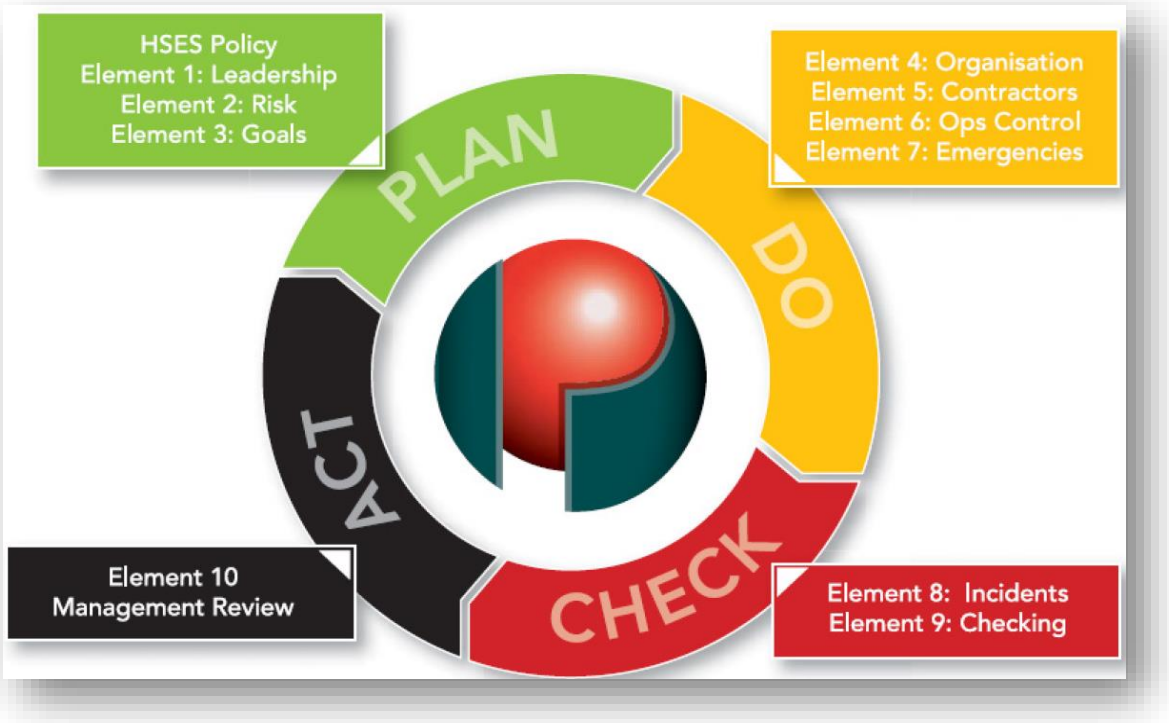

Figure 3.3 – HSES-MS Framework

ENVIRONMENTAL PERFORMANCE

Environmental performance for assets operating during 2018 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.

Babbage

In mid-April 2017, the Babbage Platform transitioned to NPAI status. The decision was taken by Premier to direct all produced fluids to Dimlington Terminal through the export pipeline. Produced water can still be routed overboard during the manned week only, however this option was not exercised in 2018. The 2018 operational base case for Babbage was zero discharge of produced water to sea.

There were no produced water discharges from Babbage in 2018.

On 6th December 2018 the Babbage Platform was sold to Spirit Energy, with one well abandonment commitment (48/02-01 well) for 2019 remaining with Premier Oil.

Balmoral

The Balmoral FPV discharges produced water overboard via a dedicated caisson after the water has been separated and then routed though hydro-cyclones and the tilted plate separator to remove entrained oil.

Figure 4.1 shows the cumulative produced water discharges from Balmoral FPV during 2018. The total volume of produced water discharged to sea from the Balmoral FPV was 1,536,840m3 against the permitted volume of 3,385,740m3.

This equates to a discharge of 42.2% of the Balmoral FPV permit produced water volume limit and is a decrease in the total amount discharged as compared with 2017 (2,206,136.09m^3). Produced water volumes expected to increase every year (due to the fact that as wells mature, the percentage of water cut from the reservoir fluids naturally increases). However, in 2018 the number of shut-downs (planned and unplanned) and extended production restrictions, resulted in less produced water/oil in produced water discharged into the sea.

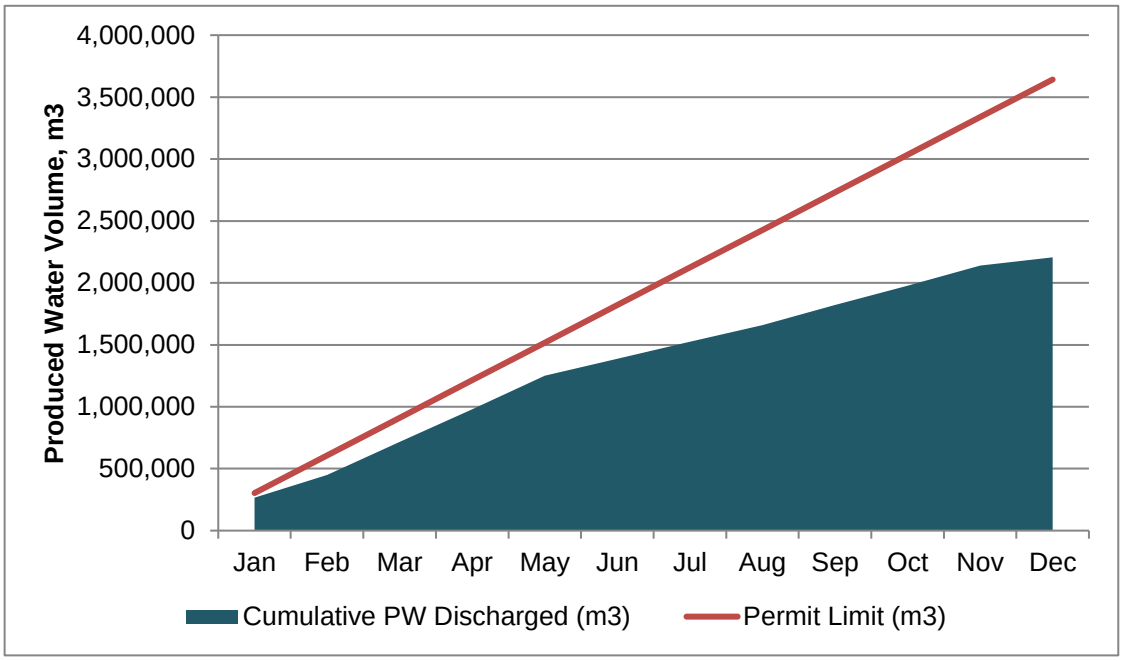

Figure 4.1 – Cumulative Produced Water Discharge from Balmoral in 2018

Figure 4.2 shows the total mass of oil in produced water discharged to sea from the Balmoral FPV in 2018 was 15.17 tonnes. This is about 20% less than the 19.6 tonnes discharged in 2017.

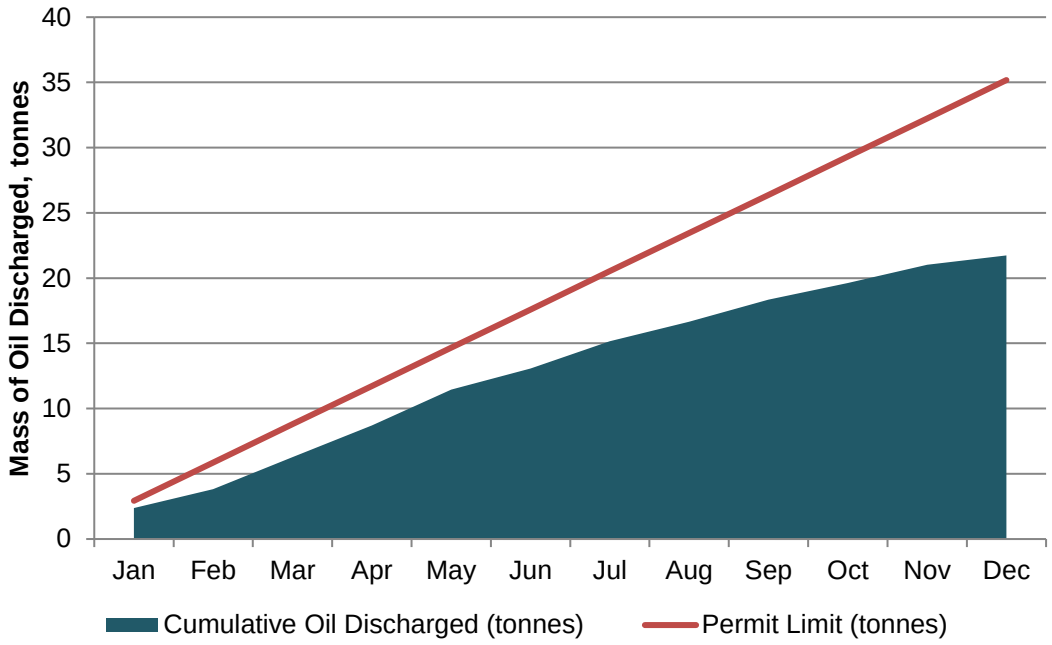

Figure 4.2 – Mass of Oil Discharged in Produced Water from Balmoral in 2018

The average concentration of oil discharged in produced water for Balmoral in 2018 was 10.2 mg/l. Monthly average oil in water concentrations are shown in Figure 4.3. This demonstrate that monthly averages were less than the legally permitted monthly average of 30 mg/l.

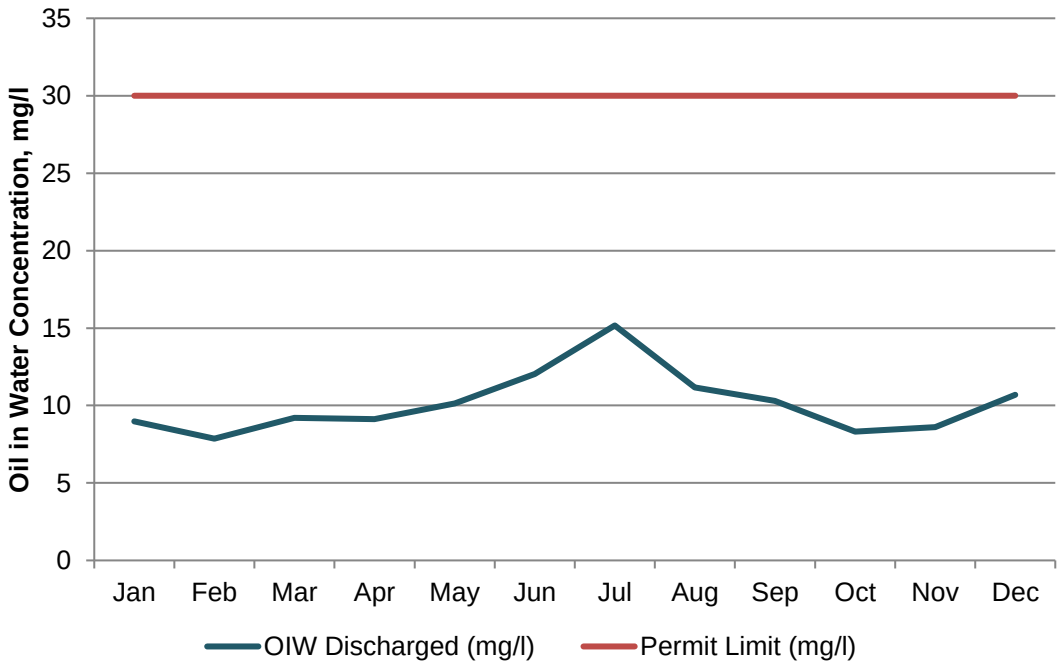

Figure 4.3 – Average Oil in Water Concentration for Balmoral in 2018

Whilst the 2018 average is 3% higher than in 2017, it is still significantly below the permitted monthly average. This continued good performance is down to 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 particularly effective.

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 ballast water is treated through a bank of cartridge filters capable of removing up to 99% of free oil from water prior to disposal overboard or downhole. 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 283,728m^3 of ballast water was discharged from the platform in 2018 against a permitted volume of 865,658m^3.

Produced water with low concentrations of hydrocarbon are discharged overboard once treated through the PWT. A total of 323,507m^3 of produced water was discharged against a permitted volume of 385,500m^3. Figures 4.4a&b shows the volume of ballast and produced water discharged in 2018.

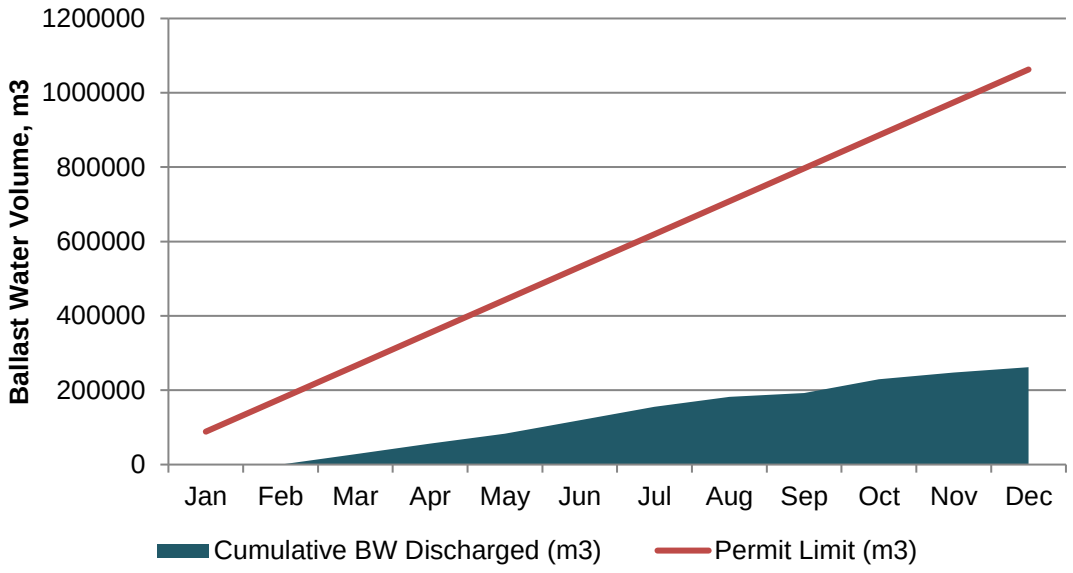

Figure 4.4a – Cumulative Ballast Water Discharge from Solan in 2018

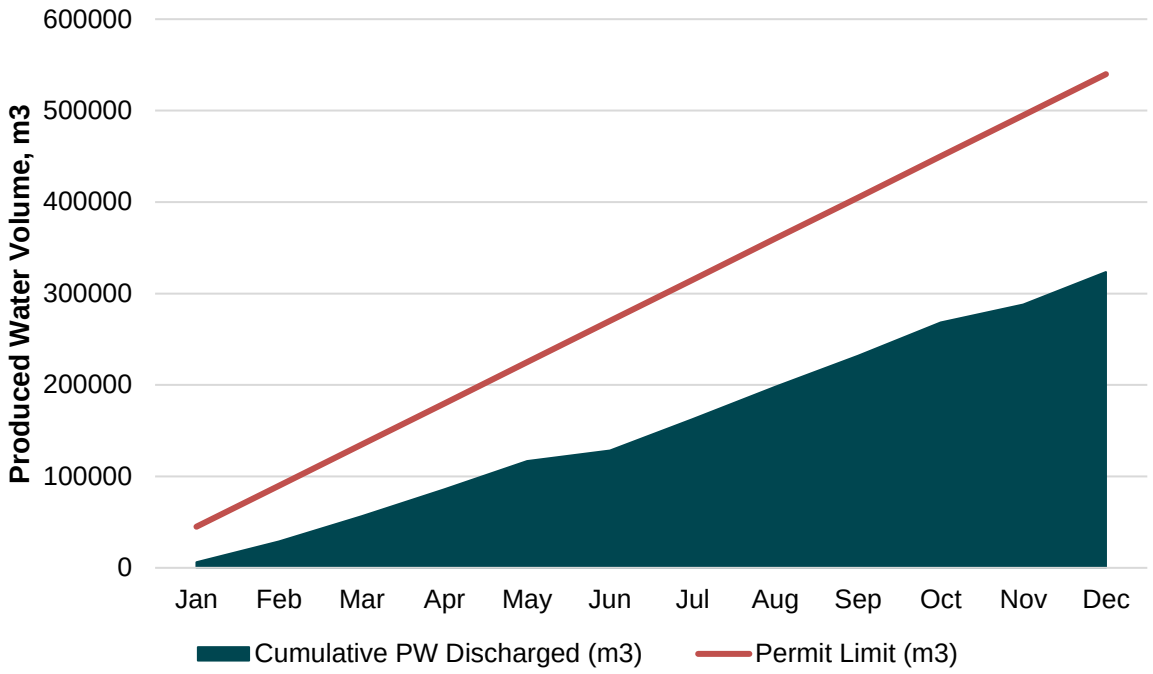

Figure 4.4b – Cumulative Produced Water Discharge from Solan in 2018

Solan was permitted to discharge a total of 0.025 tonnes of hydrocarbon in ballast water in 2018, equating to an average of 10mg/l oil in water concentration. The platform discharged a total of 0.0026 tonnes of hydrocarbon (Figure 4.5) with an average concentration of 0.02mg/l (Figure 4.6) within the ballast water due to good interface management within the SOST and treatment through the ballast water filtration package.

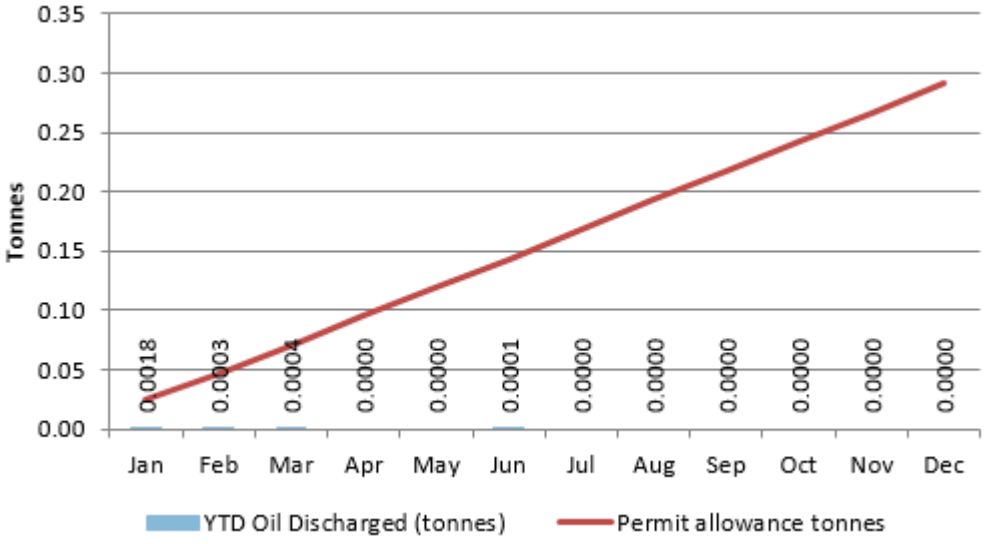

Figure 4.5 – Mass of Oil Discharged in Ballast Water from Solan in 2018

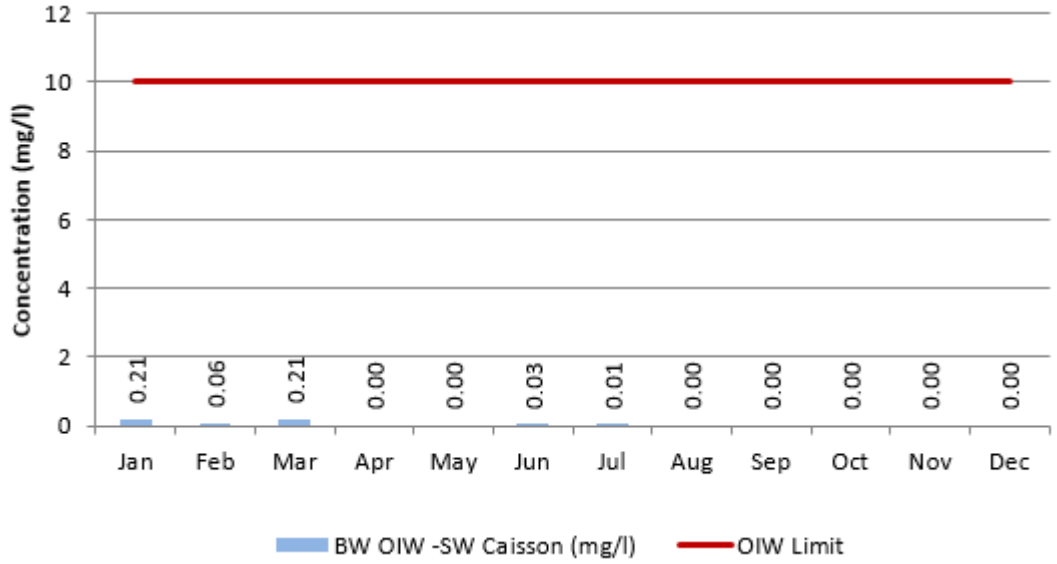

Figure 4.6 – Average Oil in Water Concentration in Ballast water for Solan in 2018

Solan was permitted to discharge a total of 5.76 tonnes of hydrocarbon in produced water in 2018 equating to an average of 20mg/l oil in water concentration. The platform discharged a total of 2.19 tonnes of hydrocarbon (Figure 4.7) with an average concentration of 6.79mg/l (Figure 4.8).

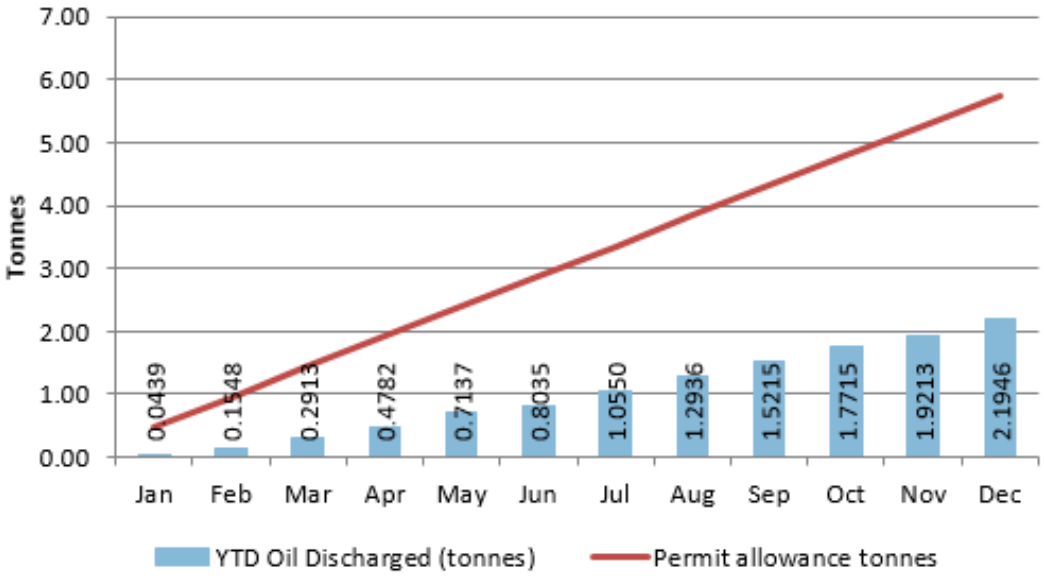

Figure 4.7 – Mass of Oil Discharged in Produced Water from Solan in 2018

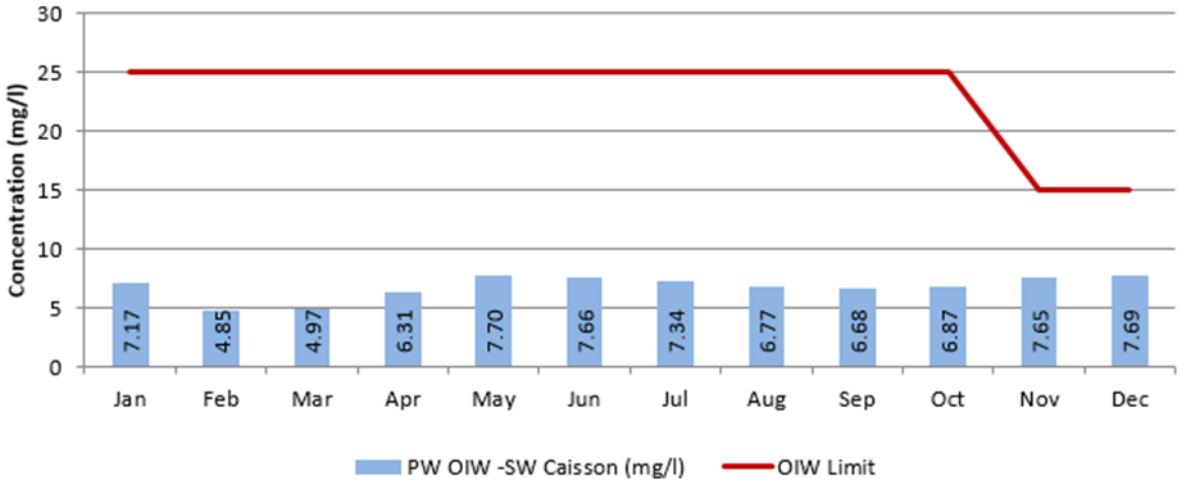

Figure 4.8 – Average Oil in Water Concentration in Produced water for Solan in 2018

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.

Babbage

Two SUB warning chemicals - Foamatron V-502 and FOAM20502A – were used on the Babbage platform on 2018 to support foam assisted lift trials and operations. These chemicals equated to a very small proportion of the overall chemical usage on Babbage. The vast majority of the remainder of chemicals used (~72%) were PLONOR as can be seen in Figure 4.9.

Unfortunately one non-compliance against the Babbage production Chemical Permit (CP) had to be submitted in the early part of 2018 for foamer chemicals used during chemical trials which were not listed on the chemical permit in error.

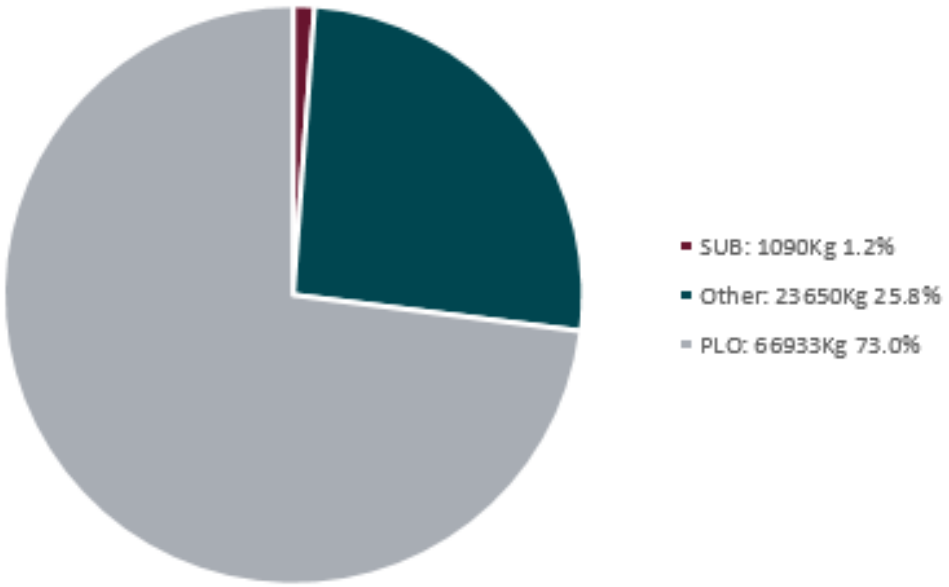

Figure 4.9 – Chemical Use and Discharge during operations, by OCNS Category

Balmoral FPV

Three chemicals with SUB were permitted for use on Balmoral in 2018. These chemicals are detailed in Table 4.1.

Chemical & OCNS Category	Summary of Change Out Review
EC1231A, Nalco Ltd, Corrosion Inhibitor, Gold, 2017	It is the corrosion inhibitor part of this combined SI/CI product that has the sub warning. It is the intention that modelling will be completed on Brenda/Nicol fluids to prove corrosion inhibitor is no longer required, and therefore a new product containing only scale inhibitor can be qualified by completing scale modelling.
EC6152A, Nalco Ltd, Scale Inhibitor, Gold 2017	This scale inhibitor is only used during B3 well scale squeezes. B3 well has been long term isolated since June 2017 due to the integrity issues.
SCW85649, Baker Hughes Ltd, Scale Inhibitor, Gold, 2017	This Scale inhibitor is used for Burghley scale prevention. The Burghley well is a Repsol well that is tie-back to the Balmoral FPV. Discussions are ongoing with Repsol/partners to progress this chemical change out.

Table 4.1 – SUB Chemicals Permitted for use in Balmoral FPV operations

24,960 kgs of SUB chemicals were used on Balmoral in 2018. This is 12% less than SUB chemicals use in 2017. SUB chemicals use in 2018 was 16.5% of the total 151,701 kgs of chemicals used.

In Figure 4.10 the chemicals used on Balmoral FPV during 2018 have been grouped by OCNS category. This figure shows that 0.6% of all the chemicals used and discharged are rated PLO.

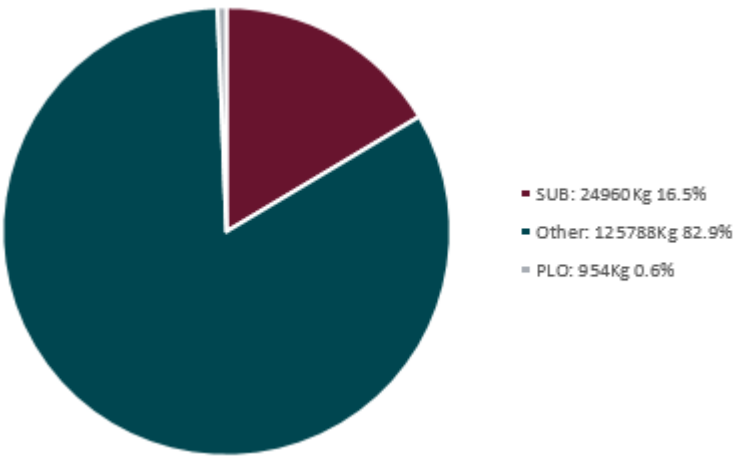

Figure 4.10 – Chemical Use and Discharge during operations, by OCNS Category

Solan

A total of 3 chemicals identified for substitution were used and / or discharged from Solan in 2018 (Table 4.2). 16,409kgs of chemical identified for substitution were discharged from Solan in 2018.

Chemical & OCNS Category	Summary of Change Out Review
EC6718A, Nalco Ltd, Biocide, Gold 2017	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.
EC9242A, Nalco Ltd, Antifoam, Gold, 2017	Manufacturer continues to research an alternative with greener technology. This product is currently not in use and will only be used if foaming is seen in the offshore production stream.
Oceanic HW 443, MacDermid, Hydraulic Fluids, 2017	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 4.2 – SUB Chemicals Permitted for use in Solan operations

In Figure 4.11 the chemicals used on Solan during 2018 have been grouped by OCNS category. This figure shows that 11.8% of all the chemicals used and discharged are rated PLO.

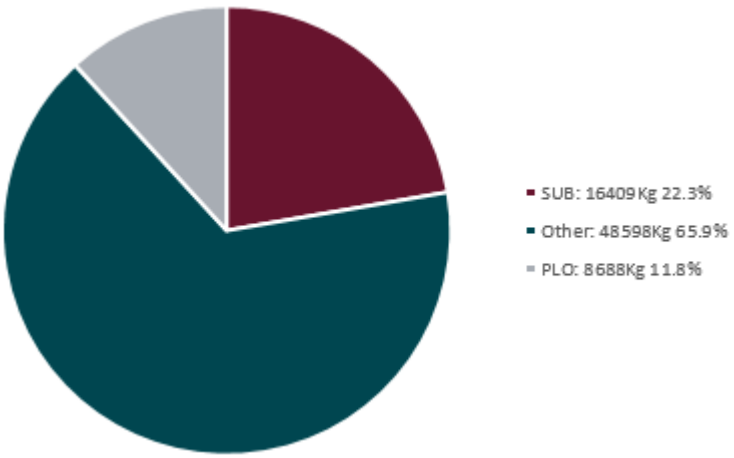

Figure 4.11 – Chemical Use and Discharge during operations, by OCNS Category

Catcher Drilling (Ensco 100)

A total of 38 chemicals with SUB warnings were permitted for use during Catcher Area drilling operations for the five wells completed in 2018; an increase of 6 permitted for use during 2017 drilling operations. Of the 38 chemicals, 29 have previously been used during drilling operations in 2017.

The quantity of SUB chemicals used during 2018 drilling operations was approximately 76 tonnes of which only 24 kg (0.024 tonnes) was discharged to sea during the year. Figures 4.12 and 4.13 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 74.2 % of all the chemicals used and 98.6 % of those discharged, were rated PLO.

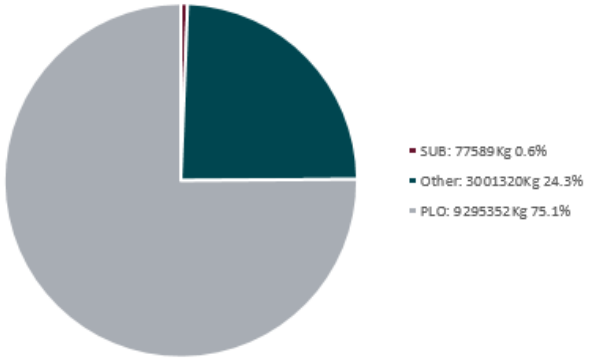

Figure 4.12 – Chemical Use during drilling operations by OCNS

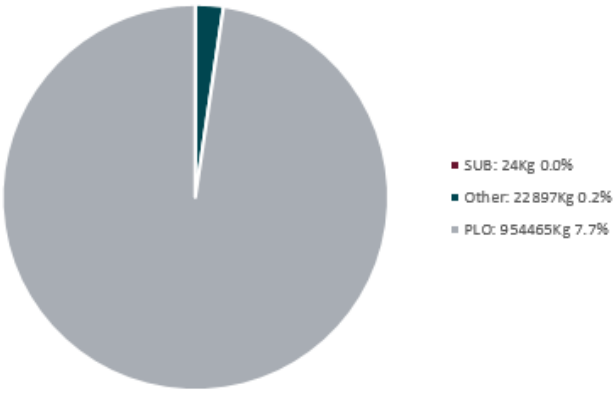

Figure 4.13 – Chemicals Discharged during drilling operations by OCNS

DSV Campaigns

The quantity of SUB chemicals used during 2018 DSV Campaigns was approximately 627 kg of which only 13 kg was discharged to sea during the year. Figures 4.14 and 4.15 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 52.4 % of all the chemicals used and 59 % of those discharged, were rated PLO.

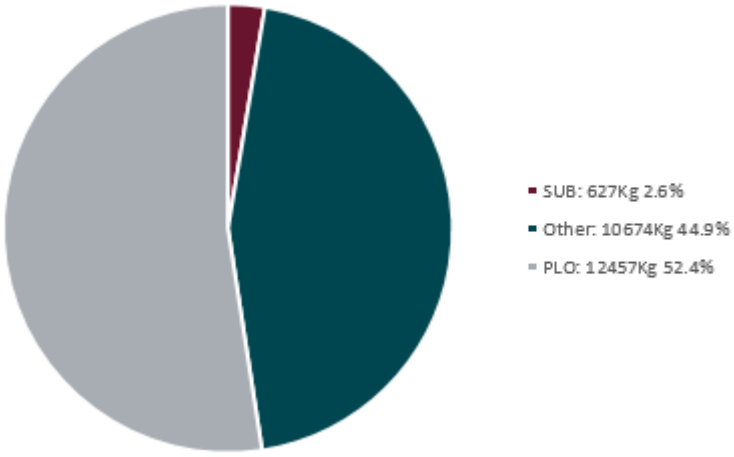

Figure 4.14 Chemical use during DSV campaigns 2018

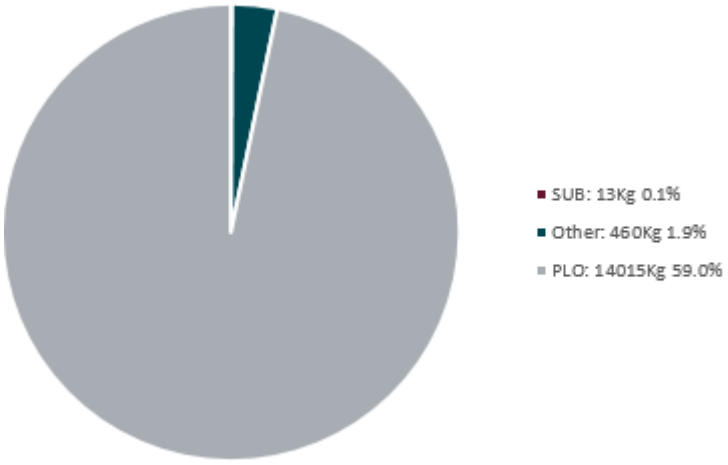

Figure 4.15 Chemical discharge during DSV campaigns 2018

Well Interventions

The quantity of SUB chemicals used during 2018 Well Interventions was approximately 302 kg of which only 4 kg was discharged to sea during the year. Figures 4.16 and 4.17 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 80.1 % of all the chemicals used and 77.9 % of those discharged, were rated PLO.

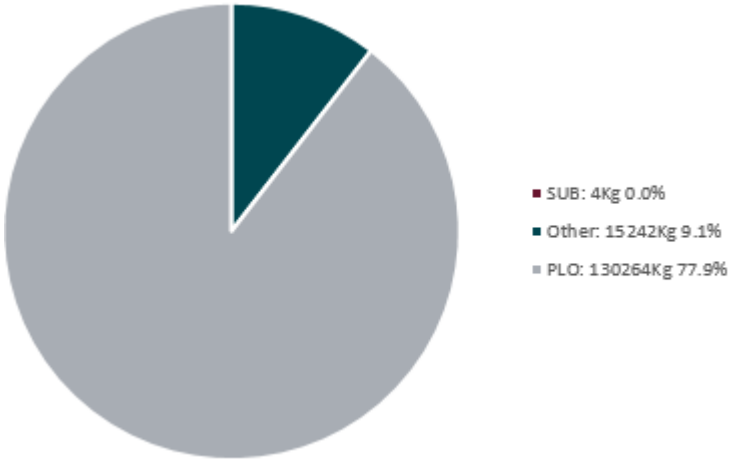

Figure 4.16 Chemical used during Well Interventions in 2018

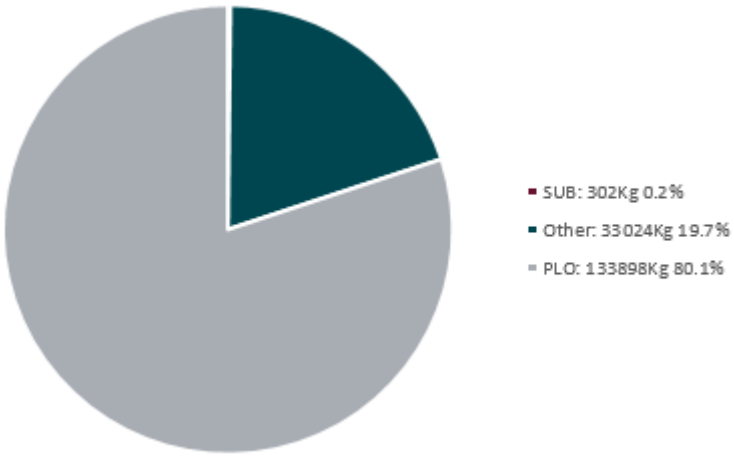

Figure 4.17 Chemical discharge during Well Interventions in 2018

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 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 of waste initiatives.

Babbage

Waste arising from the Babbage platform have been minimal during 2018, mainly due to the transition of the installation to a NPAI mode. Waste for treatment (18.6% of total waste) relates to specialist onshore treatment and disposal requirements of Naturally Occurring Radioactive Material (NORM) waste and fluids from vessel flushing operations. A significant percentage of waste generated from Babbage was sent either for recycling or waste to energy, successfully diverting waste from landfill.

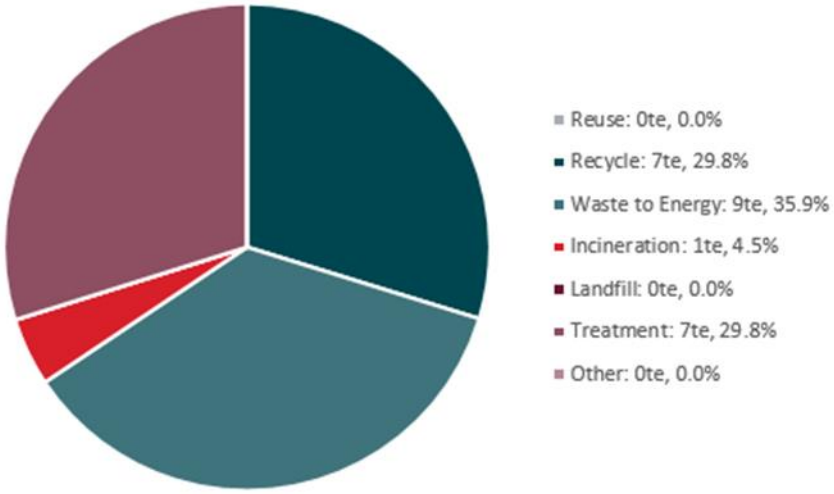

Figure 4.18 Babbage Waste Disposal Routes

Balmoral

A total of 198.7 tonnes of waste was disposed of from the Balmoral FPV in 2018 compared to 214.119 tonnes in 2017.

Balmoral recycled about 65% of its waste during the year. This is consistent with the waste recycled in 2017. Throughout 2018 participation of Environmental Representatives (E-reps) and continuous waste management awareness raising contributed in good overall performance. Figure 4.19 shows the fate of waste produced from the Balmoral FPV in 2018.

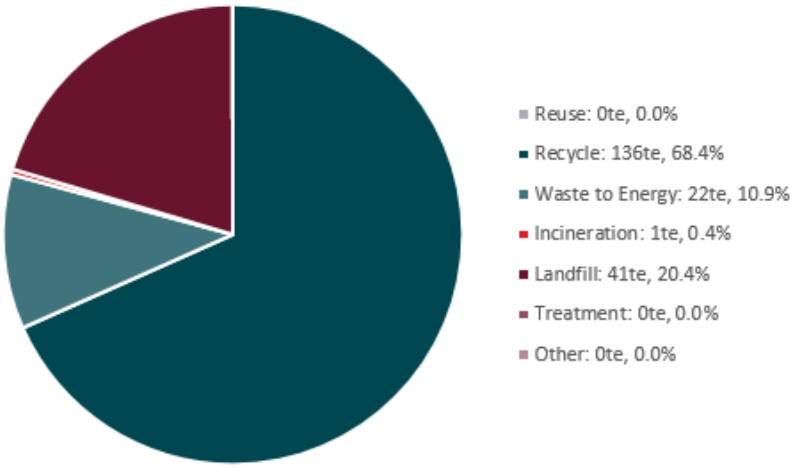

Figure 4.19 – Balmoral Waste Disposal Routes

Solan

A total of 74.4 tonnes of waste was generated on Solan in 2018. Of this 28% was sent to landfill and 56.9% was recycled (Figure 4.20).

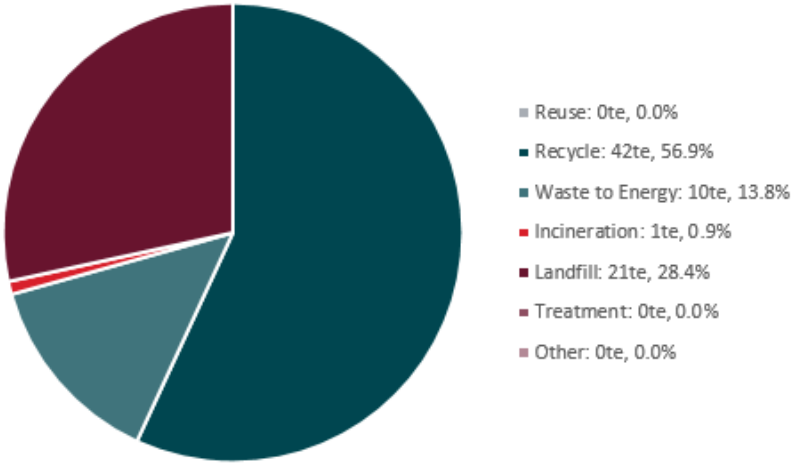

Figure 4.20 Solan waste disposal routes

Catcher Drilling (Ensco 100)

During 2018, 4,204 tonnes of drilling waste (e.g. back loaded drill cuttings) was generated during drilling operations, of which 443 tonnes (11%) of oil was recycled. In addition to this, 603 tonnes of operational waste (e.g. waste generated on the rig) was disposed of from the rig. Of this 603 tonnes, 437 tonnes (72.5%) was recycled, 119 tonnes (19.8 %) was sent to landfill and the remaining 46 tonnes (7.6 %) was either treated or waste to energy.

Figure 4.21 shows the Operational Waste from the Drilling Rig used for Catcher Area drilling operations during 2018.

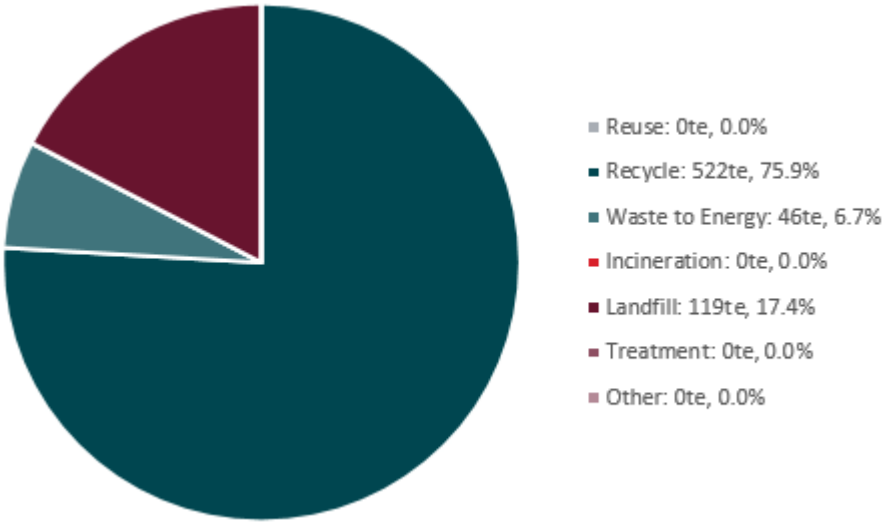

Figure 4.21 – Ensco 100 Waste Disposal Routes

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 CO_2 emissions for the Premier Oil Operated and Leased Assets. Diesel continues to be the prominent source of the largest proportion of CO_2 emissions from our Operated Assets; Balmoral and Solan, with our Leased Assets, Catcher and Voyageur Spirit, apportioning the largest amount of CO_2 emissions to fuel gas combustion (Figure 4.22). Catcher came online in 2017 and therefore there is no data to compare with for 2016.

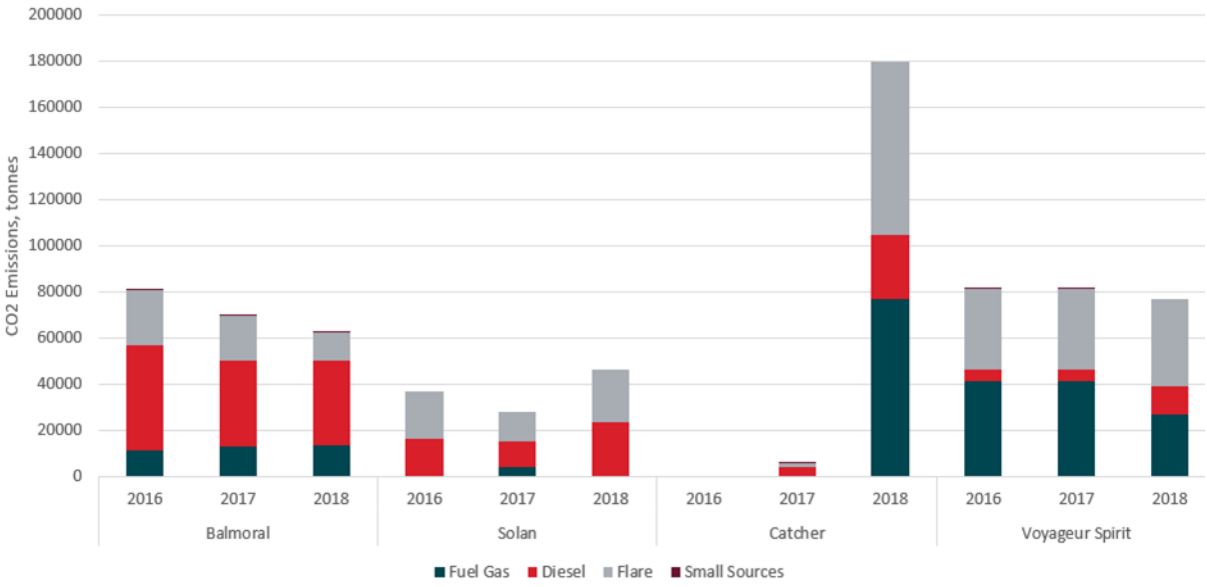

Figure 4.22 Total CO^2 emissions per asset 2016-2018

Pollution, Prevention and Control

Balmoral and Voyageur Spirit (2017 only, as the asset had transitioned to Teekay for 2018), 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 (CH_4) and volatile organic compounds (VOCs). Solan is below the thresholds for PPC but has been included here for completeness.

The above Figure 4.23 shows a small decrease on Balmoral from 2017-2018 which is attributed to an extended plant outage in September 2018. Solan shows an increase in all emissions except CO due to a further reliance on diesel generation as the field becomes gas deficient.

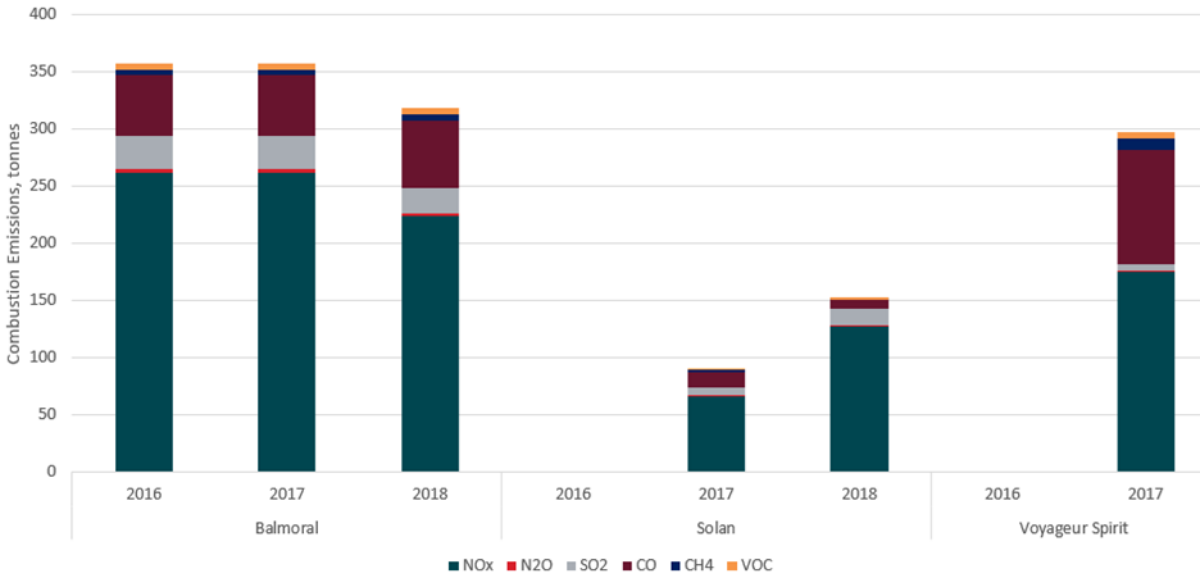

Figure 4.23 Operated Assets NO_x, N_2O, SO_2, CO, CH_4, VOC Emissions 2016-2018

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

Babbage

Due to the size of the installation and the installed thermal capacity of the power generation equipment, Babbage does not fall under the requirements of the PPC Regulations or the European Union Emissions Trading System (EU ETS) Regulations.

On 6th December 2018 the Babbage Platform was sold to Spirit Energy, with one well abandonment commitment (48/02-01 well) for 2019 remaining with Premier Oil.

Catcher Drilling (Ensco 100)

Atmospheric emissions generated during Catcher Area drilling operations, were as a result of well test operations. There were five well test operations undertaken during 2018. Combustion emissions from Catcher Area drilling operations (excluding CO_2) in

2018 are shown in Figure 4.24. In addition, 17,064 tonnes of CO_2 were released during these operations, as shown in Figure 4.25.

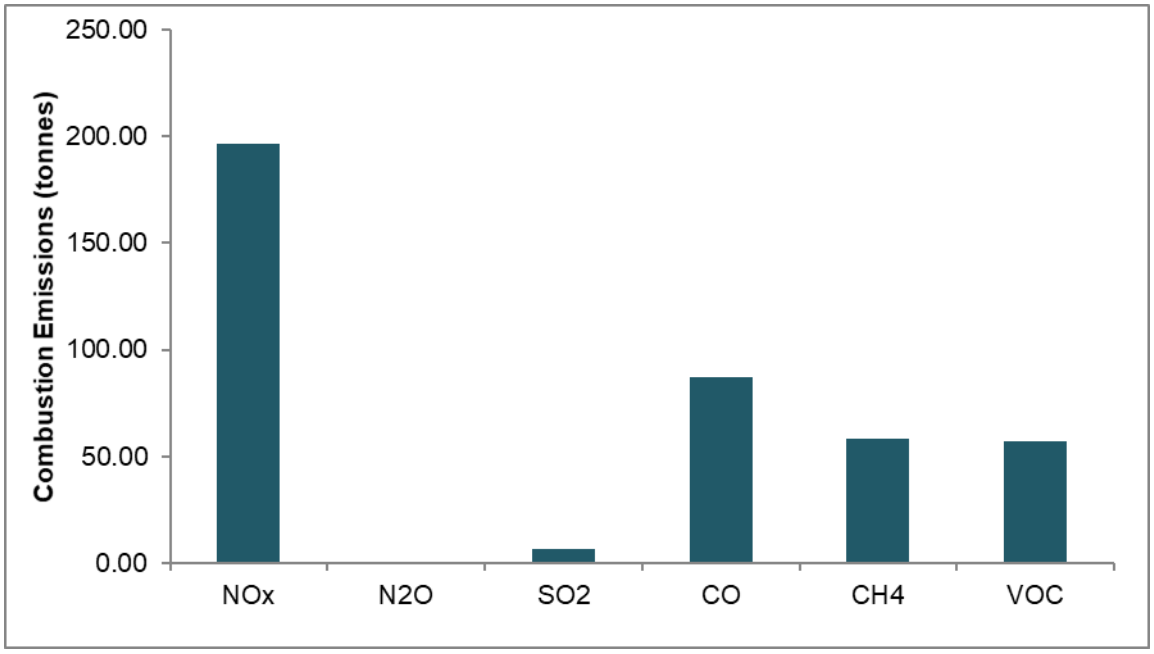

Figure 4.24 – Combustion Emissions Catcher Drilling Operations

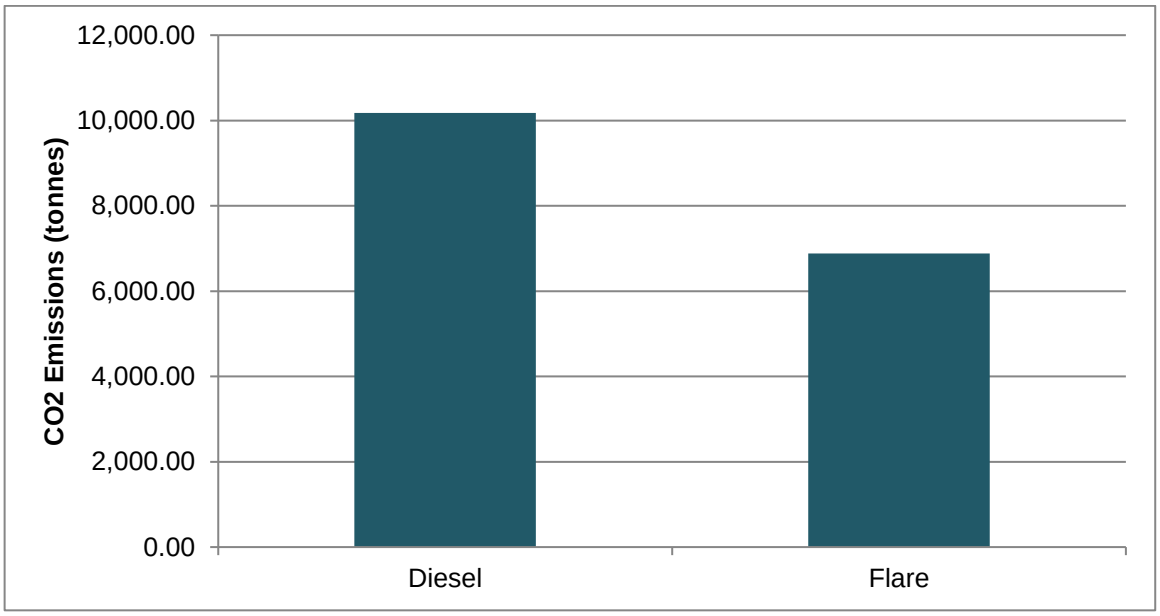

Figure 4.25 – Carbon Dioxide Emissions Catcher Drilling Operations

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 2018, a total of 19 PON1s were submitted to the regulator for unplanned releases. 14 of these reports were attributable to assets directly operated by Premier UK or operated by Installation Operators (IOs) appointed by Premier UK (Figure 5.1). These releases equate to a total of 0.38 tonnes of hydrocarbon and 17.54 tonnes of chemical released.

As shown in Figure 5.2 a further 3 PON1s were submitted in relation to facilities not directly operated by Premier. These included two PON1s from drilling rig activities and one from subsea construction vessel activity on the Catcher field.

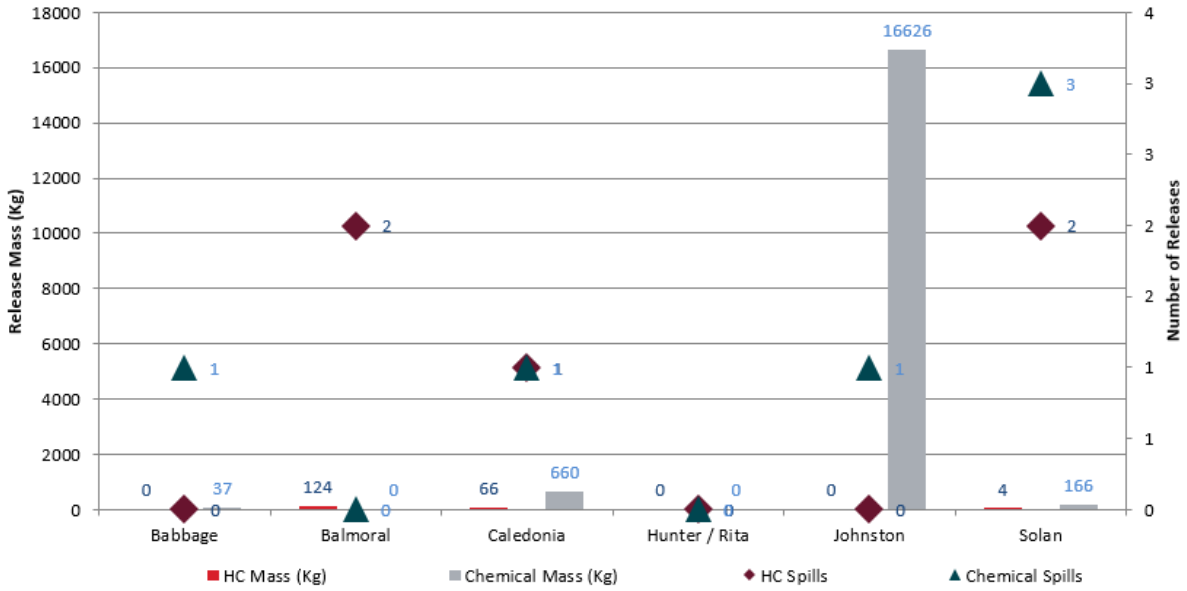

Figure 5.1 Unplanned releases from Premier Operated Assets during 2017

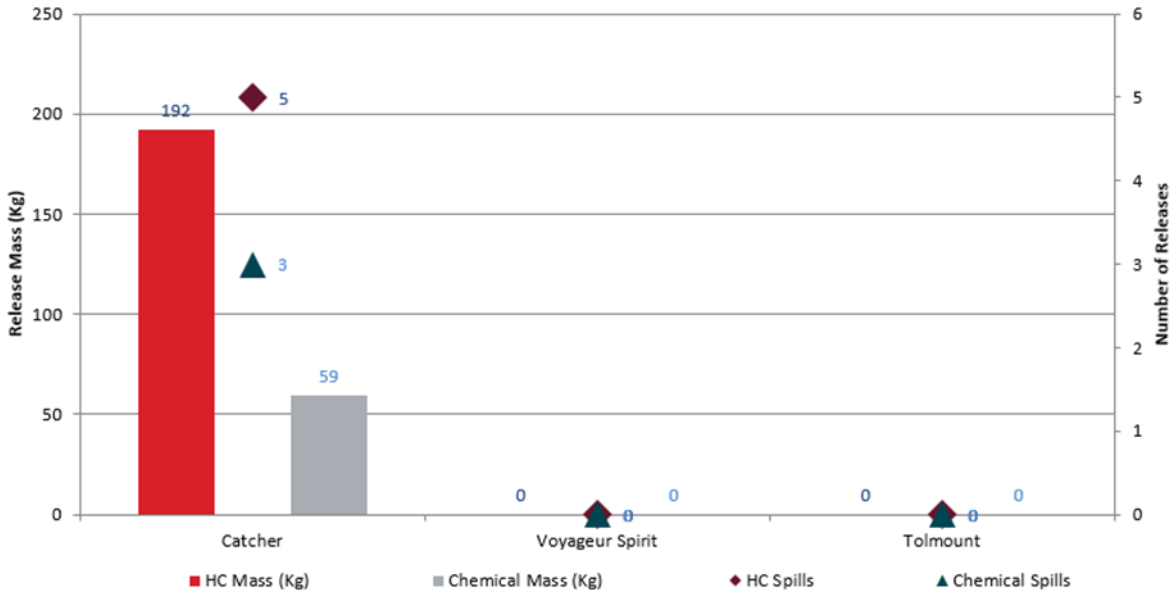

Figure 5.2 Unplanned releases from Assets Controlled by Third Parties during 2017

During 2018 there was a significant reduction in the number of releases reported as opposed to 2017 (19 as compared to 27). 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 2018 as compared to 2017 (0.38 tonnes as compared to 1.74 tonnes), unfortunately the mass of chemical released increased from approximately 10 tonnes in 2017 to over 17 tonnes in 2018. The majority of this release mass resulted from a subsea infrastructure related release, of approximately 16 tonnes. This release resulted from a failure on the Johnston Field subsea infrastructure which led to a release of subsea hydraulic fluid.

The subsea hydraulic fluid concerned was a PLONOR chemical, meaning it had been determined to pose little or no risk to the environment. However, an Environmental Impact Assessment was conducted to assess the impact of the worst case loss of this fluid and this report 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 and the leak was subsequently repaired using a DSV which was mobilised at the earliest practicable opportunity.

Regulatory Non-Compliance (NC)

A total of 9 non-compliances were raised in relation to environmental legislation or permit condition breaches during 2018 which is four less than were submitted in 2017.

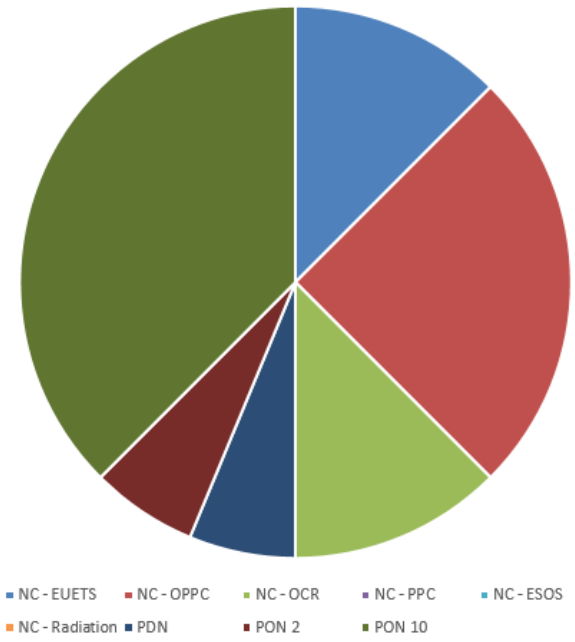

Figure 5.3 Non compliances by permit type and by location

A total of two non-compliances were raised in relation to EU ETS regulations. These non-compliances were minor in nature but reportable under EU ETS rules and were related to issues with flare metering which were subsequently corrected by applying mismeasurement calculations.

An additional three non-compliances were raised in relation to Oil Pollution Prevention and Control (OPPC) legislation. One non-compliance resulted from a monthly average discharge threshold being exceeded and two to meters failing their uncertainty requirements.

Two final non-compliances were raised against the Offshore Chemical Regulations (OCR). These were both release of permitted chemicals through unpermitted locations in a planned event .

All unplanned releases and non-compliances are thoroughly investigated by Premier 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

Objective/Target	Progress
Complete successful re-certification to ISO 14001 and OHSAS 18001 Standards	During 2018 a specific programme to review, update and refresh the environmental management system was undertaken, culminating in successful re-certification of the HSE-MS system to both ISO 14001 and OHSAS 18001.
Improve EU ETS compliance	Premier UKs EU ETS document suite was reviewed and revised to drive consistency and transparency of monitoring across the qualifying installations in the UK BU. Additional internal assurances were also added to annual work plans associated with ETS verification.
Continue Subsea Activity Awareness Campaigns	Pre-mobilisation awareness sessions were conducted for all operations. Bespoke awareness packages continued to be developed and delivered to the DSV teams for each specific campaign.
Review usage and possibilities to reduce chemical usage	A further review of rig-wash products was completed which resulted in a change out to more effective and environmentally friendly product. Review and reduction in SUB labelled chemical products continued to be a focus. A project to review the feasibility of change out of the current firefighting foams for a more environmentally friendly substitute commenced with the technical review continuing into 2018.
Raise level of environmental awareness amongst the workforce	Two environmental representative engagement sessions were held in collaboration with safety reps to promote collaborative working and help to promote environmental awareness throughout the workforce. In addition two additional HSE engagement sessions were held featuring specific environmental topics such as waste awareness, oil spill response, permit compliance etc.

Objective/Target	Progress
Review and develop internal oil spill response capabilities	Work continued on the development of tactical response plans and wider response capabilities for west of Shetland assets. Workshops to improve the awareness of senior management and technical supporters in relation to oil spill preparedness and response were undertaken. In addition a framework for a Premier UK 'Environmental Unit' with specific technical response capabilities was developed. Initial testing of this unit was undertaken in 2017 with further capability building through 2018.
Develop environmental management processes for Decommissioning Programmes	A framework for the establishment of PLANC registers was developed along with a framework for the completion of Comparative Assessments for subsea infrastructure. Decommissioning gate review processes were developed and implemented in order to provide a robust, strategic way to ensure environmental considerations will be built into decommissioning planning and execution cycles.
Complete full Environmental Impact Assessments for new Developments	The Tolmount Field Development offshore Environmental Statement and onshore Planning Application were revised and re-submitted to the regulator for review.

Table 6.1 – Premier UK 2018 Performance against Objectives and Targets