



JX Nippon Exploration and Production (U.K.) Limited
OSPAR Public Statement 2016

Environmental Performance

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OSPAR Public Statement 2016

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ABBREVIATIONS

| | |
|---------|---|
| BEIS | Department for Business, Energy & Industrial Strategy |
| BMS | Business Management System |
| BOP | Blowout preventer |
| CH4 | Methane |
| CO | Carbon Monoxide |
| CO2 | Carbon Dioxide |
| EEMS | Environmental Emissions Monitoring System |
| EMS | Environmental Management System |
| ePON | Electronic Petroleum Operations Notices |
| HQ | Hazard Quotient |
| HSE | Health, Safety and Environment |
| HSE MS | Health, Safety and Environment Management System |
| IOGP | International Association of Oil and Gas Producers |
| ISO | The International Organization for Standardization |
| JXNEPUK | JX Nippon Exploration and Production UK Limited |
| LTI | Lost Time Injuries |
| LTOBM | low toxicity oil based mud |
| M/LWD | Measurement/Logging-while-drilling |
| N2O | Nitrous dioxide |
| NOx | Oxides of Nitrogen |
| NUI | Normally Unmanned Installation |
| O&T | Operations and Technology |
| OCNS | Offshore Chemical Notification Scheme |
| OHSAS | Occupational, Health and Safety Management System |
| OSPAR | Oslo Paris Convention |
| P&A | Plugged and abandoned |
| SO2 | Sulphur Dioxide |
| SUB | Candidate for Substitution |
| TRCF | Total Recordable Case Frequency |
| TRIR | Total Recordable Incident Rate |
| TVDSS | Total Vertical Depth Subsea |
| UKCS | United Kingdom Continental Shelf |
| VOC | Volatile Organic Compounds |
| WBM | Water based mud |
| WEE | Waste Electronic Equipment |
| WMP | Waste Management Plan |

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1 Introduction

Under the OSPAR Recommendation 2003/5, the Department for Business, Energy & Industrial Strategy (BEIS) require that all existing United Kingdom Continental Shelf (UKCS) oil and gas operators undertaking offshore operations must prepare an annual statement of their environmental performance, covering the calendar year, and make that statement available to the public. This document represents JX Nippon Exploration and Production (U.K.) Limited's (hereafter referred to as 'JXNEPUK') annual public environmental statement for 2016 in relation to UKCS OSPAR reporting.

2 JXNEPUK's UKCS Operations

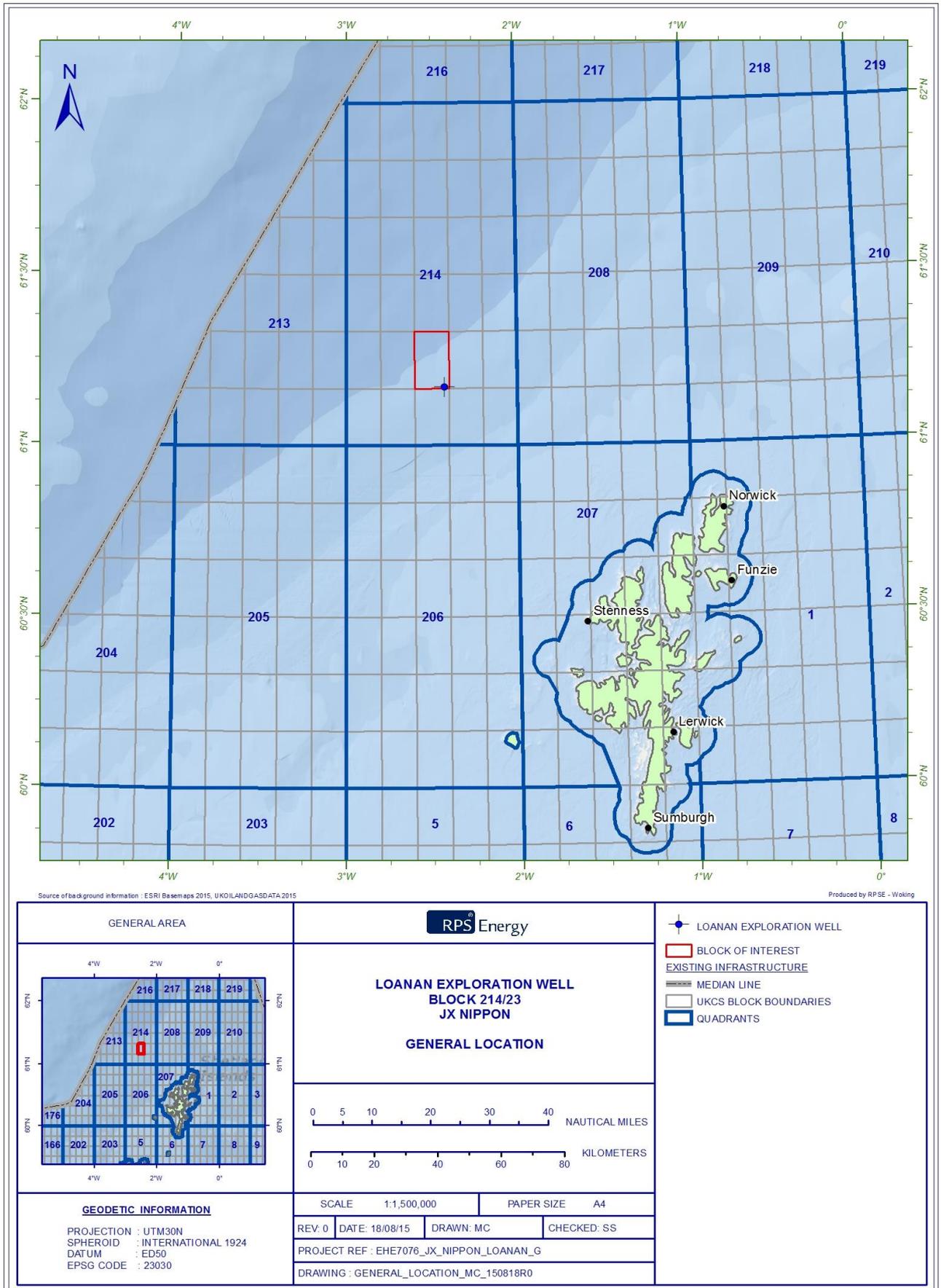
JXNEPUK is an independent oil and gas company focused on upstream activities in the UK North Sea. During 2016, JXNEPUK drilled the Loanan exploration well under Licence P.2024 in Block 214/23, approximately 82 kilometres north west of the Shetland Islands (Figure 2-1).

The well was drilled at 61° 10' 11.936" N, 02° 25' 30.958" W using the semi-submersible drilling rig Deepsea Stavanger. The Loanan well spudded on 10th May 2016 and was drilled to 11,620 ft (TVDSS) by 14th June 2016. The well was plugged and abandoned (P&Ad) on 7th July 2016. Following P&A the Deepsea Stavanger was demobilised on 8th July 2016.

The top hole sections of the well were drilled with seawater and gel sweeps. Cuttings from these sections were discharged at the seabed. The following 17 ½ inch section was drilled with water based mud (WBM) with cuttings from this section discharged from the rig at the sea surface.

The subsequent well sections (12 ¼ and 8 ½ inch sections) were drilled with low toxicity oil based mud (LTOBM). Cuttings from these sections were captured on board the drilling unit and shipped to shore for treatment and disposal. Cuttings from an additional 6" hole section were also recovered, however, only 10 feet of open hole was drilled in this section before the decision to P&A was taken.

Figure 2-1 Location of the Loanan Exploration Well



3 The Environmental Management System

JXNEPUK has established a HSE MS which follows an ISO 14001 and OHSAS 18001 structure and which draws upon information from the UK Health and Safety Executive document (HS(G)65) and the IOGP document (6.36/210) regarding HSE Management Systems.

JXNEPUK's HSE MS aims to ensure that JXNEPUK:

- Identifies and controls its HSE risk in a practical, effective and efficient manner;
- Complies with corporate HSE Policy and UK legislation; and
- Monitors and audits its HSE performance to assure itself and others (such as regulators, partners, licensing authorities and insurers) that it reflects best industry HSE practice.

Figure 3-1 JXNEPUK's Health Safety and Environment (HSE) Policy



**Health & Safety and Environmental Policy of
JX Nippon Exploration and Production (U.K.) Limited**

General Policy

We, JX Nippon Exploration and Production (U.K.) Limited (JX Nippon) a subsidiary of JX Nippon Oil & Gas Exploration Corporation, whose mission is to contribute to the development of a sustainable economy and society through innovation in the areas of energy, resources and materials, are undertaking oil and gas exploration and production operations as one of the core businesses of JX Group.

As a member of society we are committed to providing oil and gas for society's needs in a manner that avoids injury and illness to our employees, contractors and our neighbours while acting in harmony with the environment.

Strategies

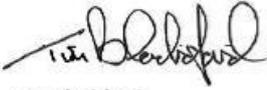
We implement this policy by conducting the following strategies:

- Ensuring that our Health Safety and Environmental (HSE) considerations are given prevailing status over other business considerations.
- Ensuring compliance with all relevant legislation and other requirements to which we subscribe.
- Applying a systematic approach to HSE management to achieve continual HSE performance improvement including setting strict HSE objectives and performing regular audits and reviews.
- Designing our workplaces to minimise risk to personnel and developing work practices to further reduce risk to as low as reasonably practicable.
- Encouraging the use of best available technology to reduce the impact of our operations on the environment, particularly with regard to the efficient use of energy and materials, and the minimisation of waste and prevention of pollution.
- Ensuring all our personnel are competent to perform the tasks associated with their roles and providing HSE training and awareness programmes to reduce HSE risk.
- Developing communications to ensure that our HSE policy and its objectives are understood by all our personnel, contractors and customers, and to actively seek their input and feedback.

Application:

The General Manager and Director of JX Nippon is accountable for ensuring that our HSE policy is implemented and that its effectiveness is reviewed annually.

All personnel and contractors of JX Nippon in all areas of the activities under our operational control are responsible for applying the HSE Policy.



Tim Blackford
General Manager and Director
JX Nippon Exploration and Production (U.K.) Limited

January 2015

4 2016 Environmental Reporting

This section provides an overview of environmental emissions during the drilling of the Loanan Exploration Well.

4.1 Atmospheric Emissions

Atmospheric emissions arise from power generation and flaring. Table 4-1 provides a summary of the fuel combustion during the drilling of the Loanan exploration well as reported into the Environmental Emissions Monitoring System (EEMS) through the UK Energy Portal.

Table 4-1 JXNEPUK's 2016 Atmospheric Emissions

| Atmospheric Emission | Unit | Loanan Exploration Well |
|---------------------------|--------|-------------------------|
| Fuel consumption (diesel) | Tonnes | 2,521.52 |
| Flaring (oil/gas) | Tonnes | 0 |
| CO ₂ | Tonnes | 8,068.86 |
| CO | Tonnes | 39.59 |
| NO _x | Tonnes | 149.78 |
| N ₂ O | Tonnes | 0.55 |
| SO ₂ | Tonnes | 10.09 |
| CH ₄ | Tonnes | 0.45 |
| VOC | Tonnes | 5.04 |

4.2 Chemical Use and Discharge

The Loanan Exploration was permitted under the Offshore Chemicals Regulations 2002 as amended (OCR) for the use and discharge of chemicals. The table below summaries total chemical use during routine drilling operations. The majority of these chemicals were Hazard Quotient (HQ) Category 'E' chemicals (products considered to have the least potential environmental hazard).

Table 4-2. JXNEPUK's 2016 Chemical Usage and Discharge

| Atmospheric Emission | Unit | Loanan Exploration Well |
|------------------------|-------------|--------------------------------|
| Gold (use / discharge) | Kilogrammes | 68,133.85 / 53,929.55 |
| SUB* (use / discharge) | Kilogrammes | 8,459.09 / 666.78 |
| A (use / discharge) | Kilogrammes | 0 / 0 |
| B (use / discharge) | Kilogrammes | 0 / 0 |
| C (use / discharge) | Kilogrammes | 6,410.00 / 710.00 |
| D (use / discharge) | Kilogrammes | 392,234.00 / 0 |
| E (use / discharge) | Kilogrammes | 1,941,203.73 / 1,282,318.53.00 |

* The SUB chemical figures are a sum of all chemicals (e.g. OCNS A, B, C, D, E, and Gold) assigned with a 'SUB' warning.

4.3 Waste Management

During the 2016 Loanan exploration well drilling operations, a Waste Management Plan (WMP) was developed to achieve the following objectives;

- Responsibilities must be clearly allocated for ensuring that waste is managed correctly;
- Waste from the Loanan exploration well project activities must be identified, classified and the waste streams clearly defined;
- All reasonably practicable steps must be taken to minimise the generation of waste;
- All waste must be segregated accordingly;
- All reasonable steps must be taken to ensure that waste is recycled where practicable;
- Environmentally sound methods of handling, storing, transporting and disposing of remaining waste streams must be employed;
- Arrangements must be in place to check compliance with specified requirements for handling, storing, transporting and disposing of wastes.
- Comply with all relevant UK waste Regulations; and
- Be supported by the specific waste management procedures (i.e. contractor specific documents) that may be associated with the Deepsea Stavanger, Offshore Supply Vessels, Emergency Response and Rescue Vessel, and onshore waste management contractors.

In a subsequent Waste Management Report, it was concluded that all waste from the Loanan exploration well operations was handled, transported, stored, processed and disposed of in full compliance with all relevant UK Regulations. All operations were carried out in full compliance with the WMP.

The Loanan exploration well produced a total of 907.954 tonnes of waste. The proportion of this waste per disposal route is shown in Figure 4.3. It can be seen that the majority of waste from the Loanan exploration well falls under the disposal route category ‘other’. This category includes aqueous waste sent for treatment (44.46%) and aqueous waste discharged under consent (4.98%). 35.52% of the waste was sent to landfill, the majority of this consisted of treated cuttings from the thermomechanical cuttings cleaner process in the form of a non-hazardous inert fine powder.

Figure 4.3 All waste from the Loanan exploration well operations; proportion of waste per disposal route

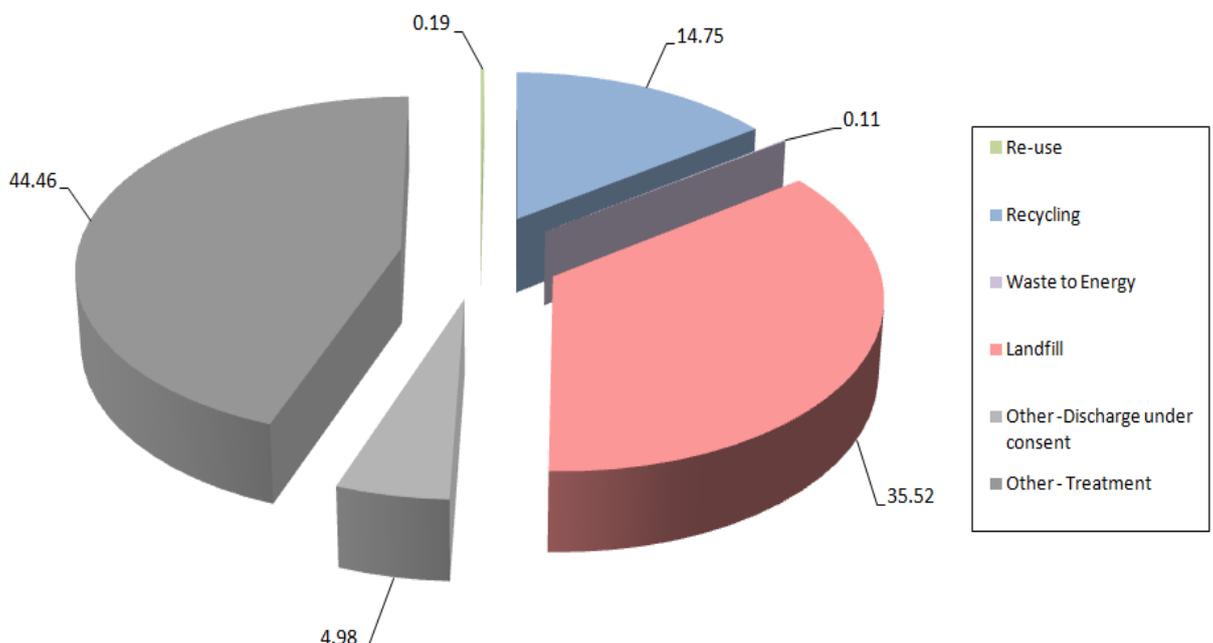


Table 4-3: Summary of all waste produced by the Loanan exploration well operations

| Waste Category | Quantity of waste per disposal route (tonnes) | | | | | | | Totals (tonnes) | |
|---|---|-----------|-----------------|------------|----------|-------------------------|-----------|-----------------|-------|
| | Re-use | Recycling | Waste to Energy | Incinerate | Landfill | Other | | | |
| | | | | | | Discharge under consent | Treatment | | |
| Group 1 – Special (Hazardous) Waste | | | | | | | | | |
| Chemicals/ paints | 0 | 0.187 | 0.177 | 0 | 0 | 0 | 3.680 | 4.044 | |
| Drums/ containers | 0.152 | 0.084 | 0 | 0 | 0.261 | 0 | 0 | 0.497 | |
| Oils | 0 | 54.655 | 0 | 0 | 0 | 0 | 0 | 54.655 | |
| Miscellaneous special waste | 0 | 0.470 | 0.798 | 0 | 0.675 | 0 | 0 | 1.943 | |
| Sludges/ liquids/ tank washings | 0 | 0.495 | 0 | 0 | 0.410 | 1.950 | 390.810 | 393.665 | |
| Group 2 – General Waste | | | | | | | | | |
| Non-hazardous chemicals/ paints | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Drums/ containers | 0.200 | 0 | 0 | 0 | 0 | 0 | 0 | 0.200 | |
| Scrap metal | 0 | 20.740 | 0 | 0 | 0 | 0 | 0 | 20.740 | |
| Segregated Recyclables | Wood | 0 | 8.010 | 0 | 0 | 0 | 0 | 8.010 | |
| | Plastics | 0 | 0.005 | 0 | 0 | 0 | 0 | 0.005 | |
| | Glass | 0 | 0.040 | 0 | 0 | 0 | 0 | 0.040 | |
| | Drinks cans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | Paper | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | Cardboard | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | Cooking oil | 0 | 0.010 | 0 | 0 | 0 | 0 | 0.010 | |
| | WEE* | 0 | 0.350 | 0 | 0 | 0 | 0 | 0 | 0.350 |
| | Misc.† | 1.340 | 6.930 | 0 | 0 | 0 | 0 | 0 | 8.270 |
| General waste | 0 | 0 | 0 | 0 | 44.125 | 0 | 0 | 44.125 | |
| Non-hazardous Sludges/ liquids/ tank washings | 0 | 0 | 0 | 0 | 0 | 0.640 | 9.160 | 9.800 | |
| Group 3 – Other Waste | | | | | | | | | |
| <i>No Group 3 waste produced</i> | | | | | | | | | |
| Group 4 – Back-loaded Drill Cuttings | | | | | | | | | |
| Hazardous | | | | | | | | | |
| a) Solids | 0 | 0 | 0 | 0 | 276.99 | 0 | 0 | 276.99 | |
| b) Oils | 0 | 41.95 | 0 | 0 | 0 | 0 | 0 | 41.95 | |
| c) Water | 0 | 0 | 0 | 0 | 0 | 42.66 | 0 | 42.66 | |
| Non-hazardous | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Totals (tonnes) | 1.692 | 133.926 | 0.975 | 0 | 322.461 | 45.250 | 403.650 | 907.954 | |

* WEE = Waste Electronic Equipment; † = Dry mixed recycling.

4.4 Environmental Incidents

During the 2016 Loanan drilling programme there were two environmental incidents that required an ePON 1 to be submitted via the UK Energy portal (Table).

Table 4-4 Environmental Incidents

| Atmospheric Emission | Unit | Loanan Exploration Well |
|----------------------|------------------|-------------------------|
| Chemical release | No. of incidents | 1 |
| Hydrocarbon releases | No. of incidents | 1 |

Environmental PON1 - BOP “runaway”

At 20:00 hours on the 25th May, a total of 25 gallons of BOP control fluid was lost due to a BOP runaway incident. An ePON1 was submitted by the Deepsea Stavanger OIM.

Environmental PON1 – OBM spill to sea

During the 6” hole section an OBM spill occurred following shallow hole testing of the M/LWD tool suite. A total of 9 bbls of OBM was lost to the sea which equated to 692 kg based on the mud specification at the time of the spill. An ePON1 was completed and submitted via the online portal. Following investigation, it was recommended that level indicator be fitted to the drip pan to alert the driller of any potential over flow in this area.

5 2017 Objectives and Targets

JXNEPUK has set corporate HSE objectives and targets for the business to meet during 2017 which are presented in Table 5-1 below.

Table 5-1 JXNEPUK's HSE Objectives and Targets

| No. | Category | 2017 Objectives and Targets | |
|-----|-------------|---|--|
| 1 | Safety | Lost Time Injuries (Corporate O&T) | Zero |
| | | Recordable Incident (Without LTI) | Zero |
| | | Total Recordable Incident Rate TRIR (TRCF) | TRIR = 0 |
| | | Other Target | High Potential Incidents = Zero Monitoring of all Non-Operated Asset Activities |
| 2 | Environment | CO ₂ Emission / Energy Consumption | Measure CO ₂ Emissions for offshore activities (except office activities onshore) Measure Energy Consumption / Intensity for onshore activities (except office activities onshore) |
| | | Oil / Chemical Spill Incidents | Pollution Incidents = Zero |