



Environmental Performance Report 2018

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**TEEKAY ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) ANNUAL
PUBLIC STATEMENT****TABLE OF CONTENTS:**

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1 INTRODUCTION

This report is Teekay's 2018 Annual Public Statement for environmental management covering UK operations.

This document is prepared in line with the reporting requirements of the UK's Department for Business, Energy and Industrial Strategy (BEIS) and meets the requirements of the Oslo Paris (OSPAR) Convention recommendations 2003/5. This report outlines Teekay's Environmental Management System (EMS) and details our 2018 environmental Performance.

2 OVERVIEW OF NORTH SEA ASSETS

Petrojarl Banff

Petrojarl Banff employs a unique wedge shape design. The vessel is currently producing under contract to CNR International in the Banff and Kyle Fields.

The Banff and Kyle fields are tied back to the Banff FPSO where processing is carried out. Oil is exported, via a pipeline, to the Apollo Spirit from where shuttle tankers offload the crude oil. Gas is primarily used as fuel gas but excess can be exported into the BP Central Area Transmission System (CATS) via pipeline.



The Banff field was discovered in October 1991 and production began in 1996. The Banff development comprises of four producing wells, and one gas injector. The Kyle field was discovered in August 1993 and began production in 1999. Currently, the Kyle field comprises of four producing wells, Kyle North (K13 and K14) and Kyle South (K12z and K15).

The Banff field straddles the boundary between Blocks 29/02 and 22/27a, the Banff FPSO is moored in Block 22/27a, of the central North Sea, 192 km from the nearest Scottish coastline and 66 km from the UK/Norway transboundary line and in water depths of approximately 95 m. The Kyle field is located to the south of the Banff field in Block 29/02c in similar water depths.

Apollo Spirit

The Apollo Spirit Floating, Storage Unit (FSU) is permanently moored in Block 22/27a, of the central North Sea, 192 km from the nearest Scottish coastline and 66 km from the UK/Norway transboundary line and in water depths of approximately 95 m.

Apollo Spirit is not a producing installation and is only used for the storage of fluids from the Petrojarl Banff FPSO, from where shuttle tankers offload the crude oil. The Apollo Spirit FSU is located approximately 2.4 km north east of the Petrojarl Banff FPSO.



Petrojarl Foinaven

The Foinaven, Floating, Production, Storage and Offloading vessel (FPSO) is the host installation of the Foinaven Field producing for BP. The Foinaven FPSO is located on the United Kingdom Continental Shelf (UKCS) 190 km west of the Shetland Islands predominantly in Blocks 204/24a and 204/19 in a water depth of 480 m.



Sevan Hummingbird

The Sevan Hummingbird is a SEVAN 300 unit located in the Chestnut field in the United Kingdom producing for Spirit Energy.

Discovered in 1986, the Chestnut oilfield is one of the oldest standalone oilfield developments in the North Sea. Production came online in September 2008, and in the first quarter of 2009, the Chestnut satellite field was tied into the newly installed Hummingbird FPSO. The Hummingbird is a cylindrical geo-stationary FPSO, the first of its kind to be utilised in the North Sea,



designed around a hexagonal shaft with a cargo storage capacity of 300,000 barrels. The FPSO's topside provides accommodation for 47 crew members. Tanks for diesel and fresh water and utility equipment are situated beneath the accommodation. Seawater is injected to maintain reservoir pressure, and produced fluids are received from two risers before fluids are separated and produced water treated and discharged directly into the sea. Oil is routed to Cargo tanks and periodically offloaded via shuttle tanker.

Voyageur Spirit

The Voyageur Spirit is one of Teekay's Cylindrical SEVAN 300 units located in the Huntington field in the United Kingdom, producing for Premier Oil.

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



3 ENVIRONMENTAL MANAGEMENT SYSTEM

3.1 HSSE Policy

Teekay's commitment to the environment, as well as health, safety and security, are detailed within Teekay's policy statement, shown in Figure 3.1. Teekay's Health, Safety, Security and Environmental (HSSE) policy is a public commitment to conducting business in a manner that protects the health and safety of people and preserves the integrity of the environment.

The main goals of the policy are:

- No injury to personnel;
- No harm to the environment;
- No damage to equipment; and
- No security breaches.

3.2 EMS

Teekay's commitment to the highest levels of HSSE is achieved through the HSSE Management System, which contains an Environmental Management System (EMS) utilised to identify, assess and mitigate environmental risks and manage environmental performance of all its operations.

The EMS is an integral element of the HSSE Management System and is based on the principle, "plan, do, check and act". The EMS is designed to achieve the environmental goals of the prevention and elimination of pollution from offshore sources, the protection and conservation of the maritime area against other adverse effects of offshore activities and the continual improvement in environmental performance. Teekay produces an annual Sustainability Report which includes the status of its environmental performance.

The EMS is verified against the International Organization for Standardization (ISO) 14001 Standard for EMS including their North Sea Assets. Teekay ensures maintenance and compliance with ISO 14001. Environmental compliance is also managed through the development of an asset specific Permits, Licences, Authorisation and Consent (PLANC) Register and an Environmental Compliance Plan.



Health, Safety, Security and Environmental Policy

High quality HSSE performance is essential and valuable for the success of our business and employees. To achieve this, we have anchored HSSE as a line responsibility and we are committed to comply with all regulatory requirements and continuously improve performance. Our main goals are:

- No injury to personnel
- No harm to the environment
- No damage to equipment
- No security breaches

To achieve this, Teekay Offshore Production will:

- Ensure HSSE is everyone's responsibility
- Empower all employees to speak up and stop work if something is not safe
- Use our operational experience to maintain and continuously improve HSE performance
- Focus on major accident hazards and process safety to reduce risk
- Focus on hydrocarbon release prevention and reduction
- Minimize discharges, emissions and waste and their environmental effects
- Exercise sustainable corporate social responsibility wherever we operate
- Assess the security risk for our offices, FPSO's and ships, and implement prudent preventive actions
- Expect all contractors and subcontractors meet our HSSE expectations
- Proactively monitor, evaluate and report HSSE performance associated with our HSSE targets

Your work is never so urgent that you don't have time to do it safely.

Trondheim, November 24th 2016

Chris Brett
President

Figure 3.1 Teekay HSSE Policy

4 ENVIRONMENTAL PERFORMANCE

Teekay has identified the following significant environmental aspects of its operations:

- Atmospheric emissions;
- Oil discharged in produced water and produced sand;
- Chemical use and discharge;
- Solid waste generation and disposal; and
- Oil and chemical spills.

Teekay routinely monitors and reports its performance in terms of environmental emissions and discharges as required by UK legislation and the internal HSSE Management System. This information is reported via the Environmental and Emissions Monitoring System (EEMS), which is a database of environmental information that is accessible to oil and gas operators and to the regulator, the Department for Business Energy and Industrial Strategy (BEIS).

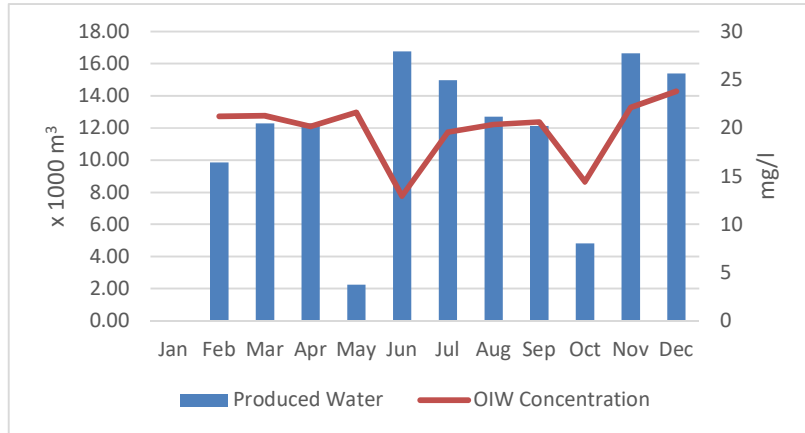
4.1 Petrojarl Banff

Data for the Banff FPSO is included for the period February 2018 to December 2018. Teekay took over Banff operations as the installation operator from CNR in February 2018.

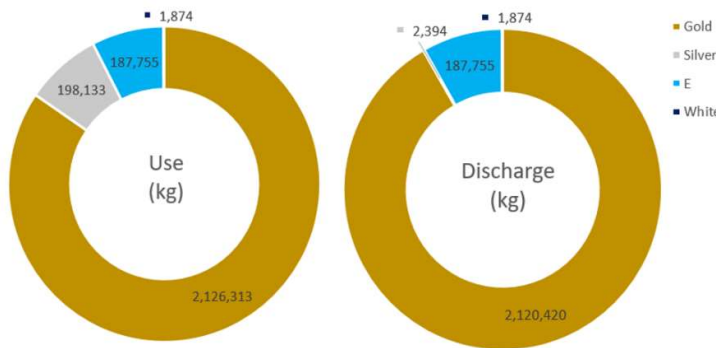
Oil in Water (OIW)

Water discharges are monitored and reported in accordance with the Oil Pollution, Prevention and Control Permit.

The average OIW concentration for the period was 18 mg/l, below the permitted 30 mg/l limit. A produced water volume of 130,123 m³ and 2,590 kg of oil was discharged during the period.

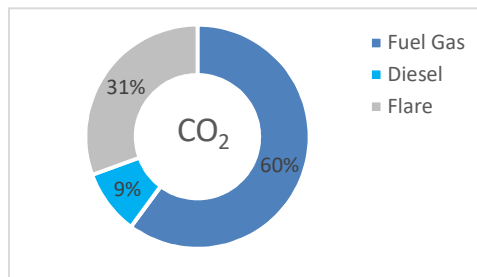


Chemical Use and Discharge

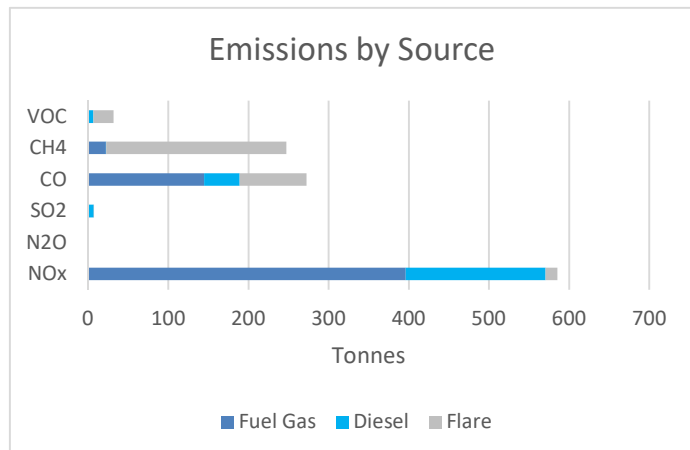


The majority of chemicals in use on the Banff FPSO are in the least harmful Gold Cefas Category. Ongoing chemical management aims to continue to minimise the impact of chemicals on the environment.

Atmospheric Emissions

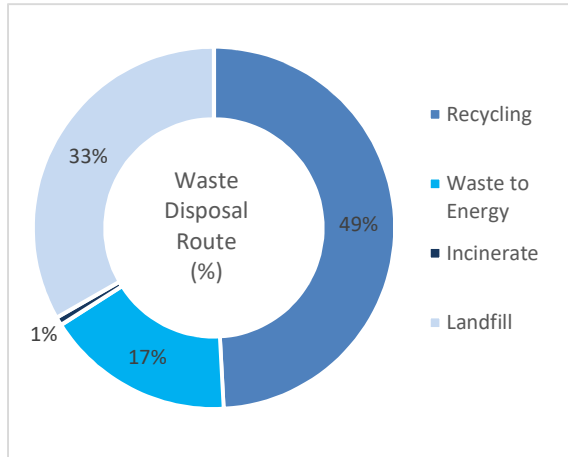


The primary source of CO₂ emissions from Banff FPSO is fuel gas which supplies the gas turbines (power generation). This is followed by flaring and diesel use. CNR owns the EU ETS permit and Flare Consent for the Banff field.



Waste Management

The Banff FPSO generated 40.3 tonnes of waste which was segregated into the following disposal routes;

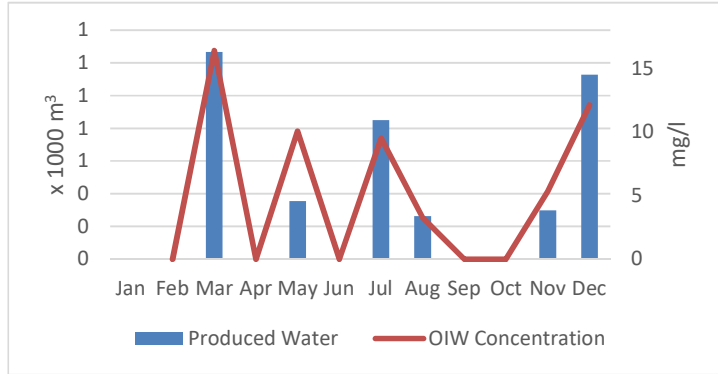


4.2 Apollo Spirit

Data for the Apollo Spirit is included for the period February 2018 to December 2018. Teekay took over Banff operations, including the Apollo Spirit, from CNR in February 2018.

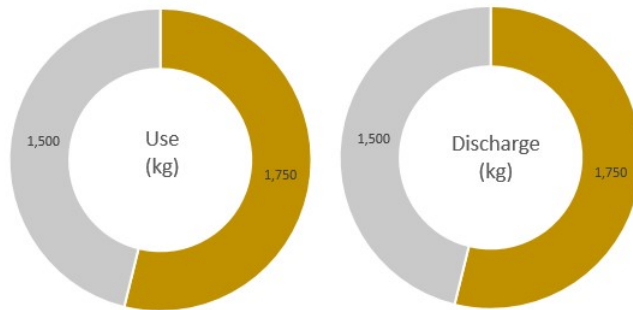
Oil in Water (OIW)

The Apollo Spirit operates as a storage vessel, receiving oil from the Banff FPSO. There are no processing units on board and therefore no continuous water discharge. Water dropout occurs within the cargo tanks and is discharged to sea on a batch basis. Discharges are monitored and reported in accordance with the Oil Pollution, Prevention and Control Permit.



The average OIW concentration for the period was 12 mg/l, below the permitted 30 mg/l limit. A produced water volume of 4,164 m³ and 50 kg of oil was discharged during the period.

Chemical Use and Discharge



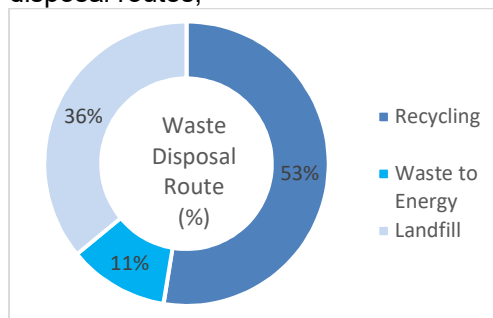
The majority of chemicals in use on the Apollo Spirit are in the least harmful Gold and Silver Cefas Categories. As there are no process systems on the Apollo spirit, chemicals are limited to biocide and cleaning fluids.

Atmospheric Emissions

Combustion plant on the Apollo Spirit falls below the reporting thresholds and therefore there is no PPC permit and data is not presented here.

Waste Management

The Apollo Spirit generated 28.9 tonnes of waste which was segregated into the following disposal routes;



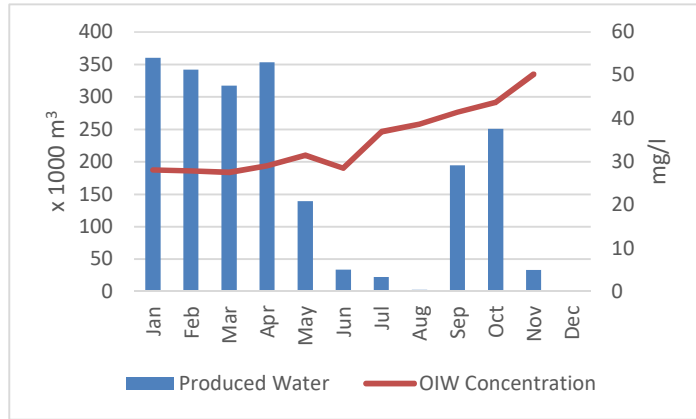
4.3 Foinaven

Data for the Foinaven FPSO is included for the period January 2018 to December 2018.

Oil in Water (OIW)

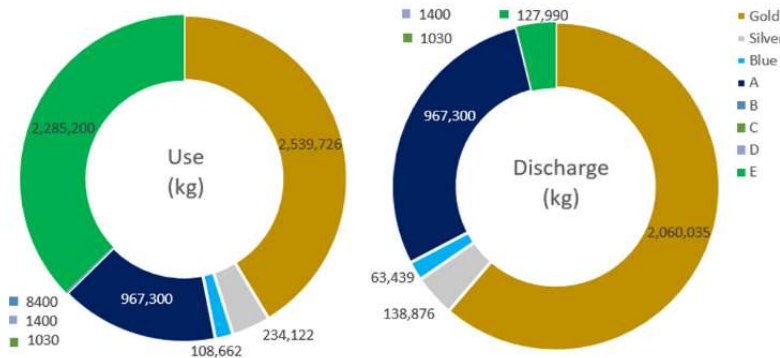
Water discharges are monitored and reported in accordance with the Oil Pollution, Prevention and Control Permit.

The average OIW concentration for the period was 32.2 mg/l, above the permitted 30 mg/l limit. A produced water volume of 2,050,265 m³ and 6,593 kg of oil was discharged during the year.



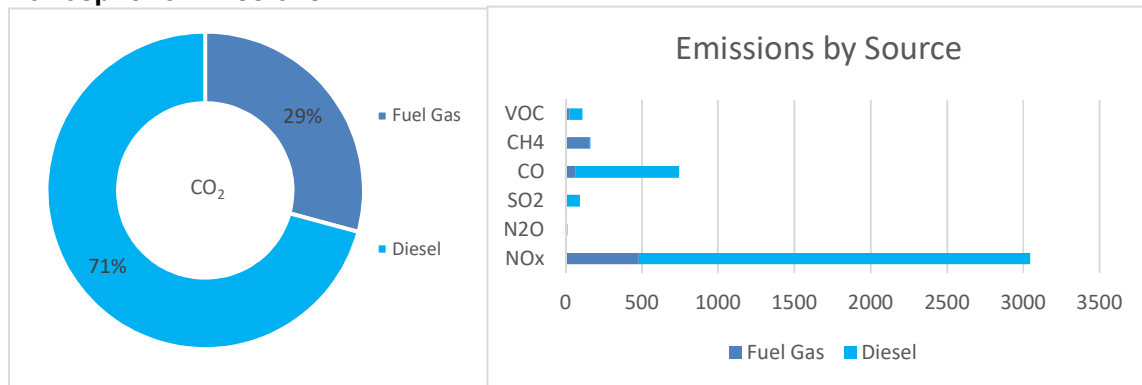
OIW figures exceed the permitted allowance from July through November following the introduction of a new producer well. Teekay are currently assessing options to bring OIW figures within permitted limits. Foinaven was shut down for the month of December with no produced water discharge during this time.

Chemical Use and Discharge



The majority of chemicals in use on the Foinaven FPSO are in the least harmful Gold Cefas Category. Ongoing chemical management aims to continue to minimise the impact of chemicals on the environment.

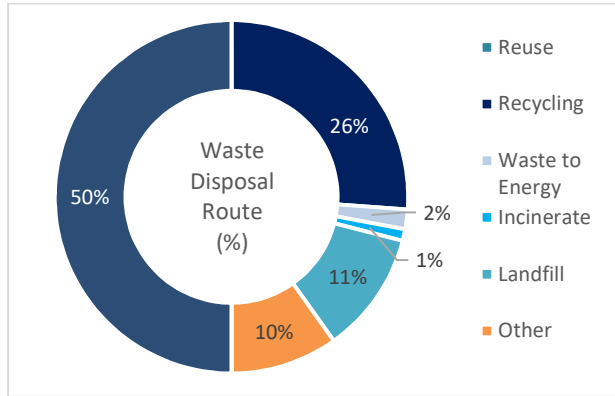
Atmospheric Emissions



The primary source of CO₂ emissions from Foinaven FPSO is diesel which supplies power generation. Note the field operator, BP, is responsible for managing the flare consent and EU ETS permit associated with the Foinaven fields and therefore flare data is not included here.

Waste Management

The Foinaven FPSO generated 351 tonnes of waste which was segregated into the following disposal routes;



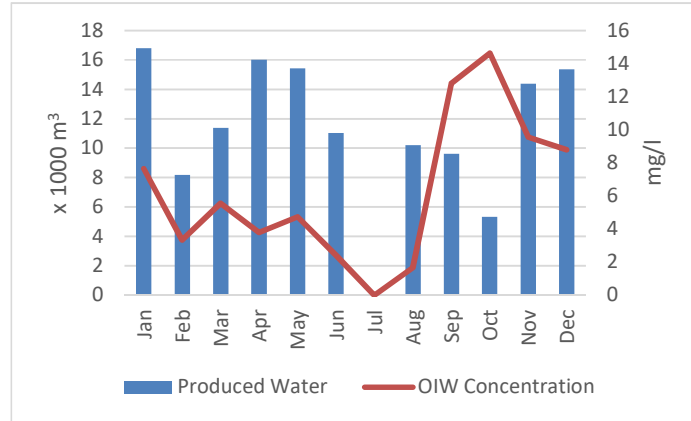
4.4 Voyager

Data for the Voyager is included for the period January 2018 to December 2018.

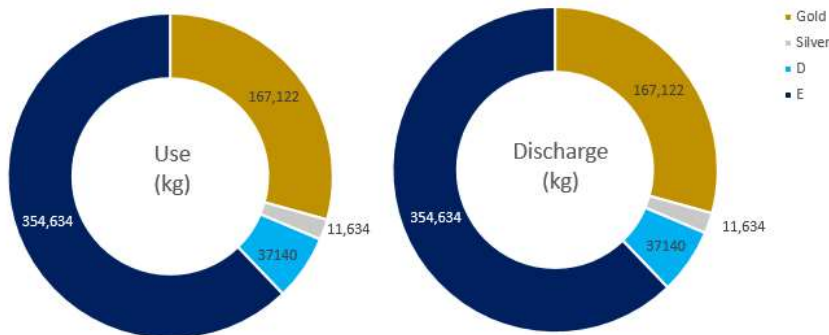
Oil in Water (OIW)

Water discharges are monitored and reported in accordance with the Oil Pollution, Prevention and Control Permit.

The average OIW concentration for the period was 6.5 mg/l, below the permitted 30 mg/l limit. A produced water volume of 133,692 m³ and 868 kg of oil was discharged during the year.

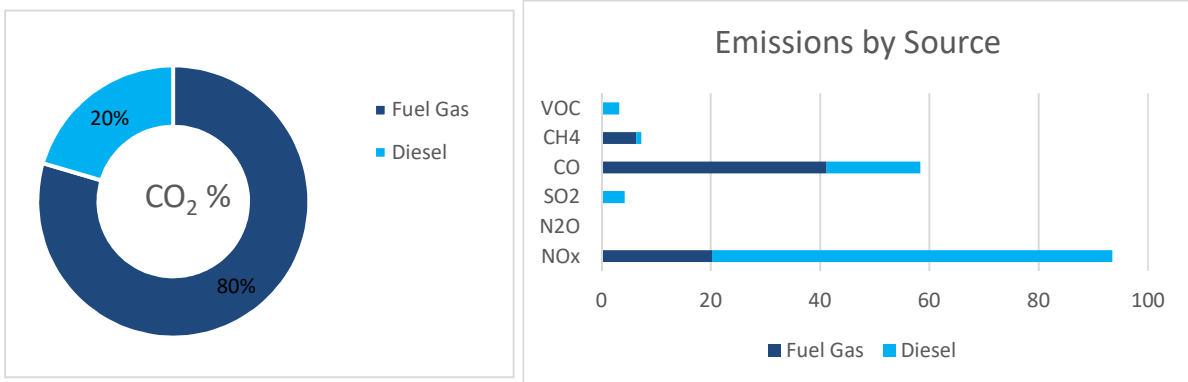


Chemical Use and Discharge



The majority of chemicals in use on the Voyager FPSO are in the least harmful Gold and E Categories. Ongoing chemical management aims to continue to minimise the impact of chemicals on the environment.

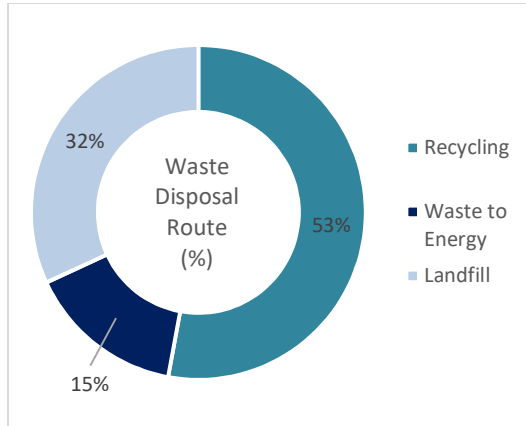
Atmospheric Emissions



The primary source of CO₂ emissions from the Voyager FPSO is fuel gas which supplies the gas turbines (power generation). Note the field operator, Premier Oil, is responsible for managing the flare consent and EU ETS associated with the Voyager fields and therefore flare data is not included here.

Waste Management

The Voyageur generated 141 tonnes of waste which was segregated into the following disposal routes;



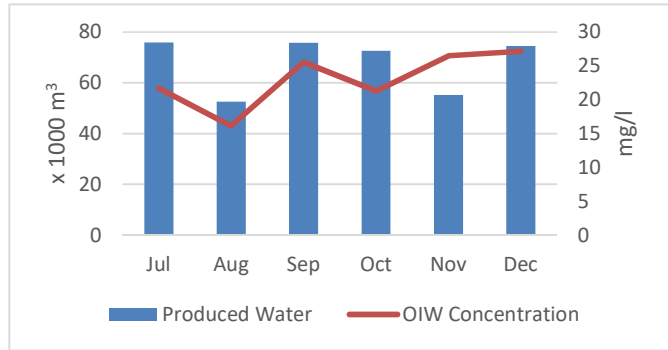
4.5 Hummingbird

Data for Hummingbird is included for the period July 2018 to December 2018. Teekay took over Hummingbird operations as the installation operator from Spirt Energy in July 2018.

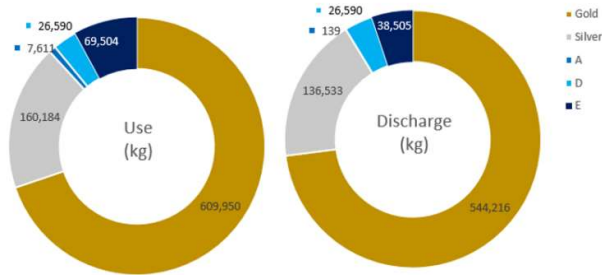
Oil in Water (OIW)

Water discharges are monitored and reported in accordance with the Oil Pollution, Prevention and Control Permit.

The average OIW concentration for the period was 23 mg/l, below the permitted 30 mg/l limit. A produced water volume of 406,579 m³ and 9,463 kg of oil was discharged during the year.

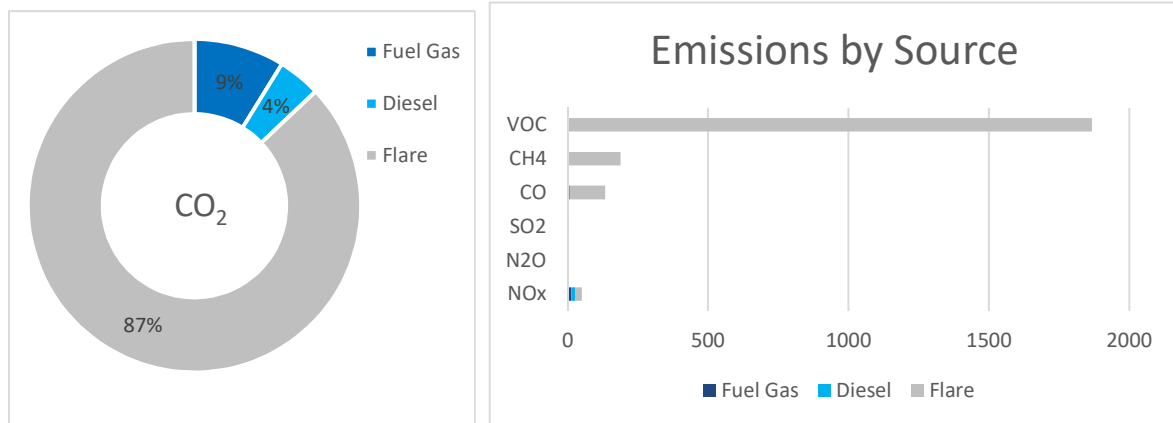


Chemical Use and Discharge



The majority of chemicals in use on the Hummingbird FPSO are in the least harmful Gold and Silver Cefas Category. Ongoing chemical management aims to continue to minimise the impact of chemicals on the environment.

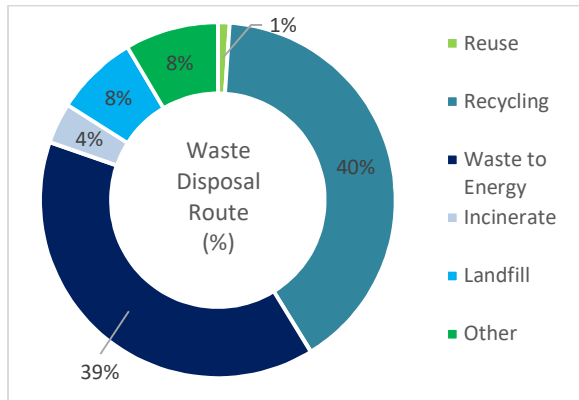
Atmospheric Emissions



The primary source of CO₂ emissions from the Hummingbird FPSO is flaring for which Spirit Energy hold the Flare Consent. This is followed by fuel gas and diesel use. Combustion plant on the Hummingbird falls below the reporting thresholds and therefore there is no PPC permit.

Waste Management

The Hummingbird FPSO generated 33.33 tonnes of waste which was segregated into the following disposal routes;



5 INCIDENTS

The table below shows the reportable incidents that occurred during 2018. Most non-conformances are associated with breaching monthly or daily OIW limits on the Foinaven and Hummingbird assets. There is on-going work to improve this.

Date	Asset	Non-Conformance Type	Description
31/01	Voyageur	PON2	Mail bag blown into sea
01/02	Voyageur	OPPC Non-Conformance	PW mis-measurement
06/02	Foinaven	F GAS	F Gas > 250 tonnes CO2e
01/06	Foinaven	OPPC Non-Conformance	May monthly average concentration of dispersed oil produced water discharged above permitted concentration of 30 mg/l
17/07	Banff	Chemical Non-Conformance	Use and discharge of 20 litres of unpermitted chemical - FYREWASH
25/07	Hummingbird	OPPC Non-Conformance	Oil In water above limit of 100ppm (spot sample) going overboard
01/08	Foinaven	OPPC Non-Conformance	July Monthly average concentration of dispersed oil produced water discharged above permitted concentration of 30 mg/l
03/09	Foinaven	OPPC Non-Conformance	August Monthly average concentration of dispersed oil produced water discharged above permitted concentration of 30 mg/l
16/09	Voyageur	PON2	Loss of ROV and lifting cage
18/09	Hummingbird	OPPC Non-Conformance	NC for flow meter 0449 as fastening clip broke leading to loss of ex rating.
20/09	Hummingbird	OPPC Non-Conformance	NC for spike in OIW during slops processing
02/10	Foinaven	OPPC Non-Conformance	September Monthly average concentration of dispersed oil produced water discharged above permitted concentration of 30 mg/l
06/11	Hummingbird	OPPC Non-Conformance	Software Issue - DCS resetting error
01/11	Foinaven	OPPC Non-Conformance	October Monthly average concentration of dispersed oil produced water discharged above permitted concentration of 30 mg/l
03/12	Foinaven	OPPC Non-Conformance	November Monthly average concentration of dispersed oil produced water discharged above permitted concentration of 30 mg/l
08/12	Banff	PON1	Leak of hydraulic fluid from subsea hydraulic control system

Date	Asset	Non-Conformance Type	Description
13/12	Banff	PPC Non-Conformance	Exceedance of VOC emissions by 3.26 tonnes due to increased diesel use.
13/12	Voyageur	OCR Non-Conformance	The chemical SCALETREAT 852ND was discharged in a manner not approved on the permit.

6 CONCLUSIONS

Teekay is committed to minimising impacts to the environment from offshore operations. Through the regular review of environmental performance, and the setting and delivery of environmental objectives that are appropriate to environmental risks, Teekay shall continue to improve environmental performance.

Teekay plan to deliver the following key environmental objectives in 2019:

- To reduce the average oil in water content on Foinaven;
 - Raise environmental awareness on the assets;
 - To reduce the likelihood of accidental discharges to the sea;
 - To ensure compliance with environmental regulations.
-