

# Dana Petroleum UKCS Environmental Statement 2015



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## Introduction

This statement describes the 2015 environmental performance of Dana Petroleum's UK offshore oil and gas operations. It has been prepared to satisfy the requirements of OSPAR Recommendation 2003/5 and the associated DECC guidance (OSPAR 2003/5 DECC Guidance: Rev 5 May 2014).

Dana, a wholly owned subsidiary of the Korea National Oil Corporation, operates internationally with offices in the UK, Egypt and the Netherlands. In the North Sea, Dana operates two assets as well as being a partner in several non-operated ventures. In 2015, Dana also continued drilling operations for its forthcoming Western Isles development.

One of Dana's key values is to respect the environment and work to minimise the impact of its operations. Dana achieves this through active use of its EMS system, development of its E-Reps and proactive engagement with offshore and operational groups. Through the use of its EMS and workforce engagement Dana ensures work activities incorporate current and developing legislation, and initiatives shared from government and industry work groups.

Dana is an exploration and production company with operations and interests in the UK, Egypt, the Netherlands and Africa. The minimisation of environmental impact is a key business driver wherever the company works.

# Dana Petroleum Vision and Values

We work hard to deliver the best results, using our values to guide how we do business, wherever we operate in the world.



# Health, Safety, Security & Environment (HSSE) Policy

## Our policy

The safety of people and assets, and respect for the environment are two of our core values and are an integral part of how we do business. We believe strong Health, Safety, Security and Environmental (HSSE) performance creates strong commercial performance.

## Accountability

The Group Chief Executive has overall accountability to the Dana Board of Directors for the management of HSSE.

## Scope

Our policy applies to all employees (staff, contract and temporary), officers and directors of Dana Petroleum Limited (collectively referred to as 'employees') in each of our operating units worldwide and anywhere that we conduct business or visit in the course of our business. It also extends to all our joint ventures business, in all countries in which we or our subsidiaries and associates operate. Where we have a minority interest we will encourage the application of this policy amongst our business partners including contractors, suppliers and joint venture partners.

## Policy in practice

Dana strives to continually improve its HSSE performance by setting and monitoring clear objectives, supported by its HSSE Standards. This requires the commitment of everyone at Dana and a culture where people are encouraged and feel able to intervene and report on HSSE issues of concern. It is expected that each individual will recognise their responsibility to put our policy into practice.

## We will:

- Provide a safe working environment that protects against injury and minimises work-related ill health
- Provide appropriate security protection for employees and assets
- Commit to prevent pollution, minimising the impact to the environment from Dana's operations
- Ensure compliance with applicable legislation and apply Dana's standards and oil industry best practice in locations where local laws do not exist
- Identify and manage HSSE risks in a systematic way as part of Dana's Risk Management Framework
- Create clear accountabilities and expectations for HSSE at every level of the organisation
- Provide resources to successfully manage HSSE risk
- Ensure that our employees and contractors are competent and able to perform the work we are asking them to undertake
- Ensure that our employees and contractors understand their HSSE accountabilities and are aware of the behaviours expected by Dana
- Identify and manage operational interfaces internally and with third parties
- Communicate standards based on oil industry best practice which are consistent with legal and regulatory requirements in all operating areas
- Communicate and report openly on HSSE objectives and performance
- Actively engage with relevant stakeholders to understand and take account of their concerns
- Make sure that appropriate emergency response, crisis management and business continuity plans are in place and are regularly tested
- Investigate HSSE incidents, identify root causes, take effective action to prevent recurrence and identify opportunities for organisational learning
- Strive for continuous improvement of Dana's HSSE performance.

A handwritten signature in blue ink, appearing to read 'Roy Elliot', is positioned above the name and title.

**Roy Elliot**  
Acting Group Chief Executive

# Overview of Operations

Dana’s portfolio in the UK consists of various exploration, production and development activities throughout the northern, central and southern North Sea and in the Moray Firth (Figure 1).

Dana is the operator of the Greater Guillemot Area (GGA) which is produced through the Triton FPSO (also operated by Dana), and the Hudson field that is produced through the TAQA operated Tern Platform.

Dana is also the operator of the Western Isles Project. This project is developing two oilfields named Harris and Barra in the northern North Sea and is located, 160 km east of Shetland and 12 km west of Tern field. It involves a subsea development of five production and four water injection wells tied back to a new FPSO (currently under construction) with oil export using shuttle tankers. When onstream, plateau production is expected to be around 40,000 boepd, adding more than 30,000 boepd to Dana’s UK production.

Dana is operator of the proposed Arran development in the central North Sea and is a partner in the proposed Tolmount gas-condensate development in the southern North Sea.

In addition, Dana has interests in 25 operated and non-operated oil and gas fields and 19 exploration licenses in the UK.

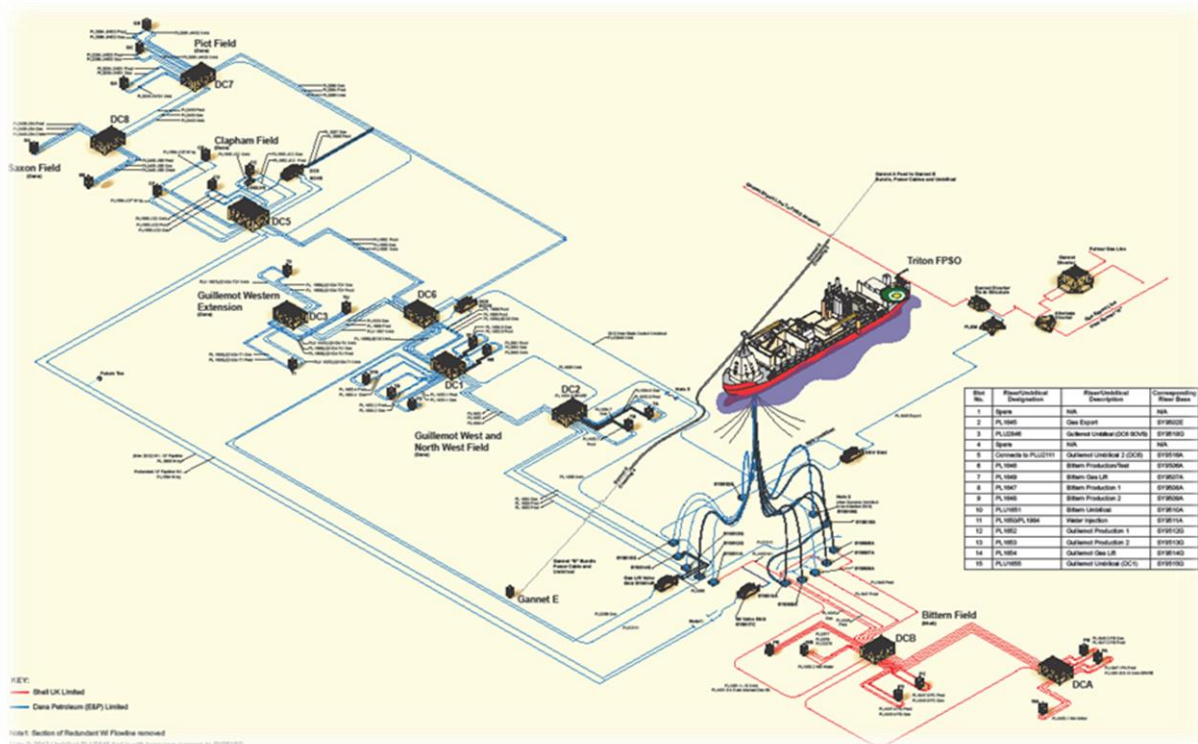
Our strategy is to continue to invest in our UK exploration portfolio and convert exploration prospects into reserves and production.

Figure 1: Dana Operated and Non-Operated Assets



# Production Operations

Figure 2: Triton and GGA



## Triton FPSO

Dana has been Operator of the Triton FPSO since October 2012 and the Greater Guillemot Field since October 2010 (Figure 2). The Triton FPSO is located in the central North Sea (in UKCS Block 21/30) approximately 193 km east of Aberdeen. The Triton FPSO produces oil and gas from the Dana operated Clapham, Pict, Saxon, Guillemot West and North West fields as well as from the Shell operated Bittern Field.

## Guillemot West

Guillemot West is located in the central North Sea in UKCS Blocks 21/29a, 21/25, 21/30 and 21/29b. The field is located approximately 14 km northwest of the FPSO. First production at Guillemot West was in March 2000.

## Guillemot North-West

Guillemot North-West is located in the central North Sea in UKCS Block 21/24. The field is located approximately 14 km northwest of the Triton FPSO. First production at Guillemot North-West was in March 2000.



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### Clapham

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Clapham is located in the central North sea in UKCS Block 21/24. The field is located approximately 22 km northwest of the Triton FPSO. First production at Clapham was in October.

### Pict

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Pict is located in the central North sea in UKCS Block 21/23b. The field is located approximately 34 km northwest of the Triton FPSO. First production at Pict was in June 2005.

### Saxon

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Saxon is located in the central North sea in UKCS Block 21/23b. The field is located approximately 35 km northwest of the Triton FPSO. First production at Saxon was in November 2007.

### Hudson

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The Hudson field is located in UKCS Block 210/24a and lies approximately 85 km northeast of the Shetland Islands. The field is produced as a subsea tieback via the TAQA operated Tern Alpha platform that is located approximately 11 km to its east. The Hudson field comprises 7 production wells and 2 water injection wells.

### Drilling Operations

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One production well was drilled from the *Ocean Nomad* at the Western Isles Development's North Drill Centre in 2015.

### Decommissioning Operations

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Dana did not conduct any decommissioning operations during 2015.





# Health, Safety, Security and Environment (HSSE) Management System

Dana is committed to managing any potential environmental impacts associated with its operational activities. Dana meets this commitment within the UK via the implementation and maintenance of an Environmental Management System (EMS) within its One Dana Management System (ODMS).

The ODMS provides the arrangements to reduce and manage risk and to implement the company's HSSE Policy. The management system provides an essential framework and rules to ensure Dana's operations, anywhere in the world, are safe and secure and minimise environmental impact at all times. The Dana HSSE Policy and Standards provide the framework to help deliver safe and reliable operations that are resilient over the long term and enable continual improvement.

The Dana UK EMS is structured to meet the requirements of Dana's HSSE Standards and was developed in line with elements of the Standard ISO 14001: 2004 and OSPAR Recommendation (2003/5). In line with the ODMS, Dana's UK EMS follows the basic structure of "Plan, Do, Check, Act" (Figure 3.)

Figure 3: Dana UK EMS



## Key Elements of Dana UK's EMS

### Environmental Aspects and Impacts Register

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The key to Dana managing its impacts is a detailed understanding of the potential environmental risks posed by its activities. By systematically identifying the environmental aspects relevant to its UK operations, Dana has assigned the appropriate levels of control required to minimise environmental impact. Dana's environmental aspects informs the remainder of the EMS.

### Legislation Compliance and Permits Register

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In order to operate wholly within the law, it is necessary to understand all applicable legislation and its implications. This is achieved through development of a Legal Compliance Register that is regularly reviewed.

### Objectives and Targets

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Continual improvement in environmental performance is achieved through setting of challenging objectives and targets. These are identified and HSSE Improvement Plans agreed annually at formal review meetings with senior management and operations teams.

### Competence, Training and Awareness

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Dana is committed to ensuring all personnel understand the value of the EMS to Dana, and how this is used to minimise impacts to the environment from the company's operations. All Dana staff and contractors are provided with relevant training to enable them to conduct their work wholly within the legislation and company's environmental commitments.

### Environmental Communication

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Within Dana, communication of environmental issues is achieved using email, company noticeboards, Dana's Intranet, meetings, environmental bulletins and environmental support packs for specific operations. A programme of environmental awareness is prepared and circulated offshore each quarter that highlights current themes or areas for improvement.

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### Emergency Preparedness and Response

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Dana has procedures to identify potential events and to ensure the required control measures are in place for the prevention of emergencies and for the management of events should they occur. Regular exercises are undertaken to assess the efficacy of these plans, with results captured to identify 'lessons learned'.

### Audit

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Monitoring of legislative compliance, environmental performance and progress towards achievement of goals and targets is achieved through regular auditing. Dana develops an annual audit schedule that identifies a range of internal and external audits. All actions and their progress until completion are managed using incident tracking software.

### Management Review

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An annual management review is conducted to review and assess environmental performance over the preceding year. This helps to formulate the objectives and set targets for the next year.



# Environmental Performance

## Atmospheric Emissions

Fuel combustion and flaring operations are the principle source of atmospheric emissions from the oil and gas industry. Carbon dioxide (CO<sub>2</sub>) is the main exhaust gas but combustion also results in emissions of CO, CH<sub>4</sub>, NO<sub>x</sub>, SO<sub>x</sub> and VOC's. The largest proportion of CO<sub>2</sub> emissions is generated by the combustion of fuel for power generation.

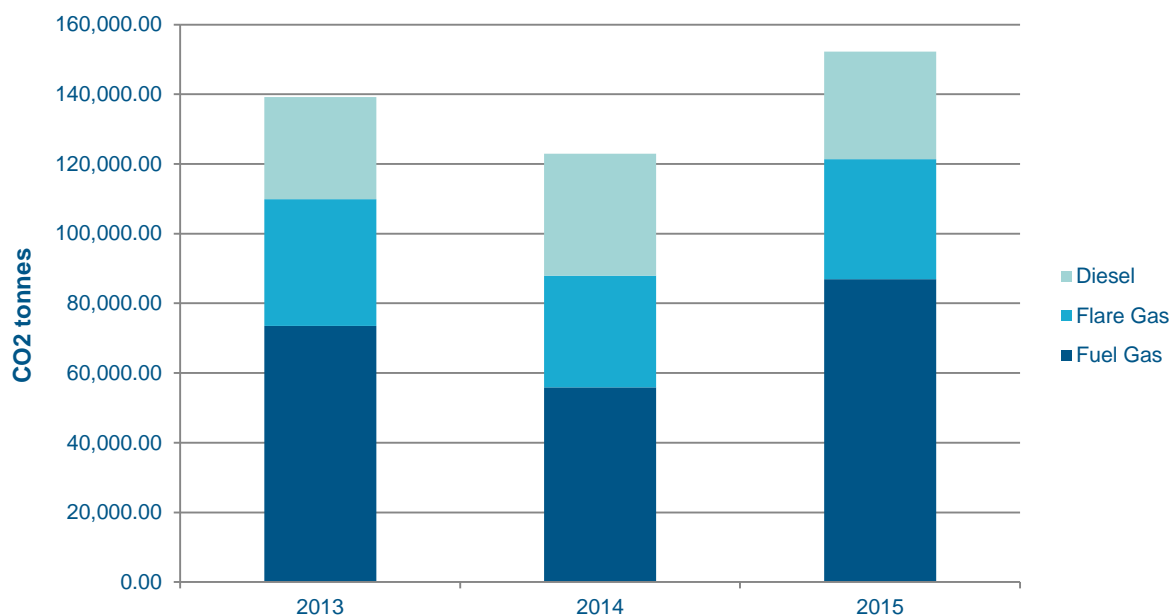


Figure 4: CO<sub>2</sub> emissions from combustion of fuel gas, flare gas and diesel during Dana production operations 2013 – 2015.

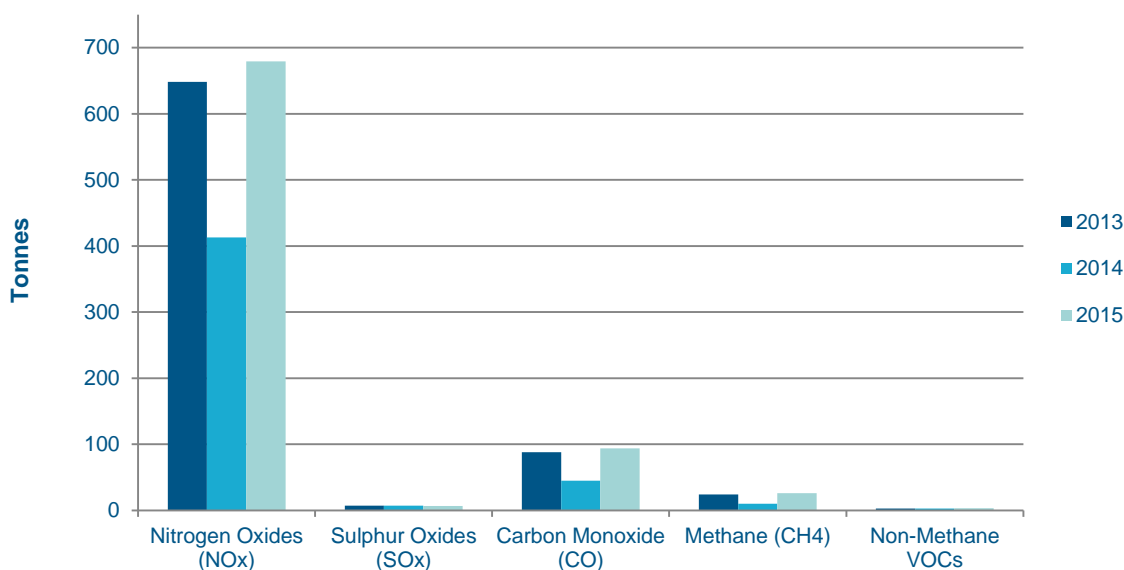


Figure 5: Atmospheric emissions from combustion of fuel gas, flare gas and diesel from Dana production operations 2013 – 2015.

Atmospheric Emissions

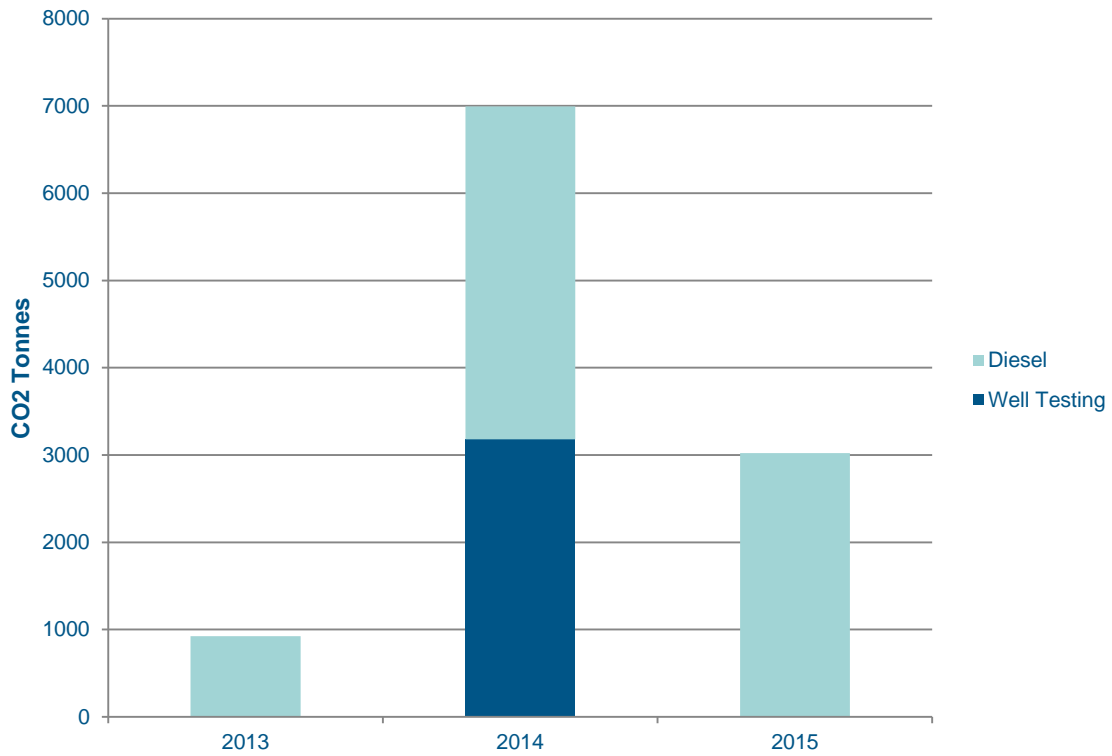


Figure 6: CO<sub>2</sub> emissions from combustion of flare gas and diesel during Dana drilling operations 2013 – 2015.

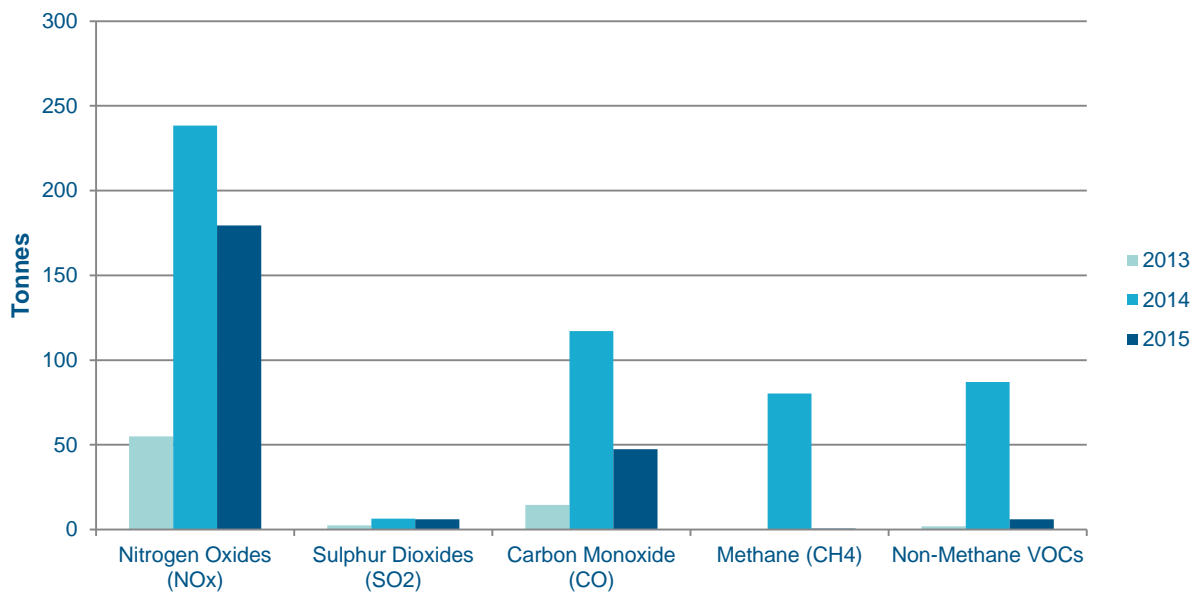


Figure 7: Atmospheric emissions from combustion of flare gas and diesel from Dana drilling operations 2013 – 2015.

Oil in Water

Dana's Oil Discharge Life Permit allows for the discharge of produced water from the Triton FPSO, provided the concentration of dispersed oil in produced water does not exceed a monthly average of 30 mg/l. Separation of oil and gas from produced water is carried out onboard Triton using hydrocyclones, degassers and compact flotation units.

During 2015, the total volume of produced water discharged from Triton's production operations was 2,897,198 m<sup>3</sup>. The 2015 annual average oil in water concentration for Triton was 28.06 mg/l, which resulted in a total of 75.78 tonnes of oil being discharged to sea.

Hudson produced water is managed by the Tern Alpha platform. During 2015, the total volume of produced water discharged from Hudson's production operations was 336,750 m<sup>3</sup>.

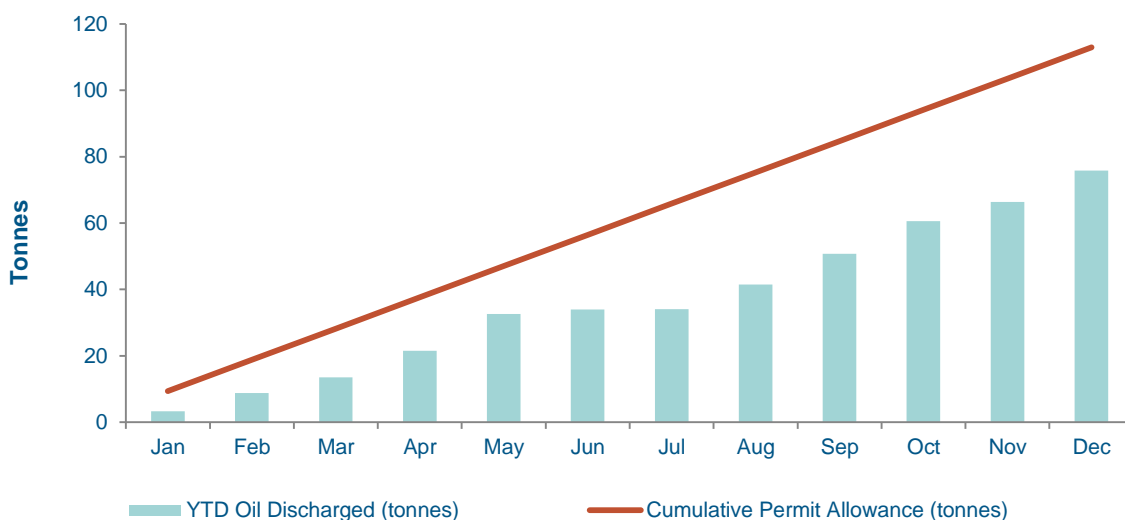


Figure 8: Oil in discharged (tonnes) in Produced Water from Triton in 2015

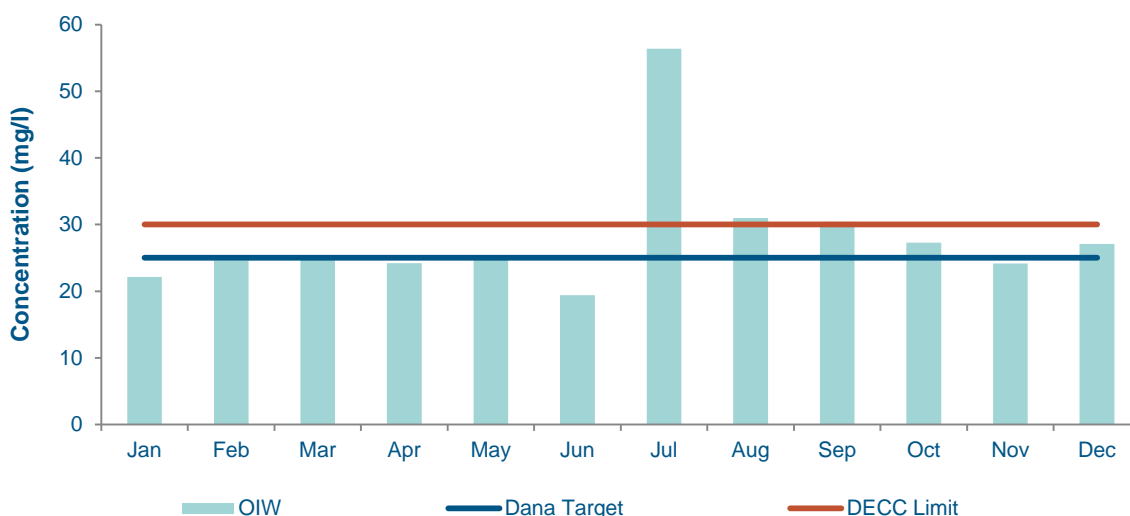


Figure 9: Oil concentration (mg/l) in discharged Produced Water from Triton in 2015

**Chemical Use and Discharge**

A wide range of chemicals is required during drilling, subsea and production operations, all of which must be risk assessed as part of the permit approval process. The use of chemicals that are deemed to present a greater risk to the environment must be further justified. A number of chemicals have been identified as candidates for substitution, wherever possible these chemicals should be phased out in favour of substitution free alternatives.

In addition to production operations, Dana conducted a number of campaigns including drilling and the maintenance and repair of subsea infrastructure that resulted in the use and discharge of chemicals. Approximately 16% of the chemicals that Dana used in 2015 had a lower environmental risk rating (PLONOR and OCNS category E). However, approximately 60% of the total chemical discharge for 2015 was of products with a substitution warning.

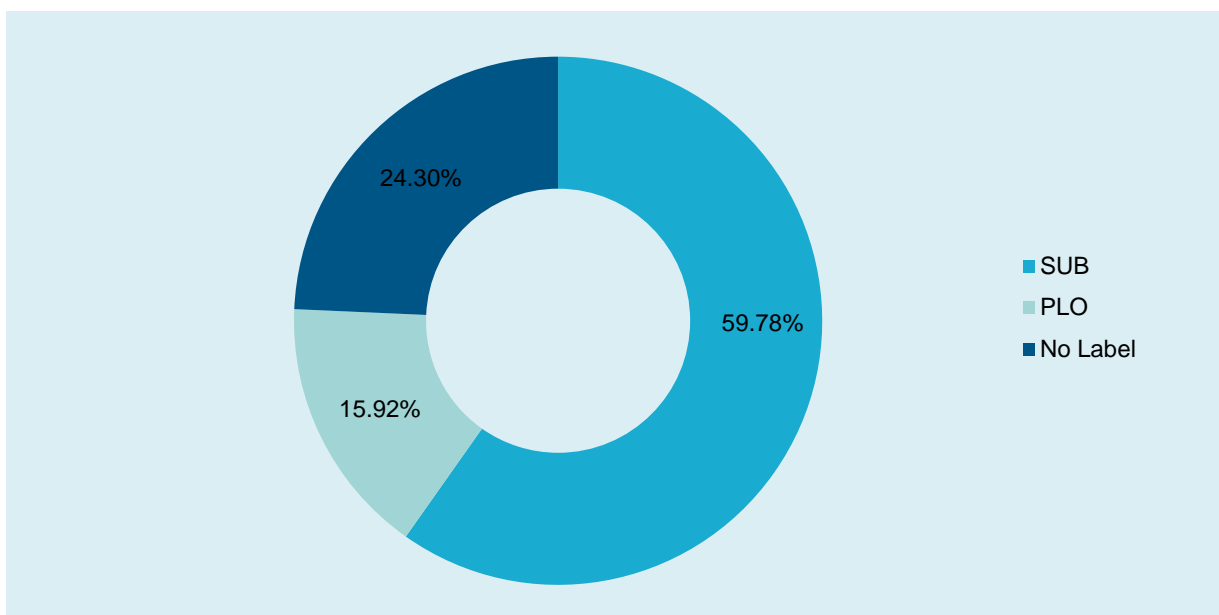


Figure 10: Dana chemical discharges by chemical label in 2015

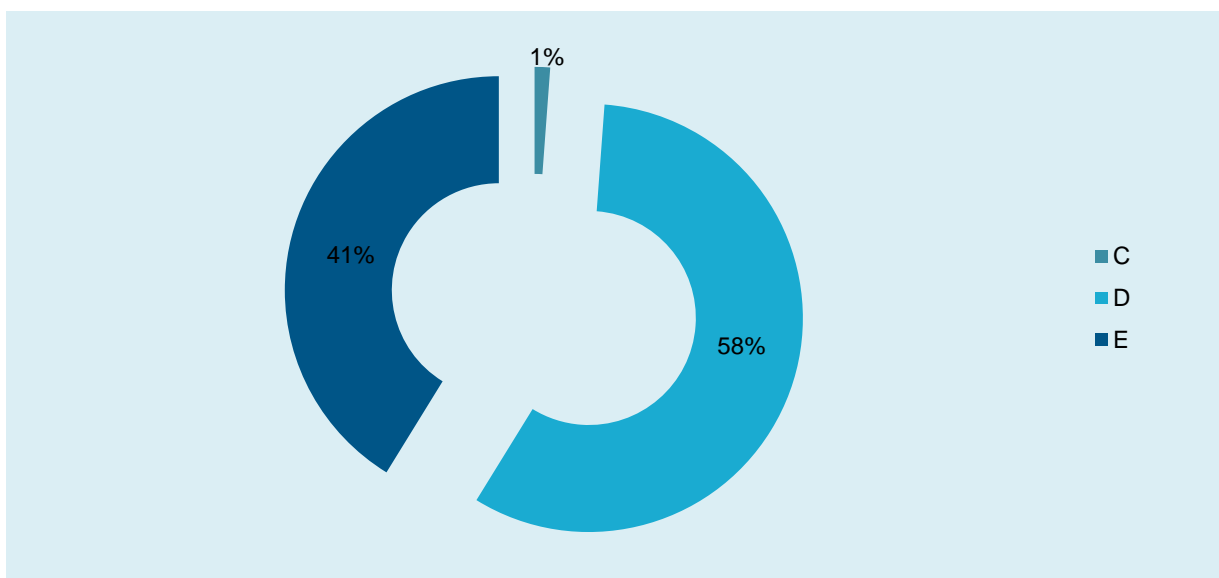


Figure 11: Dana chemical discharges by OCNS Ranking in 2015



Waste

Reducing the use of materials is the primary means of minimising the generation of waste in accordance with the waste management hierarchy. However, despite this it is inevitable that waste is generated during production and drilling operations. All waste materials are removed to the shore for appropriate disposal. Waste generated offshore is segregated at source into special, general and recyclable waste.

During 2015, a total of 165 tonnes of waste was generated from Dana’s offshore production and drilling operations. The majority of production waste was recycled (39%) or sent to landfill (45%) (Figure 12). For drilling operations the majority of waste was recycled (72%) (Figure 13).

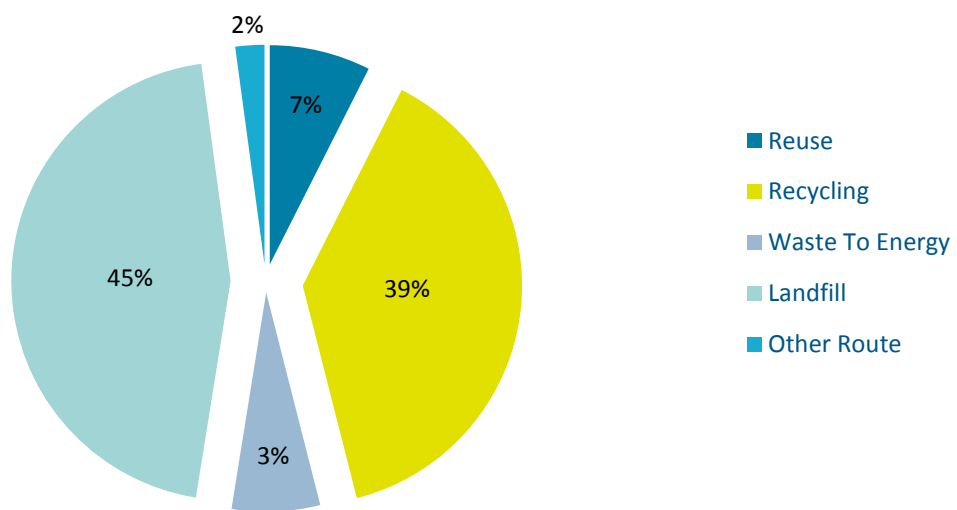


Figure 12: Waste disposed from Triton production operations in 2105

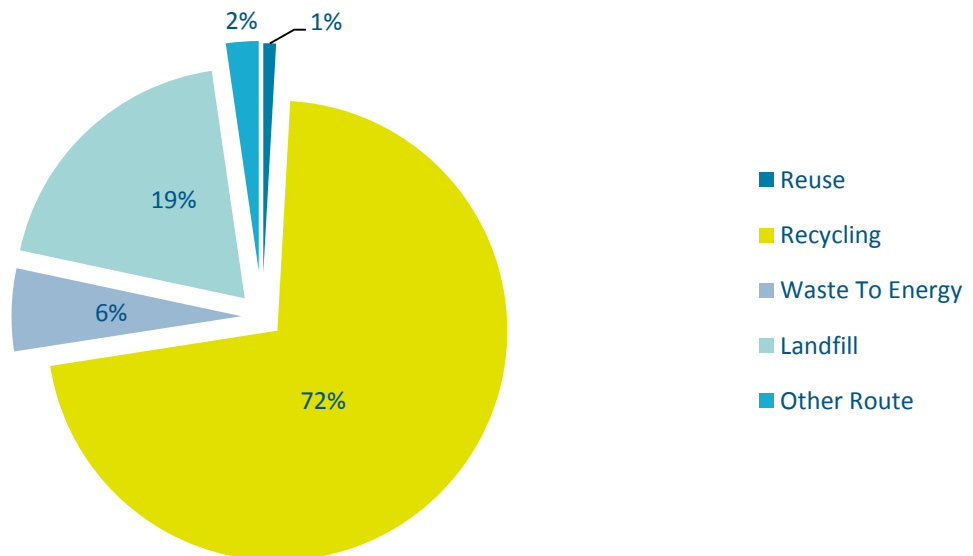


Figure 13: Waste disposed from Dana drilling operations in 2015

## Unplanned Releases

Under the Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Conventions) Regulations 1998, all offshore operations must have in place an approved Oil Pollution Emergency Plan. This sets out the procedures to follow in the event of a spill. Dana has a number of mitigation measures in place to prevent the occurrence of a spill to sea, however, all spills that do occur are reported to DECC using a PON1 submission.

During 2015, Dana reported from its operations a total of seven unplanned releases of chemicals and one of oil.

Location	Chemicals		Oil	
	Number of notifications	Total Quantity (tonnes)	Number of notifications	Total Quantity (tonnes)
Triton and the Greater Guillemot Area	4	1.299	1	0.002
Hudson	3	0.205	0	-

Table 1: Total number and volume of oil and chemical notifications from Dana operations in 2015



## Environmental Accomplishments

During 2015 Dana completed a number of environmental achievements including:

- Reduction in the total number of chemical unplanned releases from Dana operated assets
- Successful environmental awareness promoting environmental compliance rolled out across drilling and production operations
- Improved engagement and communication with E-Reps
- Completion of environmental site and pipeline route survey for the Arran development
- Satisfactory completion of the Energy Saving Opportunity Scheme (ESOS) assessment
- Update and acceptance of the Hudson OPEP



# 2015 Environmental Performance

Dana's key performance indicators (KPIs), Metrics and Measures for 2015 are summarised below.

2015 Objective	Performance
Development and implementation of environmental awareness materials for offshore that will cover PON1, chemical, oil discharge and waste compliance	A suite of environmental awareness presentations were successfully delivered to the offshore workforce throughout 2015.
Continued support with training E-Reps offshore in conducting internal environmental audits on the Triton FPSO	E-Reps conducted a Tier 1 environmental audit on Triton FPSO, prepared an audit report and shared the findings with colleagues on board.
Continual review of all unplanned spills and non-conformances in order to develop recommendations for improvement	All compliance notifications and non-conformances were reviewed and logged within Synergi database for further evaluation with Synergi review board.
Achieve an average dispersed oil in water concentration of < 25mg/l	Triton FPSO achieved an average monthly dispersed oil in water concentration of <25 mg/l for 58% of 2015.
Promote use of Environmental Tracking system and engage new users	The Environmental Tracking system was successfully used during drilling and subsea campaigns in 2015.





# Environmental Objectives 2016

Dana has developed the following environmental objectives for 2016

- Enhance oil in water management and competency for Triton FPSO
- Improve F-Gas management process to ensure continued regulatory compliance
- Continue consolidation of E-Rep network including internal network session on Triton FPSO
- Update OPEP Plans in line with DECC Guidance and obtain approval from regulator
- Develop and roll out oil spill training manual to support new OPEP documents

