TOTAL E&P UK

Operational Environmental STATEMENT

2016

twenty sixteen

TOTAL

Contents

Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Safety, Health & Environment Policy Statement

Safety, Health and Environment
Policy Statement

Total E&P UK (TEP UK) as a subsidiary of the Total Group, are committed to delivering our business objectives whilst prioritising a safe working environment for our employees, contractors and other stakeholders; safeguarding the environment and preventing pollution; complying with laws and regulations and preventing Major Accident Hazards. This commitment is visibly demonstrated through implementation and compliance with the Company Management System (CMS) and measured via the setting of annual targets and establishment of company objectives:

It is our stated policy to:

- Maintain safe, energy efficient and regulatory compliant operations in all our activities by providing assets, facilities and equipment that have been efficiently designed and procured in accordance with BATNEEC and installed, commissioned and maintained, in accordance with TEP UK and TOTAL Group procedures.
- Systematically identify for all activities, the hazards to which people, the environment and assets are exposed, evaluate the risks and define the measures for eliminating or reducing them to as low as reasonably practicable (ALARP).
- Execute our activities whilst meeting our local, national and international compliance obligations, along with TEP UK and TOTAL Group procedures.
- Continue to develop a positive SHE culture through strong visible leadership, active involvement of the workforce, individual accountability and a spirit of co-operation.
- Monitor the health of all employees to ensure they are not adversely affected by the work environment.
- Adopt the principles of continuous improvement by setting measurable business objectives, monitoring and reviewing performance through independent audits and statistical analysis of results.
- Ensuring our emergency response capability is suitable for responding to hazards and regularly testing the effectiveness of this response by controlled exercises.
- Work with our contractors and suppliers to ensure they understand our SHEQ requirements, whilst being prepared to listen to suggested improvements in areas where they have highly developed knowledge, in order to deliver mutually beneficial results.

Jean-Yves Frouté
Exploration & New Ventures Director

Brian Wilkie
Corporate Services Director

Mariam Kane-Garcia
Strategy & Business Director

Andy Powell
Legal Director

Alain Pouthas
Finance Director

Bruce Lawson
SHEI & S Director

Kevin Boyne
Asset Director WOS

David Hainsworth
Asset Director NNS

Eric Zaugg
Asset Director CGA

Elisabeth Proust
Managing Director TEP UK

January 2017
UK-SAF-GEN-0301.AI

Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Introduction

It is my pleasure to present to you the 2016 Operations Environmental Statement for Total E&P UK Limited (TEPUK). All of us at TEPUK encourage and support the protection of the environment, the safety of people, property, and the principles of sustainable development.

This year has been one of consolidation within TEPUK. Commissioning the Shetland Gas Plant has been completed and we are now preparing for the arrival of first gas from our new fields Glenlivet and Edradour in the West of Shetland. Our Elgin Franklin asset in the Central North Sea has been producing successfully following the completion of major project works. Our Alwyn Dunbar assets in the Northern North Sea have also seen a robust and comprehensive maintenance programme successfully carried out.

This work not only underlines TEPUK's commitment to the UK offshore industry but also our broader commitment to make energy more affordable, cleaner and more reliable.

Our Challenge: Total's ambition is to be the world's leading responsible international energy company. We are dedicated to three core challenges: satisfying the energy needs of the world, limiting the impact of climate change and adapting to changing customer expectations.

Our response: We aim to operate sustainably and have an active and positive presence in all our host countries in such varied areas as safety, health, climate, the environment and shared development. We were among the first in the industry to publish measurable improvement objectives.

Our vision for the environment contains four strands:

- **Combating Climate Change:** through curtailing our emissions and moving forward with new technologies such as carbon capture and storage.
- **Controlling our Local Environmental Footprint:** by protecting the environment near our facilities, striving to maintain the ecosystem's diversity as well as its water and air quality, cutting back on our waste and guarding against spills and pollution caused by accidents.
- **Developing Renewable Energies:** solar energy and biomass are the two focuses of our expertise and capabilities in the renewable energies field.
- **Develop Eco-Efficient Solutions:** leveraging innovation to serve continuous improvement, our Total Ecosolutions programme is aimed at developing products and services to help our customers to reduce their environmental footprint by consuming less and in more sustainable ways.

In this Operations Environmental Statement, we are proud to display our transparency and accountability to our stakeholders, our dedication to employing the best environmental practices within our operations and our ambition to continually improve our performance.

In this report you will find: A description of the offshore/onshore facilities we operate and the main activities carried out on our sites;

- An overview of our Environmental Management System;
- Details of the environmental emissions and discharges from our operations in 2016;
- A summary of our 2016 objectives, targets and our performance against them;
- An outline of our 2017 objectives and targets.

"I hope that you will find the report both informative and interesting and I look forward to any questions or comments that you may have".

Elisabeth Proust
Managing Director TEP UK
May 2017

Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

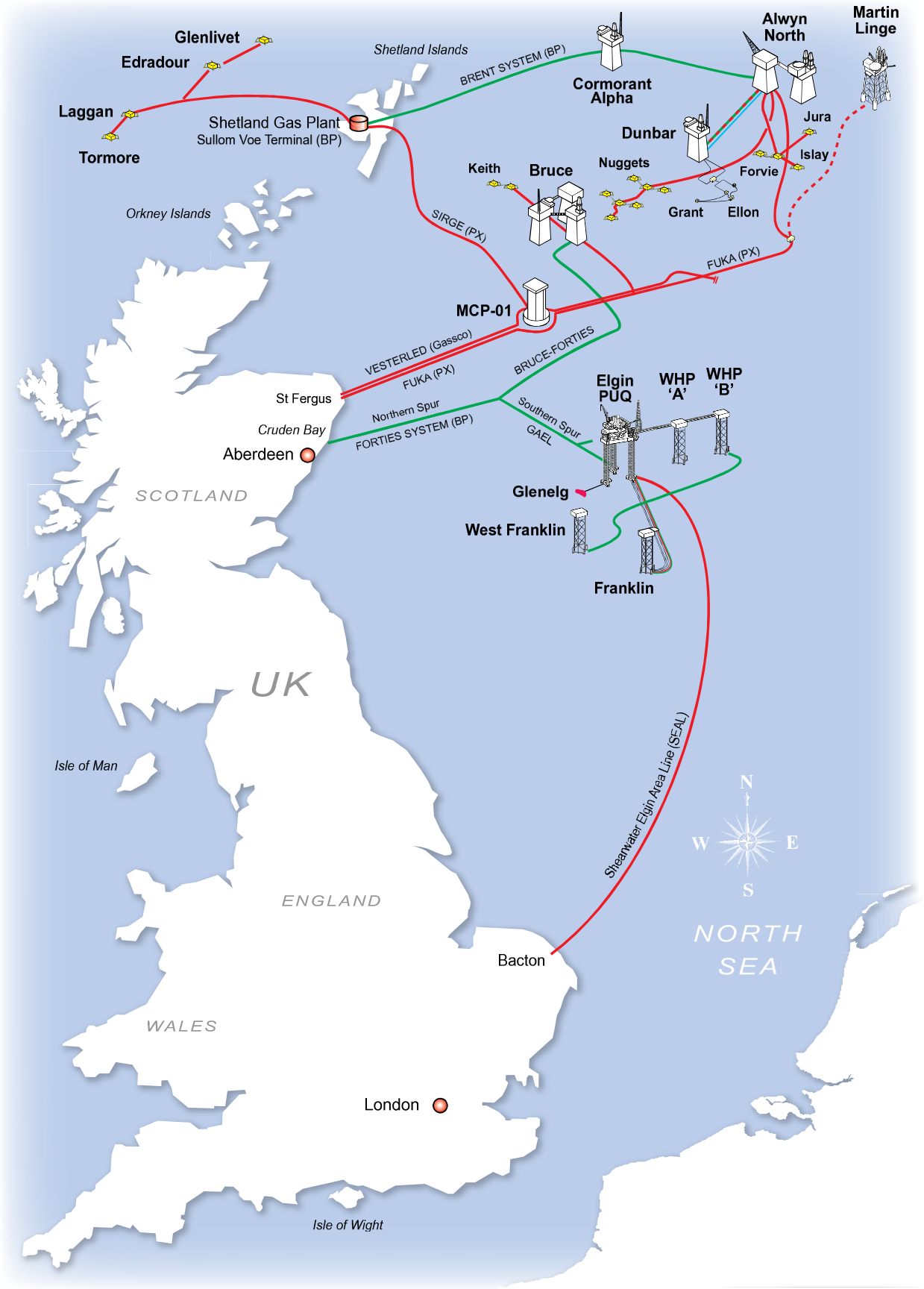


Figure 1 : TOTAL E&P UK Offshore/Onshore Operations

Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Onshore Operations

Figure 2 : Operations at the Shetland Gas Plant

TOTAL E&P UK Limited (TEP UK) SGP

The Shetland Gas Plant provides facilities for reception, processing and export of natural gas and its associated condensate from the Laggan and Tormore gas condensate fields located to the West of Shetland. SGP is located approximately 28 miles North of Lerwick on the main island of the Shetland Isles.

Gas arrives at SGP through 2 pipelines, each 18" diameter which carries gas from the Laggan & Tormore fields. When gas arrives at the plant, liquids are removed in the slugcatchers before the gas is dried, chilled, re-heated and metered, before being sent via a 30" diameter export line to join with the existing 32" diameter Frigg UK (FUKA) pipeline system to the St Fergus Gas Terminal.

Production started in 2016 and peak production rates are expected to be around 500 million standard cubic feet per day. The environmental management system in place at the SGP ensures that strict environmental monitoring and performance standards can be achieved. This is regulated by the Scottish Environment Protection Agency.

Offshore Operations

Figure 3 : Operations in the North Sea

TOTAL E&P UK Limited (TEP UK) is one of the largest exploration and production subsidiaries of the TOTAL Group. TOTAL is the world's fourth-largest oil and gas company and second-largest solar energy operator with SunPower. With operations in more than 130 countries, we have more than 100,000 employees who are all working on delivering our commitment to better energy. The TOTAL Group engage in all aspects of the petroleum industry: from oil and gas exploration, development and production, to refining, marketing, trading and shipping, to production of base chemicals and specialty chemicals for industrial and domestic use.

Operations in the Northern North Sea

Figure 4 : Alwyn North Platform

TEP UK's Northern North Sea (NNS) hub lies 160km east of the Shetland Islands and 440km northeast of Aberdeen.

Our **Alwyn North field** lies at the heart of this area and first produced oil in 1987. Alwyn North is the hub of the Alwyn Area and the support centre for the neighbouring Dunbar, Ellon, Grant, Nuggets, Forvie North, Jura and Islay fields.

These neighbouring fields were brought onstream through innovation and technological advances, thereby extending the life of the Alwyn Area past 2020 – more than 20 years beyond original estimates.

The field comprises two bridge-linked platforms in a water depth of 126m. North Alwyn A (NAA) provides drilling and accommodation facilities, while North Alwyn B (NAB) provides processing facilities. NAB supplies other Alwyn Area fields with power, water and chemicals via a network of subsea cables and pipelines.

Alwyn North has facilities for the re-injection of both drill cuttings and produced water. Untreated oil and gas from neighbouring Alwyn Area fields is piped to NAA and across the bridge to NAB for processing and export to shore. Oil from NAB is exported to the Sullom Voe Oil Terminal in Shetland via the Cormorant Alpha platform and the Brent pipeline system. Gas from NAB is exported to the St Fergus Gas Terminal on the north-east coast of Scotland via the Frigg pipeline system.

Our **Dunbar field**, situated 22km south of Alwyn North, first produced oil and gas in 1994. Dunbar comprises a platform together with well and accommodation facilities. Produced oil, gas and water are pumped back to the Alwyn platform via a 22km subsea multiphase pipeline. The Dunbar platform has facilities for drill cuttings reinjection, and some produced water reinjection.

Figure 5 : Dunbar Platform

Ellon, a subsea oil development and **Grant**, a subsea gas condensate development are located around 9km from Dunbar and linked to the Dunbar platform by flowlines and control umbilicals. Ellon started production in 1994 and Grant followed in 1998.

Nuggets is a development of four gas-bearing accumulations located 20km south of Dunbar. Brought into production during 2002/03, gas from Nuggets is piped back to Alwyn North via a 67km subsea pipeline.

Forvie North is a gas condensate development which started production in January 2006. It comprises subsea production facilities and a 32km pipeline tied back to the Alwyn North platform.

Jura is a subsea gas condensate development located 30km south of the Alwyn North platform. The development is located in 113m water depth and consists of a two well subsea tie-back to the Forvie manifold via a 3km bundle assembly. The unique bundle arrangement integrates all process and control functions for the well connections. First gas was achieved in May 2008, only eighteen months after discovery.

Islay is TEP UK's latest development in the Alwyn Area Islay is the gas/condensate field in Block 3/15, located just over 30km to the south of Alwyn North. The development consisted of a single well tied back with a 6km gas and condensate pipeline to the Forvie subsea manifold, with gas and condensate transported via the existing pipeline to Alwyn North. First production from this field was achieved in 2012.

Operations in the Central North Sea

Figure 6 : Elgin PUQ and Complex

Our Assets in the Central Graben Area of the North Sea comprise the **Elgin, Franklin, Glenelg** & **West Franklin** fields, and are located 240km east of Aberdeen. Production started in 2001, the Elgin/Franklin field was the first high pressure-high temperature (HP/HT) offshore development in the world.

Field reservoirs lie in a structurally complex area nearly 6km below the seabed where the pressure is close to 1100 bar and the temperature is around 190°C. These conditions necessitate specialist engineering, equipment and management.

Elgin consists of central processing facilities located on a Process, Utilities and Quarters (PUQ) platform bridge-linked to two wellhead platforms, Elgin WHP A and Elgin WHP B. Franklin WHP and West Franklin WHP area are normally unattended satellite platforms that tie back to the Elgin PUQ. The PUQ is, in effect, a miniature gas refinery with a sophisticated process plant onboard to produce commercial quality gas. Liquids from Elgin/Franklin are exported to Cruden Bay on the north east coast of Scotland via the Graben Area Export Line (GAEL) pipeline and Forties Pipeline System. Liquids are then piped onwards to Kinneil for tanker export. Gas from Elgin/Franklin is exported to the Bacton terminal in Norfolk via the 468km Shearwater Elgin Area Line (SEAL) pipeline.

The West Franklin field is an adjacent structure to the western margin of Franklin Field in the Central Graben area of the North Sea. The structure straddles the 29/4d and 29/5c blocks and is an ultra HP/HT field.

The West Franklin jacket was installed in August 2011, the Elgin B jacket in 2012. The topsides for the two facilities were installed in summer 2013, the commissioning was completed in 2014 with first gas produced in early January 2015.

Operations in the West of Shetland

Figure 7 : The Shetland Gas Plant

The West of Shetland operations include the now producing Laggan and Tormore fields, situated some 125km North West of the Shetland Islands on the UK Continental Shelf approximately 600m below sea level. This is the longest subsea tie back in the UK and equal longest in the word with Snohvit in Norway. Laggan and Tormore fluids are transported 143km through production pipelines to Shetland Gas Plant, which has a capacity of up to 15Mscm/d gas and 35 kbbl/d consensate, for processing and export to St. Fergus Gas Terminal on the North East Coast of Scotland via the Shetland Island Regional Gas Export (SIRGE) pipeline, a 234km long export pipeline which connects to the existing Frigg UK Area (FUKA) pipeline. Edradour and Glenlivet Pipelines will be connected to the existing Laggan Tormore pipelines in 2017 and the comingled fluids will be processed at Shetland Gas Plant.

2016 was exceptionally busy and on 7th February Gas was exported from the Laggan fields. The site was Inaugurated on 16th May. On 8th August Tormore Field well T3 was open.

The region is being expanded by the development of the Edradour & Glenlivet gas condensate fields. Work towards this was undertaken in 2015.

West of Shetlands Projects

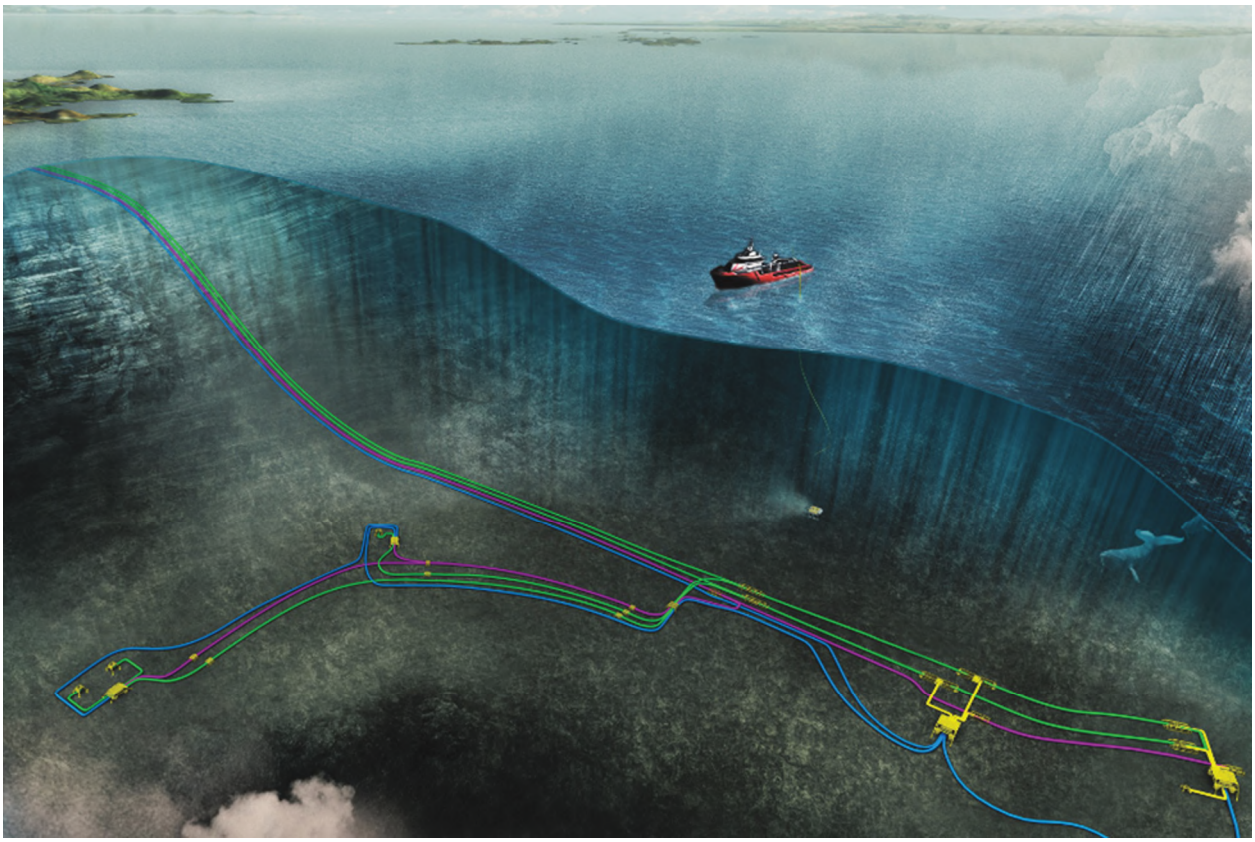


Figure 8 : Edradour / Glenlivet Project

The Edradour gas-condensate field is located in block 206/4a in the West of Shetland area. The field is approximately 35km East of the Laggan field in 295m water depth and is 17km away from the route of the 18" production flowlines for the TEPUK operated Laggan-Tormore development. The Glenlivet field is located in block 214/30a approximately 18km North of the Edradour field in 440m water depth. The expected start-up of both fields is Q3/Q4 2017.

The overall development concept consists of a long distance tie-back of subsea wells connected to the new Shetland Gas Plant (SGP), with further export of the processing gas to the UK Frigg (FUKA) pipeline system in the North Sea.

The Subsea Production System offshore will consist of two 4 slot manifolds, with three development wells, 1 at Edradour and 2 at Glenlivet. The commingled, multiphase fluid stream will be transported to shore via 12" Production Flowlines which will interconnect to the 2 Laggan-Tormore 18" Production Flowlines. The Subsea wells will be controlled via an electro-hydraulic control umbilical with a separate smaller 6" Flowline injecting a continuous stream of MEG to inhibit the production of hydrates which can form at the low temperatures and high pressures experienced.

Drilling Operations

Figure 9 : Prospector 1

TEP UK delivered an extensive exploration, development and well intervention drilling programme in 2016 with drilling operations being completed successfully and safely across all TEP UK assets.

In the Central Graben area, the Prospector 5 jack up drilling rig continued drilling the first development well from the newly installed Elgin Wellhead B platform before starting a second development well on the same wellhead platform.

In the Central Graben area the Prospector 1 continued drilling an appraisal well on the Franklin field. Prospector 1 drilling rig has also completed annulus securitisation and cementing on both Franklin F2 & F3Z wells. The Rowan Gorilla V continued drilling a development well in the West Franklin field. The Galaxy 1 drilling rig completed a workover on the Glenelg well and a number of annuli securitisations on the Elgin Wellhead Platform A.

In the West of Shetland area the West Phoenix Semi-Submersible drilled the Tormore production well.

The West Phoenix completed the production well on the Edradour field. This well is due to start producing in 2017.

In the Northern North Sea area the Borgsten Dolphin acted as a tender support vessel supporting the Dunbar Phase IV drilling programme until the completion of the programme at the end of September.

Pipeline Installation & Maintenance

Figure 10 : Shetland Pipeline Infrastructure

In 2016 we conducted numerous pipeline maintenance operations such as routine pigging of the Dunbar to Alwyn multiphase export pipeline using both specialised pigging tools and standard bi-directional pigging tools.

The Alwyn oil export pipeline to Cormorant Alpha was also pigged throughout the year for wax removal purposes.

In Central Grabben Area, the condensate export pipeline from Elgin PUQ to the Unity platform was pigged twice with cleaning and gauging pigs for wax removal purposes.

We also conducted numerous subsea pipeline projects such as the Ellon and Grant Life Extension Project (EAGLE) umbilical installation, and subsequent jumper tie-ins between the new subsea protection structure (SPS), and the old Auxiliary Subsea Umbilical Termination unit (SUTU). We also changed out the hydraulic controls system components on Forvie North and Jura.

West of Shetland pipeline maintenance operations such as routine pigging of the two 18″ were carried out routinely using a standard bi-directional pigging tools. A specialist pipeline corrosion mapping tool was also run through the pipelines.

Also the execution phase of the Edradour/Glenlivet project was commenced over the summer period to install two 12″ production pipelines, one 6″/2″ MEG/service pipeline, a controls umbilical and two production manifolds.

Environmental Management System

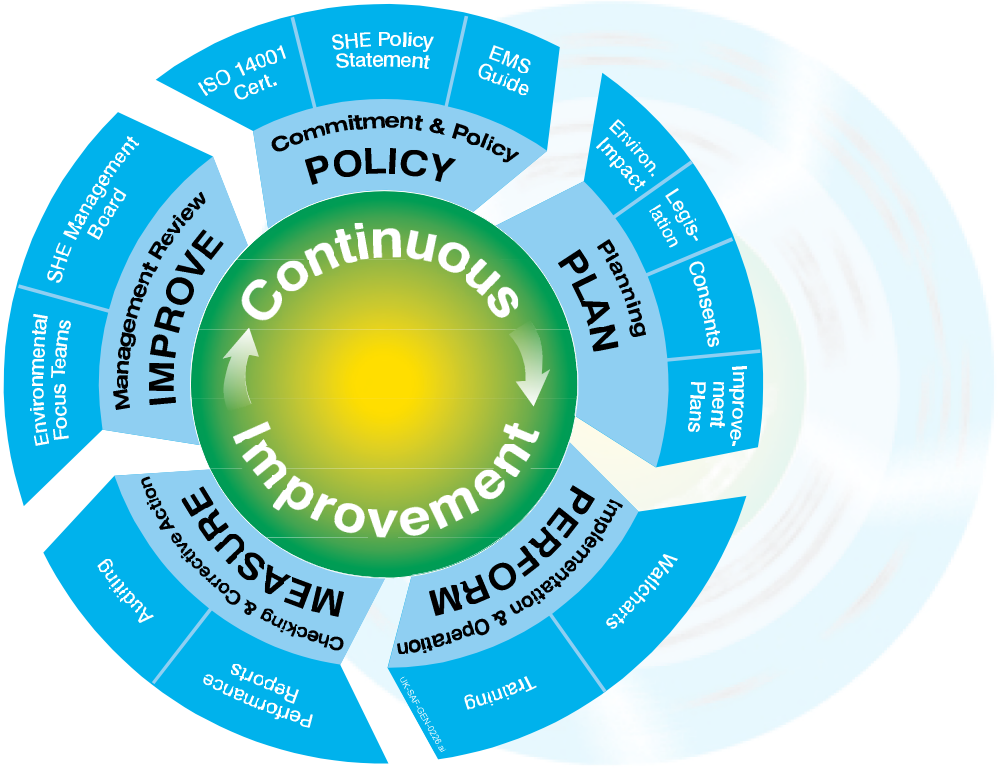


Figure 11 : Continuous Improvement Wheel

Our Environmental Management System (EMS) is designed to ensure we comply with environmental legislation, to prevent pollution and to support continual improvement of our environmental performance.

Our EMS first achieved external certification to ISO 14001 in 2001. Our EMS forms an integral part of our overall Company Management System (CMS). TEP UK was successfully recertified against ISO14001 standard during 2015.

Over the next two years TEP UK will be upgrading our management system to allow us to be certified against the updated ISO 14001: 2015 standard.

The 2016 statement reports our performance against core indicators. Core indicators relate to the direct environmental aspects impacted by our operations and other relevant environmental performance indicators, focusing on the following areas:

- **Emissions to Air**
- **Energy Efficiency**
- **Water**
- **Waste**
- **Legal Compliance**
- **Management of Major Environmental Hazards**

In 2016 all site aspect registers were reviewed and updated in accordance with internal standards.
Total operates an HSE management system which has ten core principles, the system, Management And Expectation Standards towards Robust Operations (MAESTRO), enshrines sixty expectations which ensure that each affiliate has a set of standards in place to ensure an acceptable level of risk in the HSE fields.

Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Emissions to Air

Figure 12 : Elgin Complex

Under normal operations, atmospheric emissions resulting from our offshore operations are generated by:

- **Combustion of fuels in turbines and generators that are used for compression and power generation**
- **Flares which are an integral part of the platform/rig safety systems**
- **Venting carbon dioxide and hydrocarbons through the process**
- **Sour Gas which is removed from the product to ensure entry specification is achieved.**

EU Emissions Trading Scheme

The Alwyn North and Elgin PUQ platforms exceed the 20MW thermal threshold for combustion installations. Under the Greenhouse Gas (Emissions Trading Scheme) Regulations 2012 for carbon dioxide (CO_2) we are required to report annually on our emissions of CO_2 with a view to reducing emissions year on year. Data relating to our CO_2 emissions is independently verified. The following graphs compare the CO_2 emitted from the North Alwyn and Elgin platforms against the free allocated CO_2 allowances for 2016.

Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Combustion and Flaring Emission (tonnes) CO_2

Figure 13

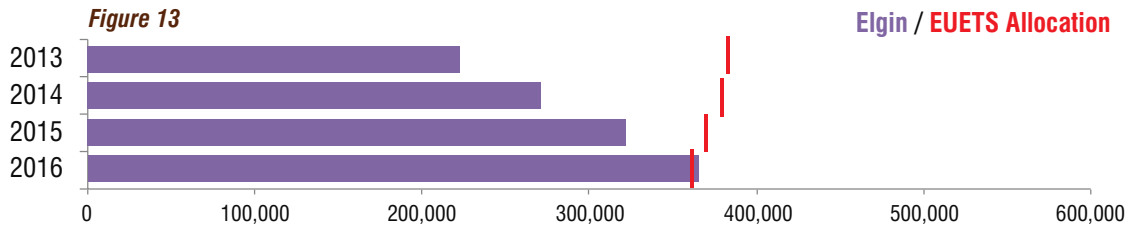


Figure 14

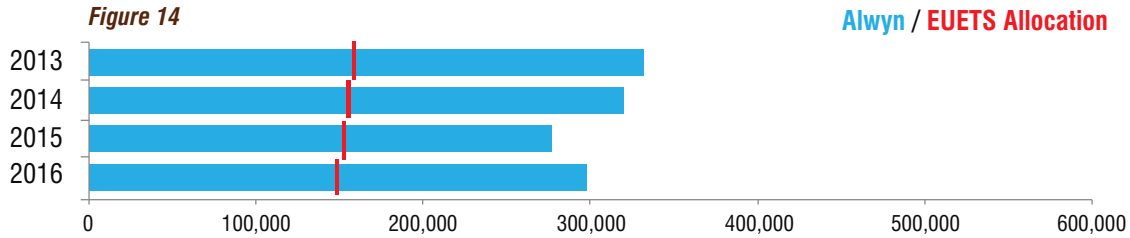
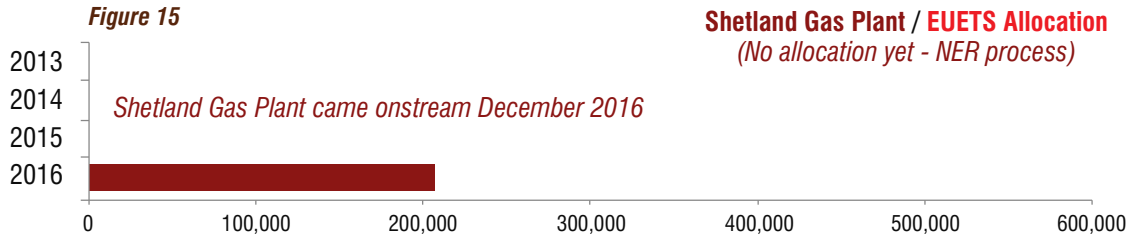


Figure 15



EU ETS Phase III - Further Reducing Emissions

The current phase of the EU ETS builds upon the previous two phases and is significantly revised to make a greater contribution to tackling climate change including: an EU-wide cap on the number of available allowances and an increase in auctioning of those allowances, hence the reduction in freely allocated allowances for the Alwyn and Elgin / Franklin assets for 2013 onwards.

The EU cap for Phase III will reduce the number of available allowances by 1.74% each year, delivering an overall reduction of 21% below 2005 verified emissions by 2020.

Non CO_2 Emissions

The Alwyn North and Elgin PUQ platforms exceed the 50MW thermal threshold for combustion installations and are regulated under a permit granted by BEIS as per the Offshore Combustion Installations (Prevention and Control of Pollution) Regulations 2013 (IPPC). The IPPC Permit requires that we monitor and report emissions of Nitrogen Oxides (NO_X), Sulphur Oxides (SO_X), Carbon Monoxide (CO), Methane (CH_4) and Volatile Organic Compounds (VOCs) from our Alwyn North and Elgin PUQ installations.

Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Flare Consent

Alwyn North, Dunbar and Elgin PUQ have flare systems, each of which have pilot flares to ensure safe combustion of any gas entering the flare system.

The Graphs below summarises the platforms' performance against the BEIS (Department of Business Energy and Industrial Strategy) Flare Consents.

Flaring emissions (tonnes)

Figure 16

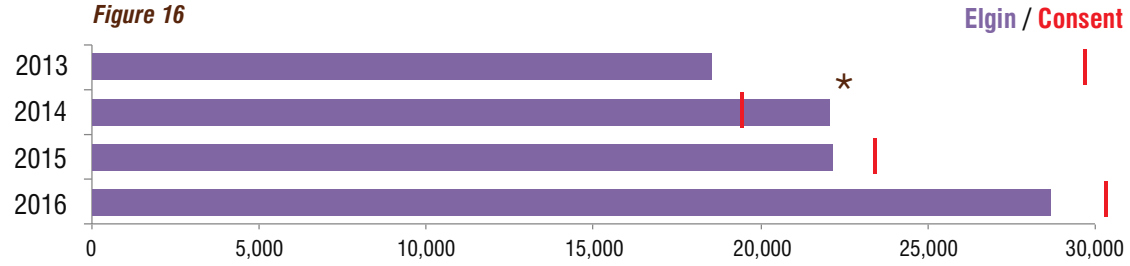


Figure 17

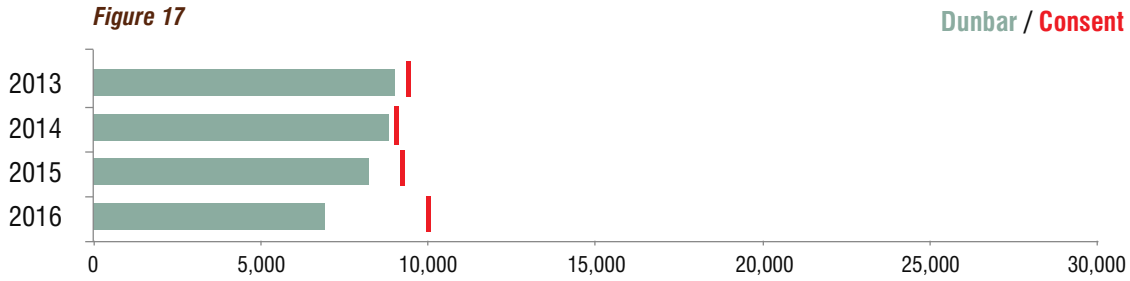


Figure 18

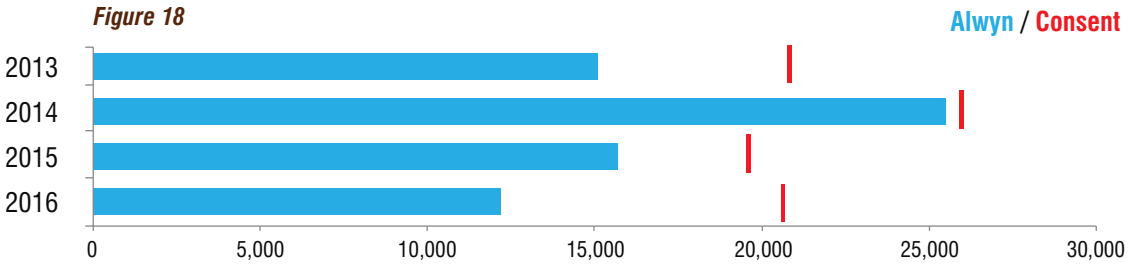
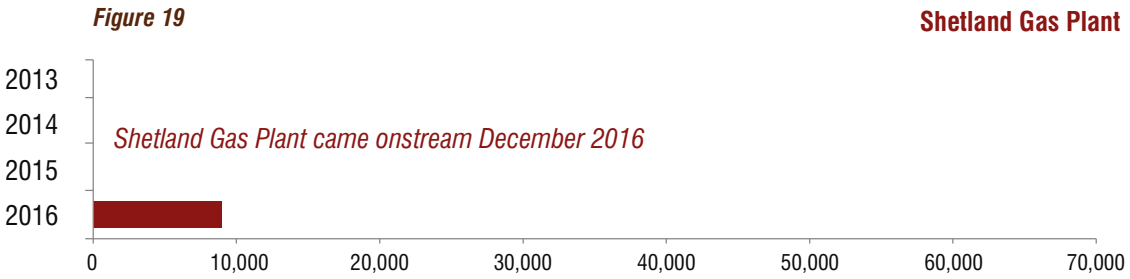


Figure 19



*
In 2014 the annual flare consent was exceeded on Elgin. This was mainly due to flaring taking place during unforeseen plant upsets and higher rig moves than expected during Q4.

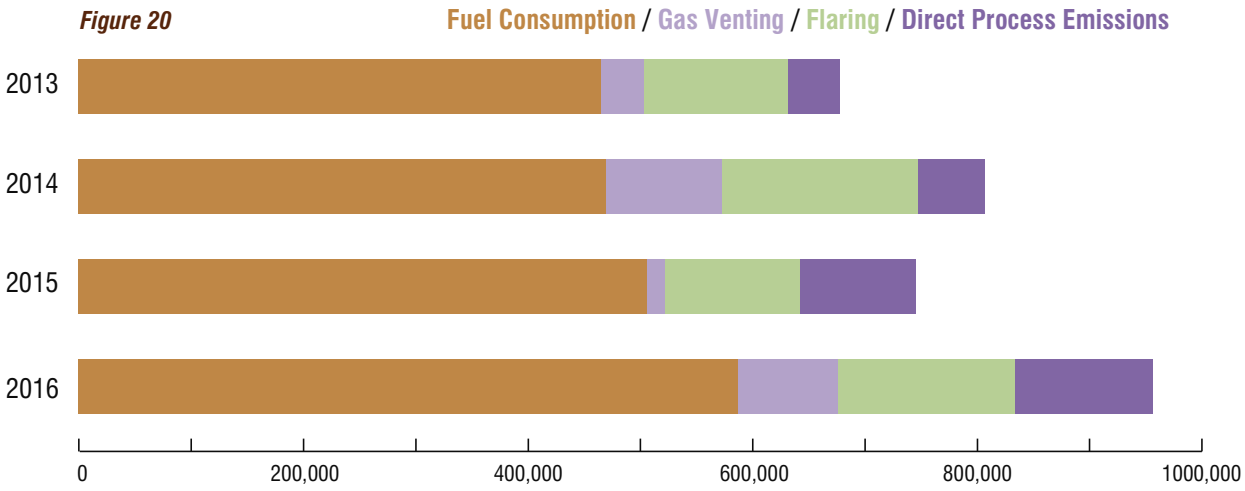
Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Greenhouse Gas Emissions

We measure our atmospheric emissions in a number of ways to help identify areas where reductions can be made. By minimising our emissions wherever possible, we actively contribute to a culture which combats climate change. To help us understand our overall impact on climate change we measure the amount of emissions to air from all of our operations and then convert the data on these emissions into a CO_2 equivalent. The graph below shows the emissions to atmosphere from all TEP UK offshore production and drilling operations.

CO_2 equivalent (tonnes) from TEP UK offshore operations

Figure 20



Energy Efficiency

Managing the energy that we produce offshore is a key part of reducing our environmental emissions. TEP UK has completed a series of energy efficiency assessments on all installations, onshore and offshore.

In 2016 TEPUK took the opportunity to assess the viability of the energy optimisation projects identified within the Energy Saving Opportunities Scheme (ESOS), ones which were deemed applicable will be implemented in the coming years on the respective assets.

TEP UK, as one of the largest affiliates in the Total group, has in place an action plan to achieve compliance with the group requirements with regards to implementing an energy management system which aligns to ISO 50001, this is expected to be achieved during 2017.

Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Water

Figure 21 : Dunbar Platform

Discharges to the Sea

Permitted discharges to sea arising from our operations include:

- **Produced Water Discharged to Sea**
- **Chemical Discharges to Sea**

Produced Water

Produced water is water extracted from the subsurface with oil and gas. It may include water from the reservoir, water that has been injected into the formation and any chemicals added during the production / treatment process.

The produced water volumes increased in 2016 in comparison with the previous year. This was due to increased production activity in the Central Graben Area. Total weight of oil discharged has been increased accordingly.

In the NNS Asset over 90% of produced water is re-injected.

Year	2013	2014	2015	2016
Total Quantity of produced water discharged (m^3)	105,394	144,057	180,722	221,937
Average Oil in Water Concentration (mg/l)	30.0	30.1	15.9	14.3
Total weight of oil discharged to marine environment in produced water (tonnes)	3.15	4.33	2.88	3.17

Figure 22 : Produced Water Data

Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Chemical Use

TEP UK use and discharge chemicals as part of the offshore exploration and production process. The use and discharge of chemicals is regulated under the Offshore Chemicals Regulations 2002 (as amended), and TEP UK is required to obtain appropriate permits from BEIS prior to commencement of these operations.

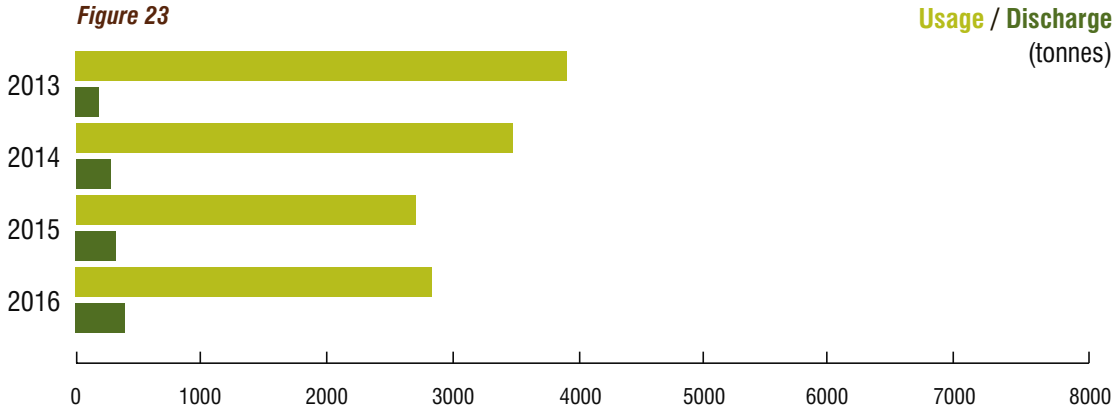
The Oslo-Paris Convention (OSPAR) offshore oil and gas strategy and the OSPAR hazardous substances strategy commits the OSPAR commission and member states to "making every endeavour to move towards the target of cessation of discharges, emissions and losses of hazardous chemicals by the year 2020."

OSPAR recommendation 2006/3 was enabled in the UK by the issue of the "UK National Plan for the Phase Out of Substances Identified as Candidates for Substitution". This plan requires TEP UK to ensure arrangements are in place to support the achievement of the goal of zero discharges by 2020.

In 2016 TEP UK continued development and implementation of our Environmental Chemicals Management Strategy. This Strategy outlines the process TEP UK has in place to take into account the UK National Plan and the environmental impacts associated with chemical use and discharge. The use of this process enables TEP UK to prioritise the elimination of harmful substances with less harmful alternatives over a given time period.

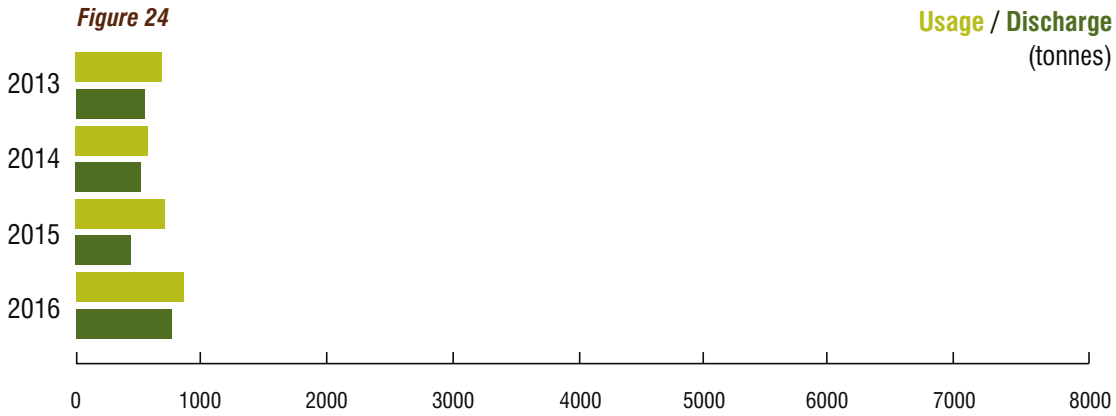
Alwyn Area chemical usage on Production Permit

Figure 23



Central Graben Area chemical usage on Production Permit

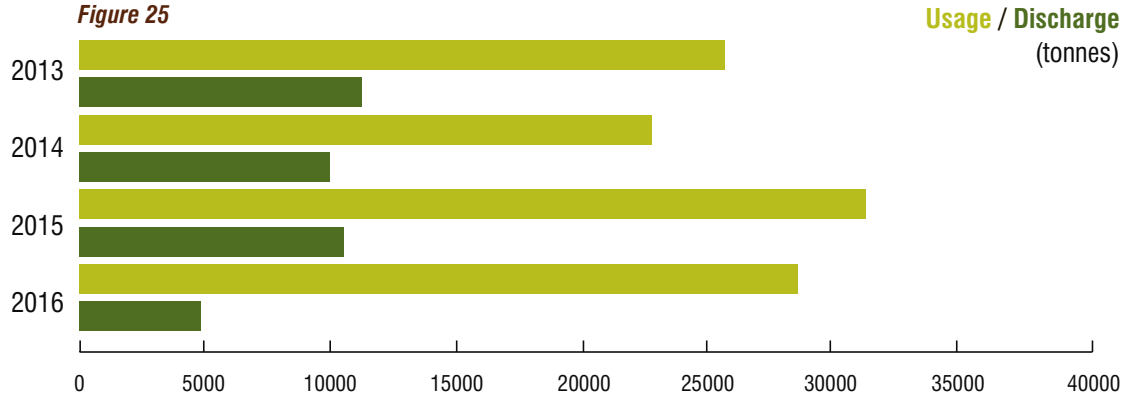
Figure 24



Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

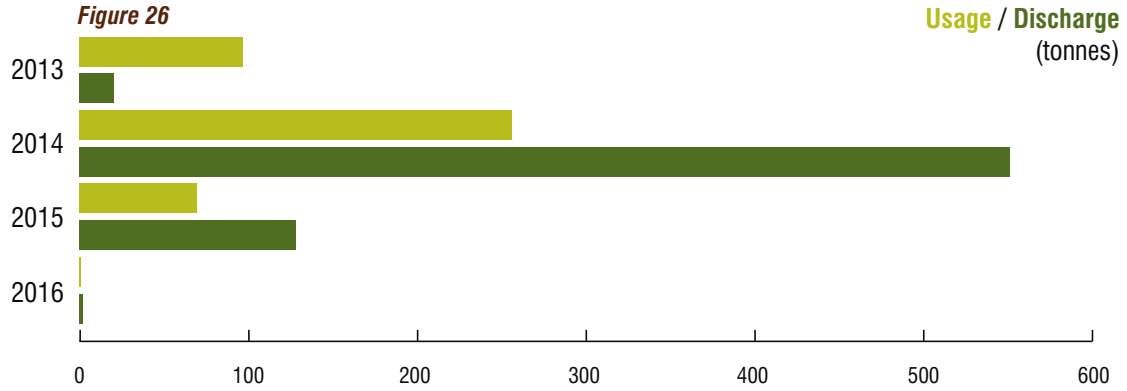
Well Chemical usage & discharge (tonnes)

Figure 25



Pipeline chemical usage & discharge (tonnes)

Figure 26



Accidental Spills

In 2016 TEP UK experienced a decrease in the number of oil spills to sea.

The number of chemical spills were slightly higher than previous years, but there has been a significant reduction in the volume of liquids released to sea.

Oil Spills

Year	2013	2014	2015	2016
Number of Spills	10	29	27	26
Quantity of Spills (tonnes)	1.9	0.237	5.066	0.237

Chemical Spills

Year	2013	2014	2015	2016
Number of Spills	8	8	9	15
Quantity of Spills (tonnes)	0.99	30.88	21.07	0.734

Figure 27 : Spills Data

Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Waste

Figure 28 : Waste Segregation

Waste management is another key environmental challenge facing the oil and gas industry. Our operations consume materials that generate a range of waste including drill cuttings, waste chemicals, tank washings residue, waste oil, general waste, paper, scrap metal, glass and wood. We are committed to reducing waste production across all of our operations and effectively managing the waste that is produced. This commitment is consistent with our aim to reduce the impact of our operations on the environment and is in accordance with the waste management hierarchy.

At TEP UK, we continually strive to identify and implement sustainable options for the management of our waste streams and we actively support local, innovative solutions for reuse and recycling of waste. We also engage with local communities to promote environmental best practice and raise awareness about waste management solutions that can be implemented either at home or within schools.

Waste Management

(Excludes Drill Cuttings)

Onshore waste management routes for wastes generated by TEP UK in 2016.

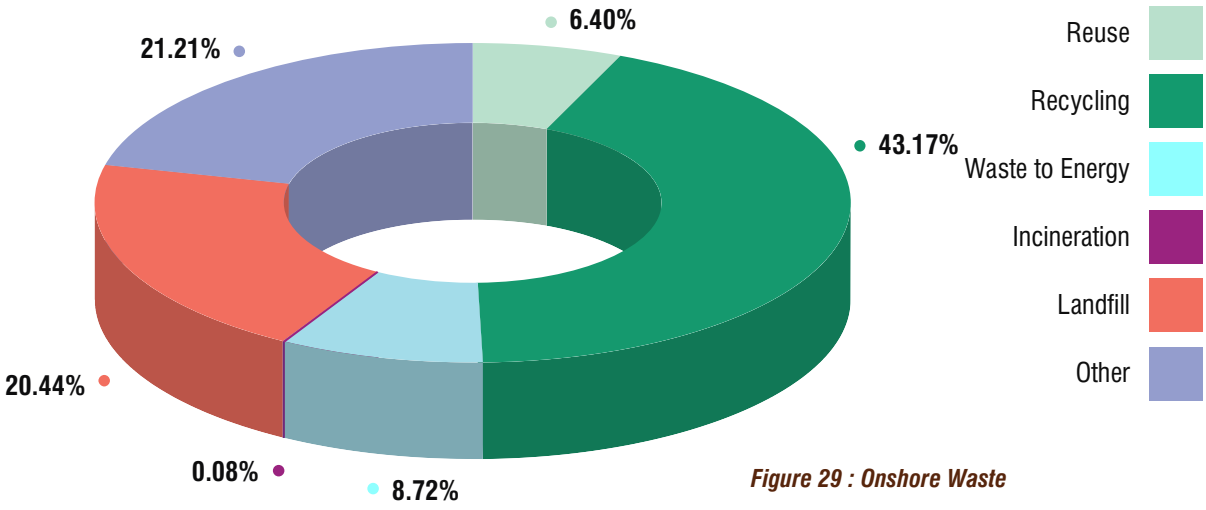


Figure 29 : Onshore Waste

Landfill stream excludes solid content of treated tank washings/MODU's slops/vessels mud.

Waste (tonnes)

Year	2013	2014	2015	2016
Alwyn North	1,106	1,402	1,479	339
Dunbar	149	170	135	453
Elgin	723	830	323	464
MODU's	4,498	7,035	23,455	26,795

Figure 30 : Waste Data

Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Offshore Waste Management

Some of the wastes generated by our operations are managed offshore and discharged to the marine environment under permit or in the case of cuttings, re-injected into the reservoir. This is industry Best Available Technique (BAT) for the management of these waste types. The table below shows the wastes managed offshore for the last four years.
Over the last two years we have seen a significant increase in the amount of drilling activity in TEP UK acreage.

Ongoing drilling campaigns and well intervention work have meant the following Mobile Offshore Drilling Units (MODUs) have been utilised by TEP UK for the whole or part of 2016.

- **Rowan Gorilla V**
- **West Phoenix**
- **Galaxy I**
- **Prospector 1**
- **Prospector 5**
- **Borgsten Dolphin**

Year	2013	2014	2015	2016
Water Based Drill Cuttings discharged overboard (tonnes)	6,664	2,139	4,908	1,027
Cuttings, slurry, brine and slops re-injected (tonnes)	711	0	0	0

Figure 31 : Waste Cuttings Data

Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Legal Compliance

Unplanned oil and chemical spills associated with TEP UK offshore activities are required to be reported to BEIS using a Petroleum Operations Notice 1. These discharges are discussed within the Accidental Spills section of this Statement.

In addition, TEP UK is also required to submit notifications to BEIS in the event of a non-compliance with the current legislative regime under the Offshore Chemicals Regulations 2002 (OCR) and the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005 (OPPC).

The table below shows the number of non-compliances reported to BEIS in 2016.

Installation	Alwyn & Dunbar	Elgin	West of Shetland	MODU's
OCR (Offshore Chemical Regulations)	0	0	0	1
OPPC (Oil Pollution Prevention and Control)	17	1	0	0
PON2	0	1	0	1
PPC	1	1	1	0

Figure 32 : Non-Compliance Data

In 2016 there were numerous short term excursions above the limits of the OPPC permit on the Alwyn platform. These were due to short term trips causing produced water to be discharged to sea and exceeded the OPPC non-compliance reporting threshold. The vast majority of NNS Assets produced water is re-injected.

When practicable, non-compliances have been investigated, with dedicated action plans being defined to address the issues identified and prevent the non-compliance from re-occurring.

As part of the company's ISO14001 certified Environmental Management System, TEP UK regularly conduct internal audits and checks for legal compliance at all of our sites both on and offshore. Any resulting improvement actions are assigned to the appropriate persons with agreed target dates for completion. Implementation of these actions is tracked electronically via the company 'Stre@m' reporting system. Trends are regularly analysed to identify potential room for improvement.

Partner Information

Area	Company	Percentage	Owner
Northern North Sea area:			
Alwyn / Dunbar	TOTAL	100 %	Operator
Jura	TOTAL	100 %	Operator
Forvie	TOTAL	100 %	Operator
Ellon / Grant	TOTAL	100 %	Operator
Nuggets	TOTAL	100 %	Operator
Islay	TOTAL	94.49 %	Operator
	TOTAL E&P Norge AS	5.51 %	
Central North Sea area:			
Elgin / Franklin	TOTAL	35.773 %	Operator
	E.F. OIL & Gas Ltd - (TOTAL)	10.400 %	
	ENI Elgin / Franklin Limited	21.867 %	
	BG International (CNS) Limited	14.11 %	
	Premier Oil E&P UK	5.20 %	
	Esso Exploration and Production UK Limited	4.375 %	
	Chevron North Sea Limited	3.90 %	
	Dyas UK Limited	2.1875 %	
	Summit Exploration and Production Limited	2.1875 %	
Glenelg	TOTAL	58.73 %	Operator
	E.ON E&P UK Limited	18.57 %	
	BG International (CNS) Limited	14.70 %	
	ENI UKCS Limited	8.00 %	
West of Shetland area:			
	TOTAL	60.00 %	Operator
	Dong E&P UK Limited	20.00 %	
	SSE E&P UK Limited	20.00 %	

Figure 33 : Owner / Operators

Management of Major Environmental Hazards

In line with internal commitments and the revised Offshore Safety Directive, TEP UK has re-defined its approach to managing major environmental hazards.

During 2016 TEP UK undertook a full Environmental Risk Assessment (ERA) of our offshore assets with regards to identifying any potential Major Environmental Incidents (MEI) which could be generated as a result of a Major Accident Hazard occurring This approach follows the safety strategy. The risk assessment outcome, which considers the environmental sensitivity of an area, is used to define what the MEI's are.

This approach follows the safety strategy. The risk assessment outcome, which considers the environmental sensitivity of an area, is used to define what the MEI's are.

This work builds upon the strategy developed over the last two years and allows TEP UK to document our environmental risks and mitigate them effectively within our Operational Integrity Assurance & Verification Scheme (OIAVS) and update any performance standards accordingly to take account of the risks identified in the ERA processs.

To take account of the updates to the respective assets safety cases TEPUK are in the process of reviewing and, where appropriate revising the MEI's identified as a result of the ERA's.

Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Environmental Goals - 2016 (Achieved)

Aspect	Objectives	Targets	Programmes	Achieved
Atmospheric Emissions.	Improve air quality by reducing harmful activities either direct or indirect.	Achieve GHG Emission INTENSITY 18.5 $kTCO^2$ eq/Mboe.	Optimise fuel gas usage, flaring and production across TEP UK Sites.	Partially Achieved, Intensity reduced to 19.83 $kTCO^2$ eq/Mboe.
Energy Management.	Increase the energy efficiency of our operational sites.	An auditable energy management system in line with ISO 50001.	Update the existing management system to align with the requirements of ISO 50001.	Achieved. EnMS has been implemented
Waste.	Management of waste streams and reduce, reuse and recycle.	Achieve waste segregation efficiency of 80%.	Increase awareness on sites.	Segregation of 85.7% achieved.
Risk Management.	Review the risks at Shetland Gas Plant (SGP) in line with the new COMAH requirements.	Updated COMAH report for Shetland Gas Plant (SGP).	Prepare and submit an addendum to the Shetland Gas Plant (SGP) COMAH Report to the regulator.	Partially achieved due to change in requirements.
Environmental Management System.	Ensure ongoing legislative compliance at Shetland Gas Plant (SGP).	Successful completion of the PPC commissioning phase. A submitted New Entrants Reserve (NER) application.	Implement PPC and EUETS monitoring and compliance programs on SGP.	Achieved
Emergency Response.	Enhanced emergency plans for oil spill response.	Fully updated OPEPs for Alwyn Area and West of Shetland	Update all outstanding OPEPs to comply with new requirements.	Achieved

Figure 34 : 2016 Summary

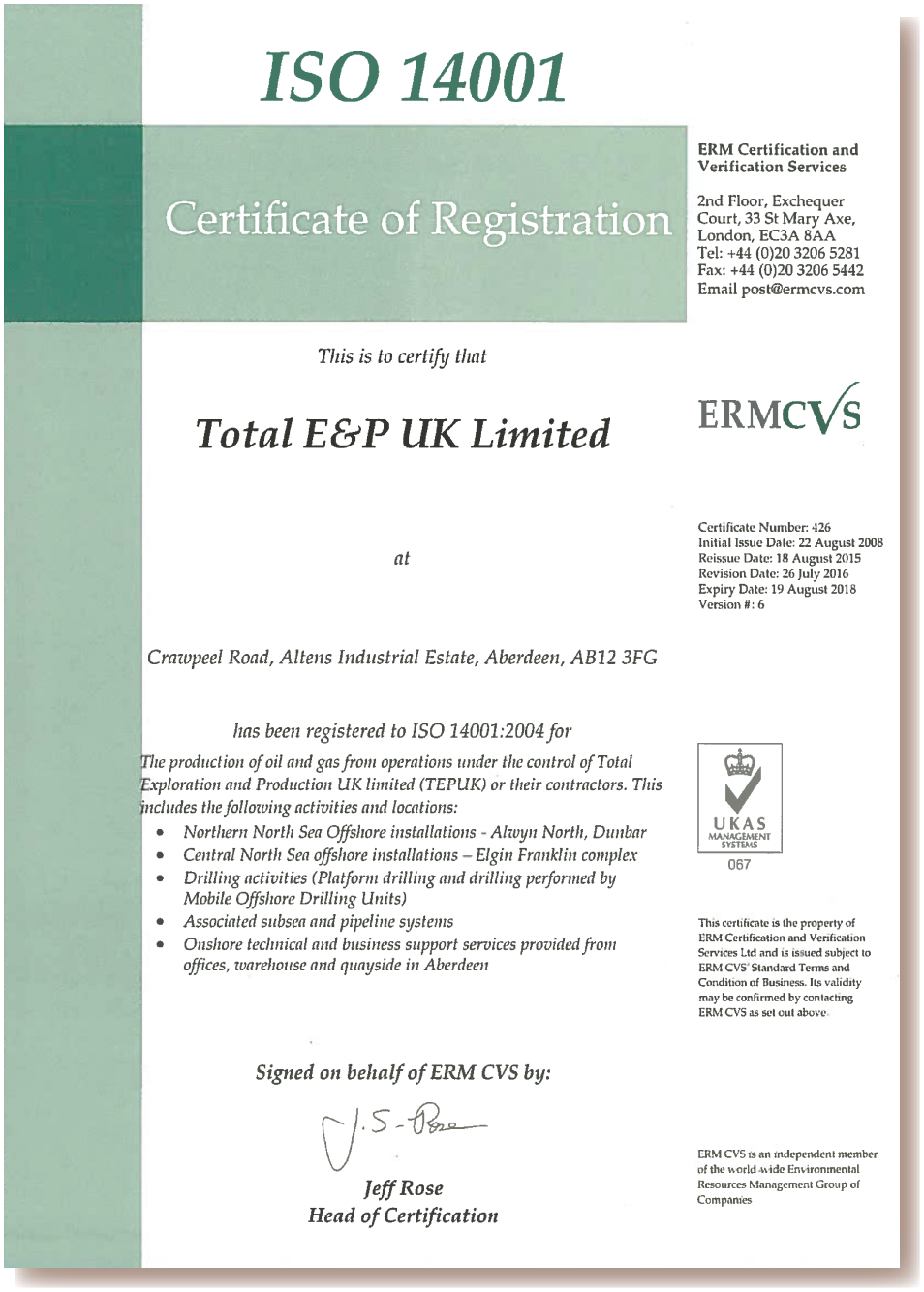
Data may have changed from previous years reports as revisions of the data can happen after the reports are finalised.

Environmental Goals - 2017 (Planned)

Aspect	Objectives	Targets	Programmes
Atmospheric Emissions.	Improve air quality by reducing harmful activities either direct or indirect.	Achieve GHG Emission INTENSITY 17 kTCO^2 eq/Mboe. continue with planned initiatives.	Optimise fuel gas usage, flaring and production across TEP UK Sites, continue with planned initiatives.
Energy Management.	Increase the energy efficiency of our operational sites.	Full internal validation after use of new system parameters.	Update the existing management system to align with the requirements of ISO 50001.
Waste.	Management of waste streams and reduce, reuse and recycle.	Achieve waste segregation efficiency of 80%.	Increase awareness on sites.
Risk Management.	Review the risks at the Shetland Gas Plant (SGP) in line with the new COMAH requirements.	Complete addendum in 2017.	Prepare and submit an addendum to the Shetland Gas Plant (SGP) COMAH Report to the regulator.
Environmental Management System.	Ensure ongoing legislative compliance at Shetland Gas Plant (SGP).	Fully incorporate SGP into the TEPUK ISO 14001 certification.	Carry out the planning objectives and have in place the requirements of ISO 14001 for SGP.
Emergency Response	Enhanced emergency plans for oil spill response.	Conduct spill response exercise for WOS asset.	Plan exercise, involve all identified stakeholders, apply any lessons learned to procedure

Figure 35 : 2017 Planned

ISO 14001 Certificate



ISO 14001

Certificate of Registration

ERM Certification and Verification Services

2nd Floor, Exchequer Court, 33 St Mary Axe, London, EC3A 8AA
Tel: +44 (0)20 3206 5281
Fax: +44 (0)20 3206 5442
Email post@ermcvs.com

This is to certify that

Total E&P UK Limited

ERMCVS

Certificate Number: 426
Initial Issue Date: 22 August 2008
Reissue Date: 18 August 2015
Revision Date: 26 July 2016
Expiry Date: 19 August 2018
Version #: 6

at

Crawpeel Road, Altens Industrial Estate, Aberdeen, AB12 3FG

has been registered to ISO 14001:2004 for

The production of oil and gas from operations under the control of Total Exploration and Production UK limited (TEPUK) or their contractors. This includes the following activities and locations:

- Northern North Sea Offshore installations - Alwyn North, Dunbar
- Central North Sea offshore installations – Elgin Franklin complex
- Drilling activities (Platform drilling and drilling performed by Mobile Offshore Drilling Units)
- Associated subsea and pipeline systems
- Onshore technical and business support services provided from offices, warehouse and quayside in Aberdeen

UKAS MANAGEMENT SYSTEMS
067

This certificate is the property of ERM Certification and Verification Services Ltd and is issued subject to ERM CVS' Standard Terms and Condition of Business. Its validity may be confirmed by contacting ERM CVS as set out above.

Signed on behalf of ERM CVS by:

Jeff Rose
Head of Certification

ERM CVS is an independent member of the world-wide Environmental Resources Management Group of Companies

Figure 36 : Certificate

International Standards Organisation (ISO) 14001 provides TEP UK with means to have an effective environmental management system that can be integrated with other management requirements such as safety, production and cost to help environmental and economic goals.

TEP UK are ISO 14001 certified by ERMCVS, a UKAS accredited verifier. To this end, TEP UK are proudly accredited to ISO 14001 and have been since 2001.

Feedback

If you have any comments, or would like further information on our environmental impacts or performance, please contact:
Public Affairs & Corporate communications

To view this statement online please visit:

www.uk.total.com

TOTAL E&P UK Limited

Crawpeel Road, Altens Industrial Estate,
Aberdeen AB12 3FG
Tel: 44 (0) 1224 297000
Fax: 44 (0) 1224 298999

www.uk.total.com

UK-ENV-REG-0005.AI