TEPUK Operational

Environmental Statement 2021

TotalEnergies

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Foreword

It is my pleasure to present our Operational Environmental Statement which provides an overview of the environmental performance of our UKCS operations throughout 2021.

TotalEnergies' continues to improve its environmental performance by developing an Environment Roadmap focusing on carbon reduction, biodiversity, produced water discharge and waste management. Total Energies E&P UK ('TEPUK') has set its own objectives and targets to support the company's ambitions.

Maintaining our emissions reduction success from 2020, we have implemented further projects in 2021 which have combined to reduce our emissions by approximately 60kt CO_2e. Example projects include the glycol contactor condensate re-route on Culzean and the amine contactor on Elgin.

TotalEnergies' ambition is to be a world class leader in the energy transition with our own contribution meaning we offer more energy with less emissions while remaining sustainable.

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

Jean-Luc Guiziou
Managing Director

TotalEnergies

Introduction

TotalEnergies is a broad energy company that produces and markets fuels, natural gas and electricity. Our 100,000 employees are committed to better energy that is more affordable, more reliable, cleaner and accessible to as many people as possible. Active in more than 130 countries, our ambition is to be a world class leader in the energy transition, reaching net zero with society in 2050.

This report is the 2021 annual environmental statement for TEPUK's activities which contains the environmental performance of our operated facilities and drilling activity in the UKCS **(Figure 1)**. The report has been prepared in accordance with the OSPAR Recommendation 2003/5 regulatory requirements.

The data provided in this report has been previously reported to the UK environmental regulator (OPRED) via the Environmental Emissions Monitoring System (EEMS) for offshore operations.

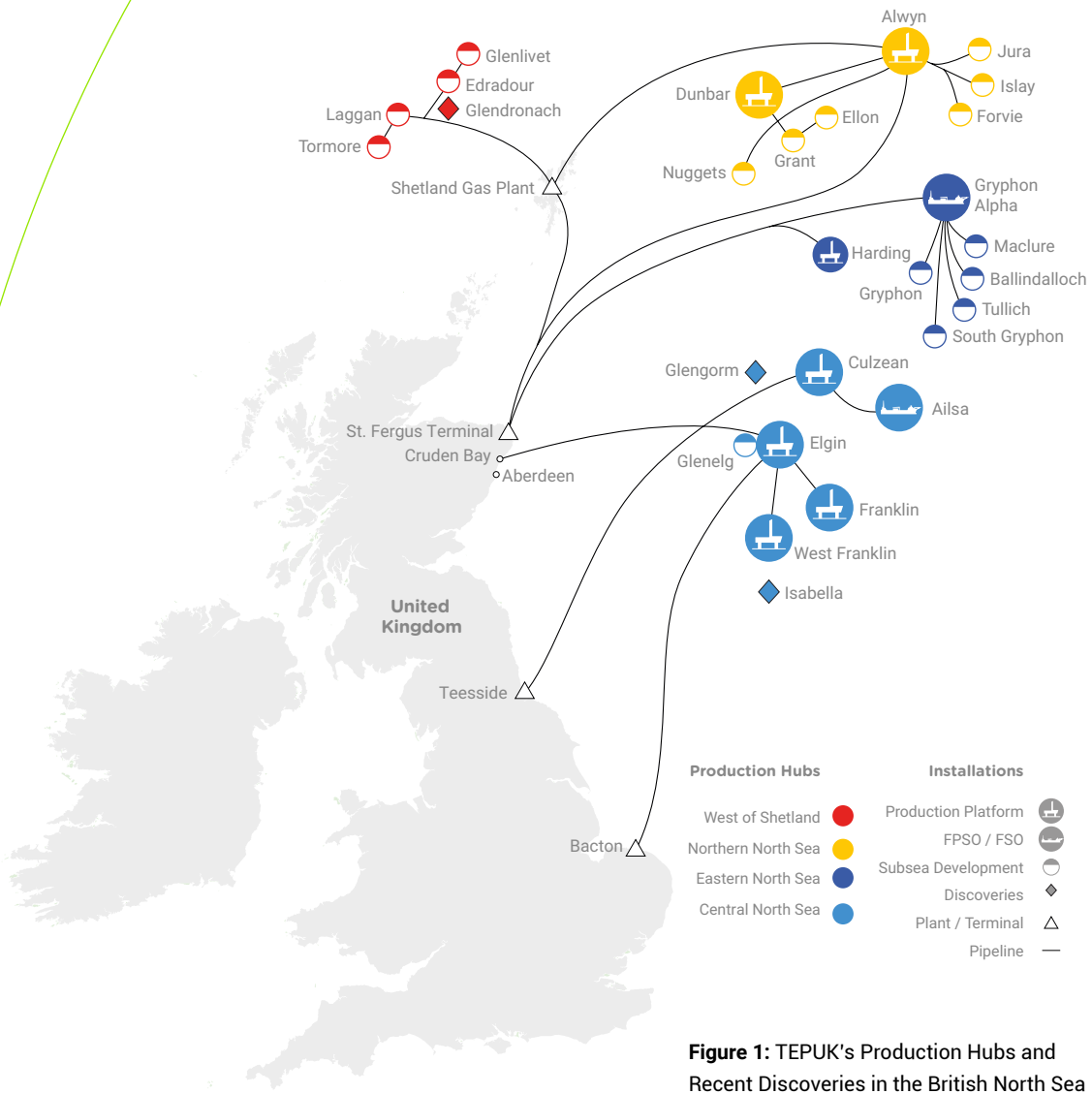

Figure 1: TEPUK's Production Hubs and Recent Discoveries in the British North Sea

Onshore Operations

Shetland Gas Plant

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

Gas and condensate from the four WOS fields arrive at SGP through two flowlines, each 18" in diameter. When the multiphase flow arrives at the plant, liquids are removed in the slug catchers before the gas is dried, chilled, re-heated, and metered, before being sent via the 30" diameter Shetland Islands Regional Gas Export (SIRGE) pipeline to join with the existing 32" diameter Frigg UK (FUKA) pipeline system to the St Fergus Gas Terminal. Condensate is exported via a short pipeline to the neighbouring Sullom Voe Terminal (SVT).

Production started in 2016 and peak production rates were around 81kboe/d. The environmental management system in place at SGP ensures that strict environmental monitoring and performance standards can be achieved. SGP is regulated by the Scottish Environment Protection Agency (SEPA). Environmental performance data is not included for SGP in this report.

Offshore Operations

Northern North Sea

TEPUK's Northern North Sea (NNS) hub lies 160 kilometres (km) east of the Shetland Islands and 440km northeast of Aberdeen in Block 3/9a. It comprises the Alwyn, Dunbar and Gryphon Alpha assets. The Global Producer III (GP3) Floating Production, Storage and Offloading (FPSO) facility was divested from the NNS hub in July 2020.

Alwyn

Our Alwyn North field lies at the heart of this area and first produced oil and gas 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.

The field comprises two bridge-linked platforms in a water depth of 126 metres (m). 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 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 northeast coast of Scotland via the Frigg pipeline system.

Nuggets is a subsea field development of four gas-bearing accumulations located 20km south of Dunbar. Brought into production over 2002-2003, the gas from Nuggets is piped back to Alwyn 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 NAB platform.

Jura is a subsea gas condensate development located 30km south of Alwyn. 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. First gas was achieved in May 2008.

Islay is TEPUK's latest development in the area and is a gas and condensate field located just over 30km to the south of Alwyn. The development consists 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 NAB. First production from this field was achieved in 2012.

Offshore Operations

Northern North Sea (contd.)

Dunbar

The Dunbar field is situated 22km south of Alwyn and 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 NAB via a subsea multiphase pipeline. The platform has facilities for drill cuttings re-injection and produced water re-injection.

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

Gryphon

The Gryphon Alpha FPSO vessel is located in UKCS Block 9/18 approximately 169km southeast of Shetland.

The Gryphon Alpha FPSO is permanently moored by ten anchors. Hydrocarbon production comes from subsea wells via a series of manifolds and risers which terminate in the FPSO turret. The processed oil is stored in cargo tanks in the hull and a 20" diameter hose is used to transfer the cargo to shuttle tankers. The FPSO is double hulled with ballast tanks segregating the cargo storage tanks from the sea. Gas is exported via a pipeline to Beryl A and through the Scottish Area Gas Evacuation (SAGE) system to St.Fergus. Production from the Gryphon field started in 1993. The Maclure and Tullich fields are tied into Gryphon and production started in 2001 and 2002 respectively. Ballindaloch is the latest development in Block 9 and first production was achieved in 2019.

Dunbar

Central North Sea

TEPUK's Central North Sea (CNS) hub lies 240km from the Aberdeen coastline in Blocks 22/25, 22/30, 29/5, 29/4 and comprises the Elgin, Franklin, West Franklin, Culzean and Ailsa sites.

Elgin

Elgin consists of central processing facilities located on a Process, Utilities and Quarters (PUQ) platform bridge-linked to two wellhead platforms (WHP); Elgin WHP A and Elgin WHP B. 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 northeast coast of Scotland via the Graben Area Export Line pipeline and Forties Pipeline System. Liquids are 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 pipeline. Production started in 2001.

Elgin PUQ

Culzean

Franklin and West Franklin

Franklin WHP and West Franklin WHP are normally unattended satellite platforms that tie back to the Elgin PUQ. Franklin is a satellite field situated approximately 5.5km south southeast of Elgin in Block 29/5b in a similar water depth. The West Franklin WHP lies approximately 6km southeast of the Elgin PUQ.

The West Franklin field is an adjacent structure to the western margin of the Franklin field in the Central Graben area of the North Sea. The structure straddles Blocks 29/4d and 29/5c and is an ultra High Pressure High Temperature (HPHT) field.

Culzean & Ailsa

The Culzean field was developed via six production wells drilled by a heavy-duty jack-up drilling rig. The field facilities comprise of a WHP bridge-linked to a central processing facility (CPF) platform that is in turn bridge-linked to a utility and living quarters (ULQ) platform. The associated Ailsa Floating Storage and Offloading (FSO) vessel receives processed condensate from the CPF for onward transport via tanker. Production started in July 2019.

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West of Shetland

The West of Shetland (WOS) operations (Figure 2) include the Laggan and Tormore fields and Edradour and Glenlivet fields. The Laggan and Tormore fields are situated 125km northwest of the Shetland Islands approximately 600m below sea level and the Edradour and Glenlivet fields are situated approximately 70km northwest of the Shetland Islands at a depth of 300m – 430m.

Edradour and Glenlivet tie into the Laggan and Tormore pipelines. The Laggan and Tormore import pipelines are the longest subsea tie back in the UK. The co-mingled fluids are transported through these production pipelines to the Shetland Gas Plant, which has a capacity of up to 15mscm/d gas and 35 kbbl/d condensate, for processing and export to the St. Fergus Gas Terminal on the northeast coast of Scotland via the Shetland Island Regional Gas Export pipeline, a 234km long export pipeline which connects to the existing Frigg UK Area pipeline.

Edradour and Glenlivet pipelines were connected to the existing Laggan Tormore pipelines in 2017.

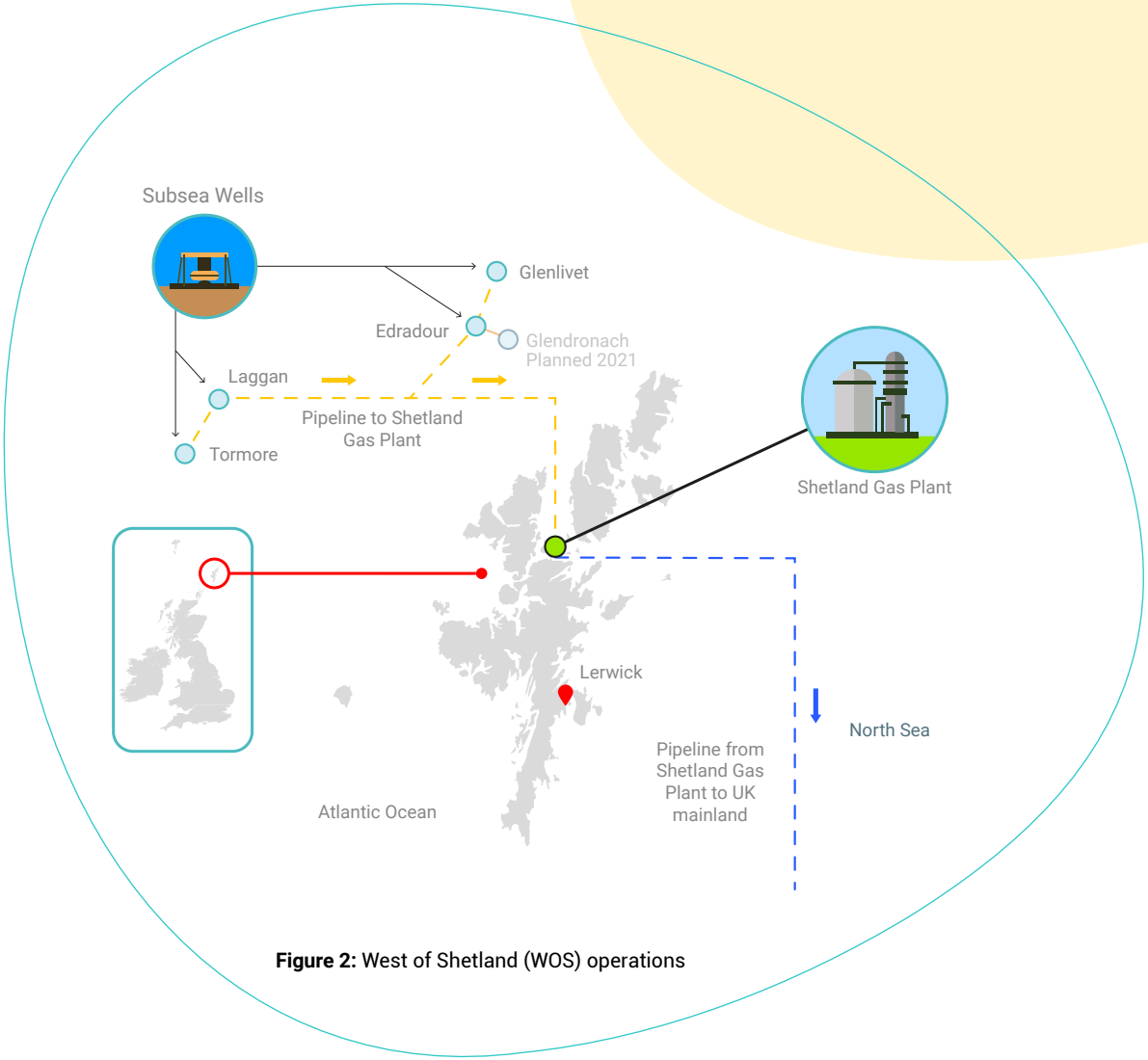

Figure 2: West of Shetland (WOS) operations

Maersk Highlander

Drilling Operations

TEPUK delivered a wells programme of drilling and well intervention operations during in 2021, which were completed successfully and safely across all TEPUK assets.

In the Central North Sea area, the Maersk Highlander jack-up drilling rig left the Culzean area (having been on location drilling since 2016) and moved to the Elgin field to drill the sixth Elgin well (EIG).

Drilling operations resumed on the Alwyn North platform at the end of December, with a drilling programme extending into 2022.

No exploration drilling was undertaken during 2021.

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Environmental Goals and Objectives

Environmental Goals – 2021 (Achieved)

TEPUK's goals are set at both the group and affiliate level which are developed to focus on targeted environmental performance improvements.

Aspect	Objectives	Targets	Programmes	Achieved
Energy Management System (EnMS)	Embed management system throughout organisation	Achieve asset Energy Key Performance Indicators (EnPIs) targets for 2021	Energy Improvement Plan	Recommendation for continued certification of ISO50001:2018 energy management achieved
Atmospheric Emissions	Develop process for measuring Scope 1,2,3 Emissions (CO_2 Equivalent)	Documented procedure for Scope 1,2,3 emissions calculations	Service Company & Stakeholder Engagement	Process developed to document Scope 1 and 2 emissions calculations
Atmospheric Emissions	Assess Feasibility of Carbon Offsetting Project via Peatland Restoration	Identify and work collaboratively with stakeholders/partners to develop project scope	Develop business case for TEPUK	Ongoing engagement with stakeholders to further develop Peat Restoration Project
Atmospheric Emissions	Asset models to be developed for emissions forecasting	Validation with historically verified data compilation of asset emissions forecast	E Forecaster tool to be beta user tested and asset models constructed	E forecaster has been built and verified and used for the LTP forecast for 2021
Atmospheric Emissions	Culzean & Ailsa New Entrant Reserve (NER) Applications completion	NER application compiled, verified and submitted	Assessment of capacity threshold - Monitoring of emissions for set period to be completed	Completed
Waste Management	Reduce waste to landfill	Identify and work collaboratively with waste management provider to develop project scope	Zero waste to landfill	Majority of landfill waste diverted to waste to energy
Environment Improvement Plan	Improve management of environmental performance	Digitalisation of environmental performance data	Create Environment Performance App in PowerBi	Environment App created in PowerBi to measure environment and energy performance

Environmental Goals – 2022 (Planned)

Aspect	Objectives	Targets
Continuous Improvement	Assign on-site Environmental Representatives on operational facilities	Communicate low carbon culture, drive environmental awareness and implement improvement projects
Decommissioning Emssions	Modelling of all pertinent emissions, as defined under scope 1 perimeter	Produce Decommissioning Emissions Model Template for all Assets
Atmospheric Emissions	Reduce methane emissions from our activities	Deliver the Methane Action Plan to meet OGMP 2.0 Gold Standard
Atmospheric Emissions	Embed CFR requirements into contracting process	Develop and Roll Out a Supply Chain Emissions Assessment Tool Supply Chain workshops
Atmospheric Emissions	Address Requirement for TEPUK's Assets to Meet Zero Routine Flaring and Venting by 2030	Identify projects to meet ambition and add to future LTPs

Environment and Energy Management System

TEPUK is certified to the international standard for environment management ISO 14001:2015 and energy management ISO 50001:2018.

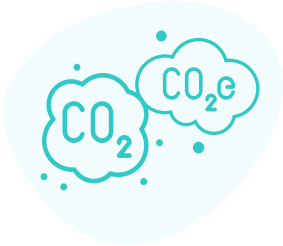
The standards specify the requirements for establishing, implementing, maintaining and improving environment and energy management systems following a systematic approach to enhance and drive continual improvement throughout the organisation.

Consistent with our HSE policy, the intended outcomes of the organisation's environment and energy management systems includes:

- Enhancement of environment and energy performance
- Fulfilment of compliance obligations
- Achievement of environment and energy management objectives

The scope of both ISO 14001:2015 and ISO 50001:2018 certification includes all TEPUK's operational assets and onshore support functions.

Environmental Performance



Atmospheric Emissions

Atmospheric emissions are generated from several sources on our installations. The sources are detailed below and are required to support the processes related to exploration and production of hydrocarbons.

- Combustion of fuels (gaseous and liquid) in turbines and generators that are used for power generation and compression
- Flaring, which is an integral part of the installation safety systems
- Venting of both hydrocarbon and inert gases from the process plant
- Venting of sour gas which is removed from the product to ensure pipeline entry specification is achieved

TEPUK is required to report their production operation combustion emissions (fuel gas and flare gas) annually under the UK Emissions Trading System scheme (UKETS). This data is independently verified. All atmospheric emissions, from both combusted and vented sources for all TEPUK, are required to be reported to BEIS via EEMS on an annual basis.

To help us understand the overall impact on climate change from our activities, we measure the amount of emissions to the atmosphere and then convert this data into a carbon dioxide equivalent (CO_2e).

The atmospheric legislation applicable to the UK aims to achieve a reduction in greenhouse gas emissions. TEPUK has developed an ambitious carbon management strategy to reduce its greenhouse gas emissions in support of the legislation and the Net Zero strategy set by the UK Government in 2019. The TEPUK strategy includes reduction through implementation of a turbo machinery, flare and vent philosophies, digitalisation, introduction of new technologies and implementation of alternative power sources (e.g. power from shore or offshore renewables). This strategy has been developed in line with our certified Energy Management System ISO 50001:2018.

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Atmospheric Emissions (contd.)

Figure 3 illustrates the CO_2e emissions to atmosphere from all TEPUK activities over the last four years. In 2021, TEPUK's CO_2e emissions have decreased by 20% compared to 2020, resulting from the implementation of a number of projects and planned shutdowns.

Figure 3: CO_2e emissions (tonnes) from TEPUK operating facilities between 2018-2021.

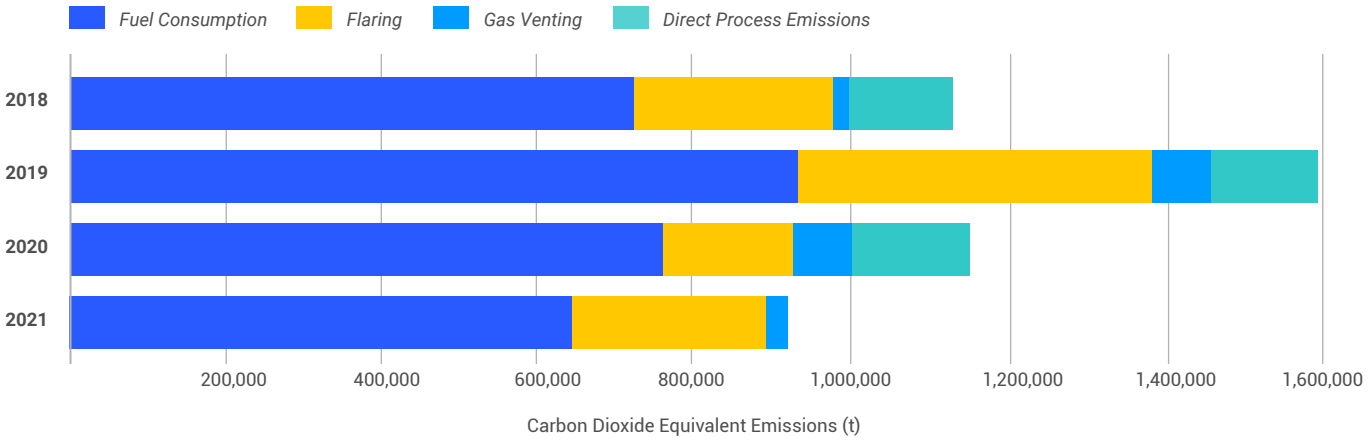


Figure 4: CO_2e emissions (tonnes) from each TEPUK operating facility in 2021

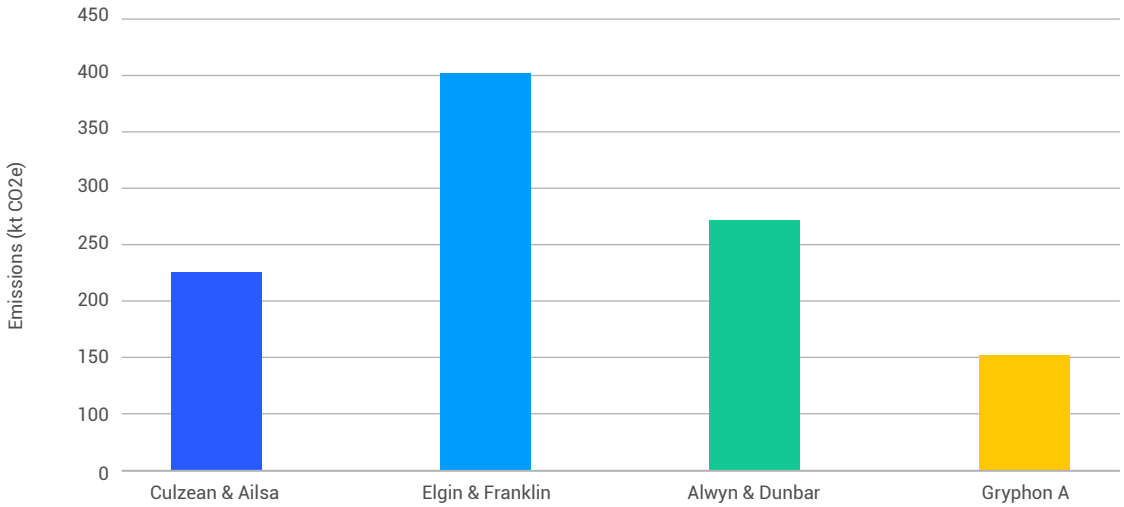


Figure 4 shows the CO_2e emissions (in tonnes) from each TEPUK operating facility in 2021. A number of reduction projects were implemented in 2021 including the amine contactor on Elgin (estimated savings of 16kt CO_2e per year) and glycol contactor on Culzean (estimated savings of 13kt CO_2e per year).

Permitted Discharges

Oil in Produced Water

Produced water is extracted from the subsurface with oil and gas, which after processing contains trace amounts of oil. The produced water is either reinjected into the wells or discharged to sea in accordance with the environmental permit regulated under The Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005.

Figure 5 illustrates the total quantity of produced water discharged to sea and the average oil in water content for the last four years

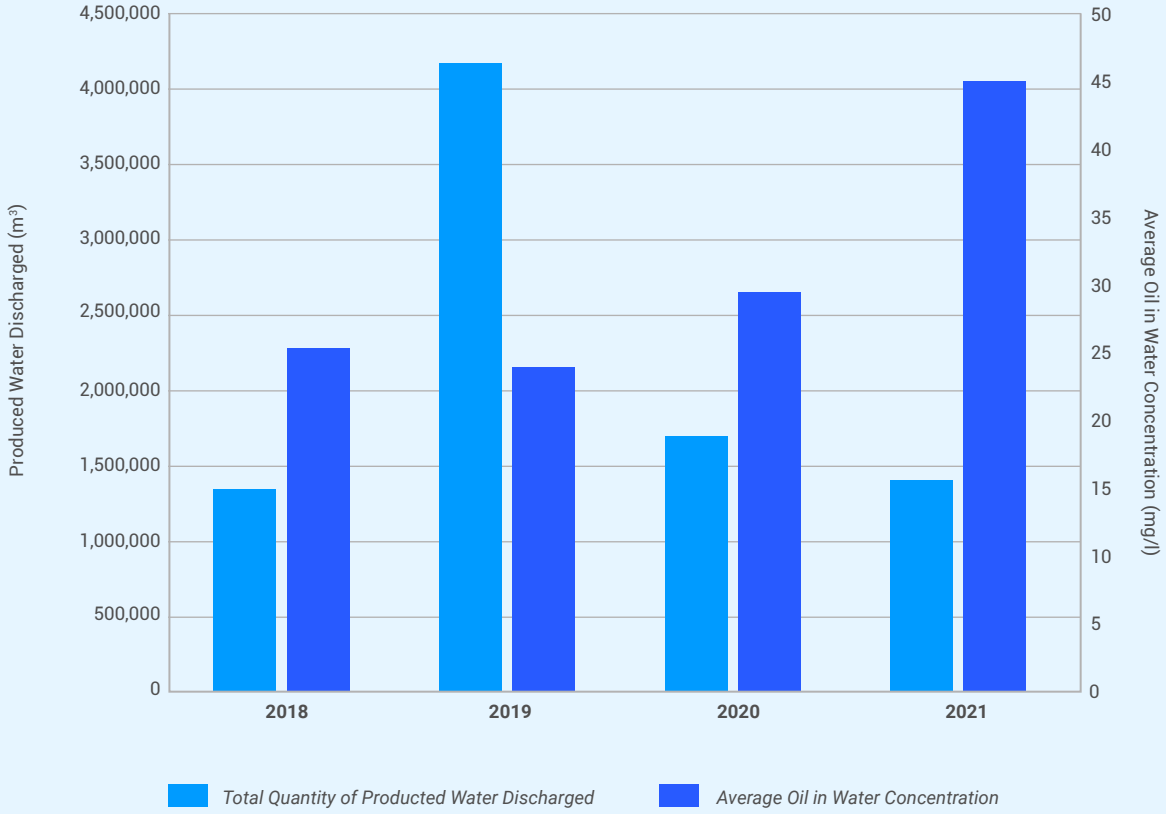
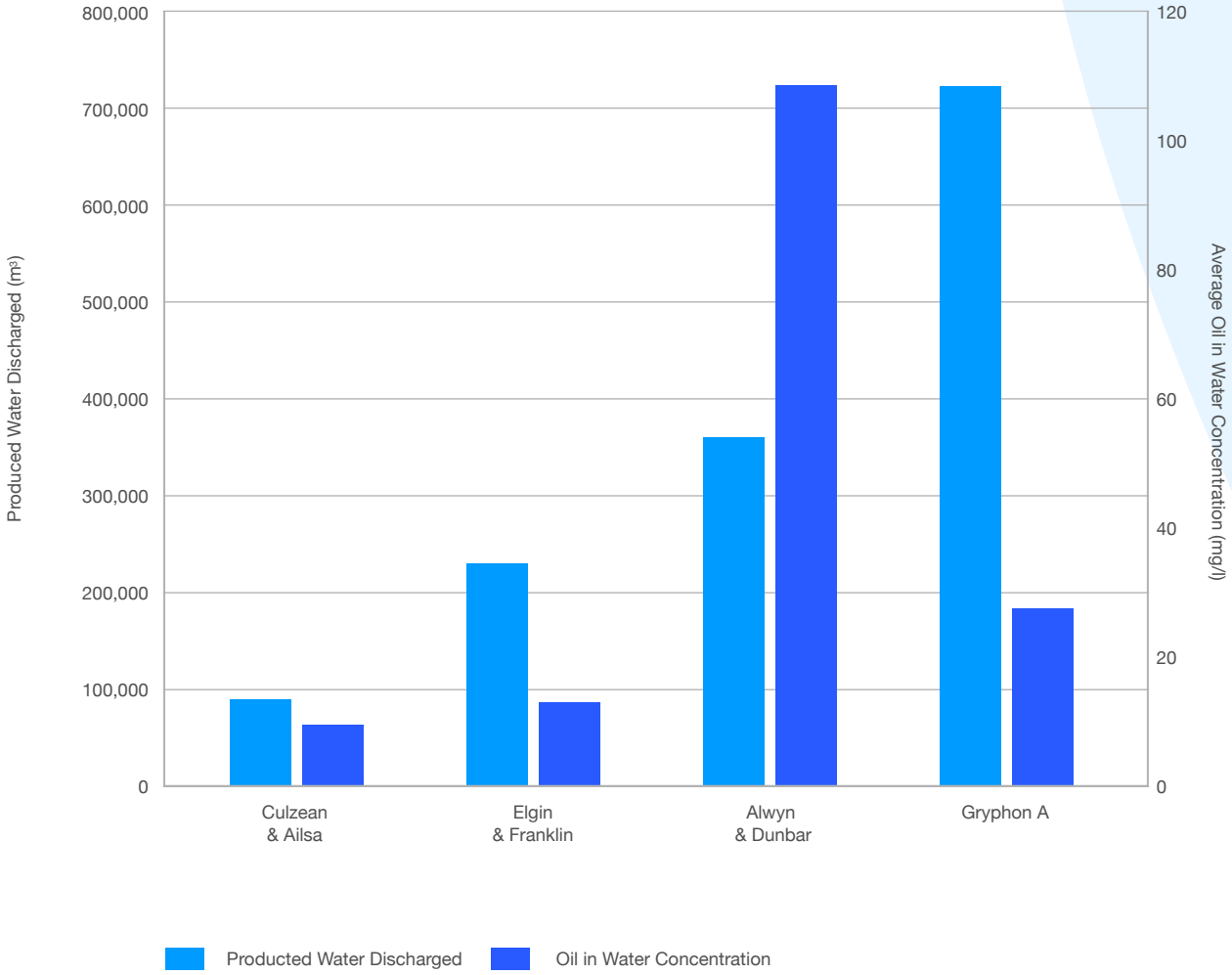


Figure 6: Total quantity of produced water discharged to sea and the average oil in water content from each TEPUK operating facility in 2021.



Oil in Produced Water

Figure 6 shows that the Alwyn asset had the highest average oil in water concentration for 2021 compared to the other assets. This was due to the unplanned discharge of produced water to sea with an oil content >30mg/l (permitted limit) during process upsets. Gryphon FPSO discharged the highest volume of produced water in 2021, however, the average oil in water content remained below the permitted threshold of 20mg/l for Culzean and 15 mg/l for Ailsa.

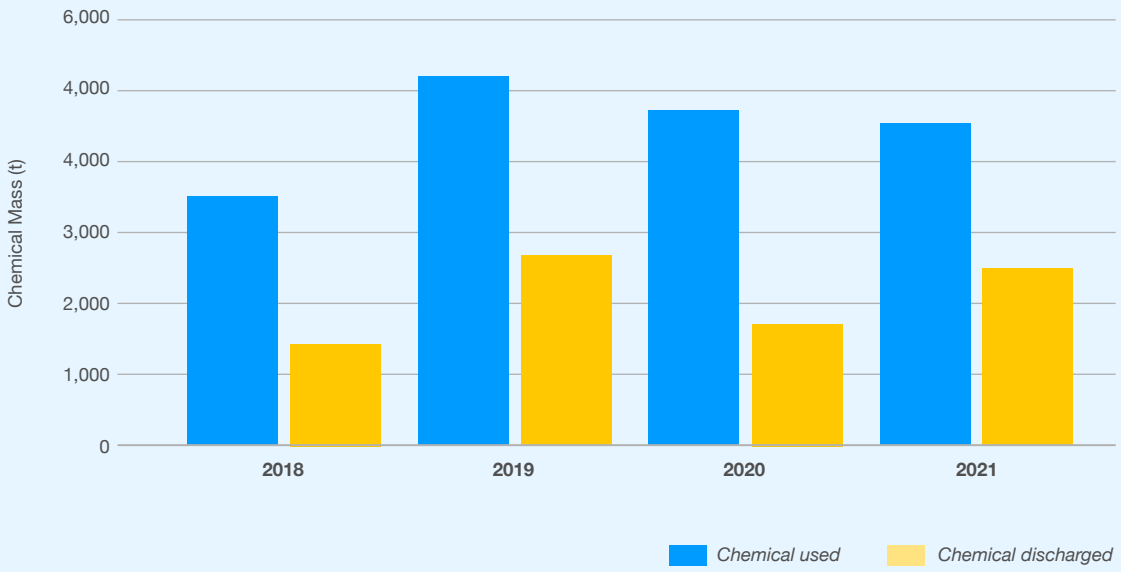
Chemical use and discharge

TEPUK uses and discharges 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).

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'. TEPUK carried on with the development and implementation of its Environmental Chemicals Management Strategy and successfully changed out several of its chemical applications for more acceptable substitutes. This strategy outlines the process TEPUK 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 TEPUK to prioritise the elimination of harmful substances with less harmful alternatives over a given time period.

Figure 7 shows the total production chemicals used and discharged for TEPUK operating facilities between 2018-2021.

Figure 7: Total production chemicals used and discharged (t) for TEPUK operating facilities between 2018-2021



Chemical use and discharge

In 2021, a significant proportion of chemical use primarily relates to the additive used in water injection systems as part of microbiological control, corrosion treatment and the management of hydrogen sulphide on the Alwyn asset **(Figure 8).**

Figure 8: Total chemicals used and discharged (t) for each TEPUK operating facility for 2021

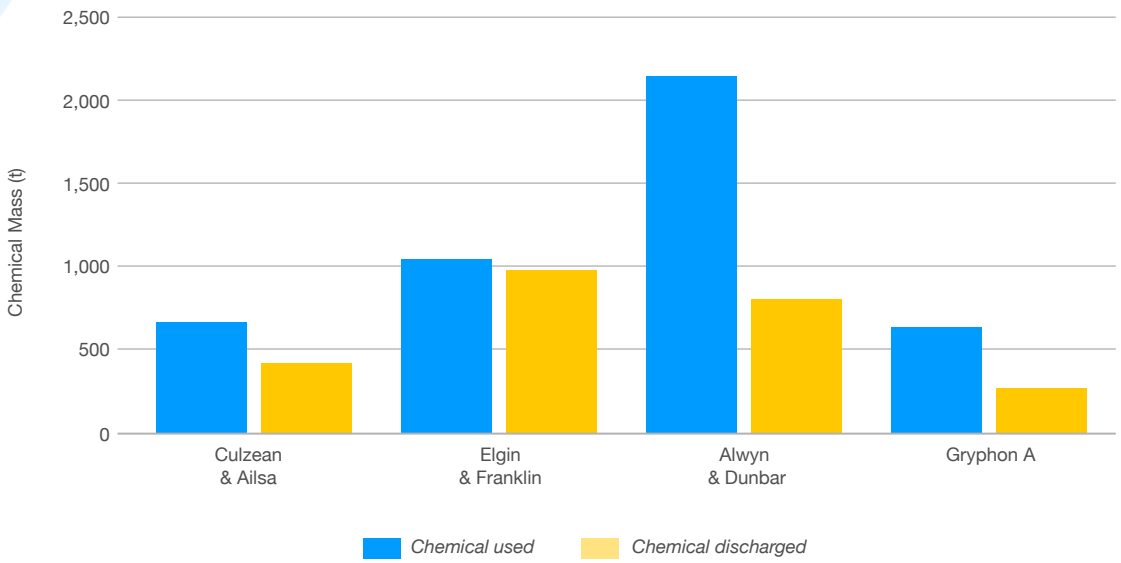
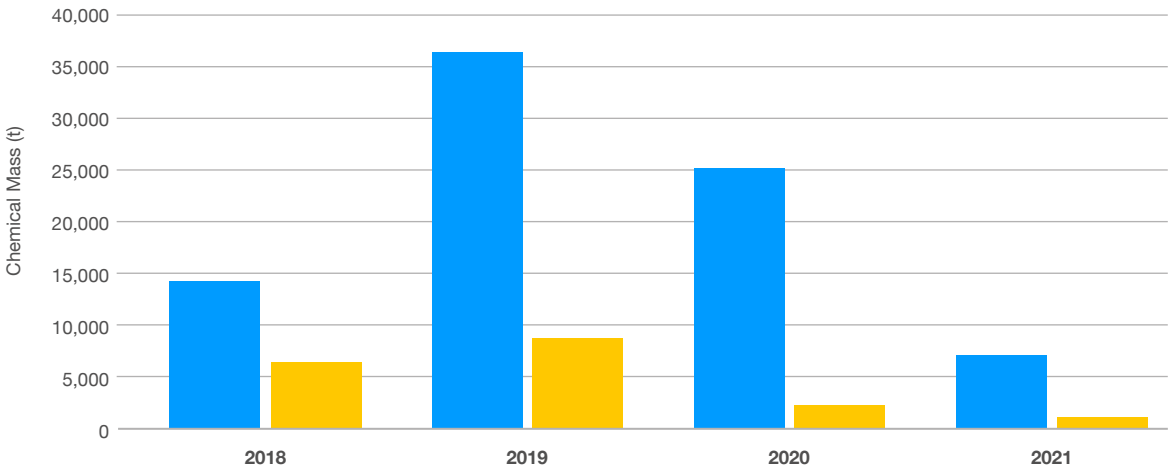


Figure 9: Total well chemicals used and discharged (t) for TEPUK operating facilities for 2021



As shown in **Figure 9**, approximately 6,951 tonnes of chemicals were used as part of the TEPUK's drilling and well intervention operations in 2021 with approximately 972 tonnes discharged in accordance with the environment permits. The majority of the chemicals (75%) were completion brines and water-based mud chemicals which have little or no risk to the environment (PLONOR) as classified by OSPAR.

Releases to the Environment

One of TEPUK's key focus areas is reducing spills to the environment from our activity in the North Sea. Unpermitted releases of oil and chemicals, regardless of volumes, are recorded and investigated internally and reported to the regulator.

In 2021, there was a total of twenty-two unplanned releases to sea of which thirteen were oil related and nine were chemical losses amounting to a total mass of 5.44 tonnes **(Table 2).**

Year	Number of Oil Spills	Mass (t)	Number of Chemical Spills	Mass (t)
2018	41	9.73	12	5.6
2019	26	15.80	20	3.6
2020	20	4.65	7	23.40
2021	13	1.51	9	3.93

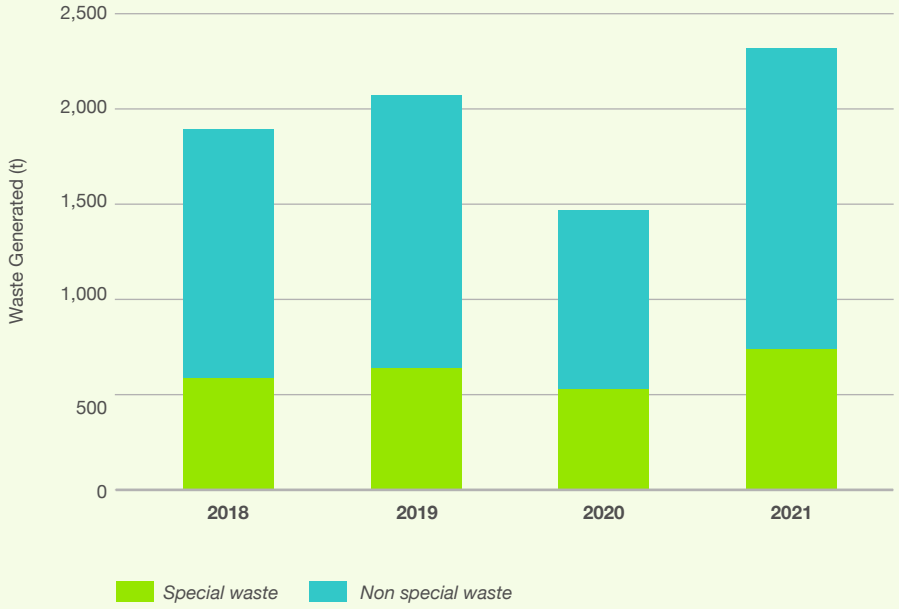
Table 2: Total number and mass (tonnes) of oil and chemical unplanned releases to sea from TEPUK activities between 2018-2021

Waste Management

TEPUK's operations consume materials that generate special and non-special waste. Waste is managed from 'cradle to grave' following company procedures and applicable legal requirements.

Figure 10 illustrates the amount of waste (special and non-special) that was generated from our operational activities over the last four years. The majority of our landfill waste has been routed to waste to energy with the converted energy providing power to local domestic and industrial facilities, only 3.62% of our waste went to landfill in 2021.

Figure 10: Mass (tonnes) of special and non-special waste generated by TEPUK's operating facilities between 2018-2021



Waste Management (contd.)

Special waste includes paints, contaminated drums and containers, oily waste, chemicals, and aerosols. Quantities of special waste generated by our operating facilities and the disposal routes used are shown in **Figure 11**.

Non-special waste includes segregated recyclables (plastics, wood, paper, cardboard) and general waste (textiles, some galley waste) and scrap metal. **Figure 12** shows the non-special waste produced by each TEPUK operating facility in 2021.

Table 3: Drill cuttings discharged offshore between 2018-2021

	2018	2019	2020	2021
Water Based Drill Cuttings discharged overboard (tonnes)	2,204	6,692	888	873
Oil Based Drill Cuttings treated and discharged overboard (tonnes)	1,129	4,472	2,444	790
Cuttings, slurry, brine and slops re-injected (tonnes)	0	758	0	0

Table 3 shows the drill cuttings generated between 2018 and 2021 by our operations which were managed offshore and discharged to the marine environment under permit or re-injected into the reservoir. This is industry Best Available Technique (BAT) for the management of these waste types. Drill cuttings and muds disposed of onshore are treated where the oil is recycled.

Figure 11: Mass (tonnes) of special waste generated by each TEPUK operating facility in 2021 and the disposal routes used

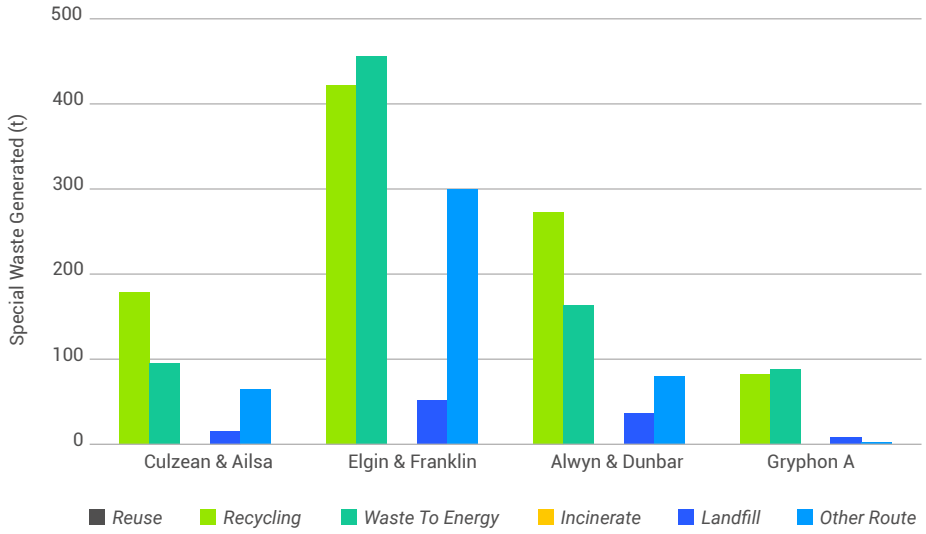
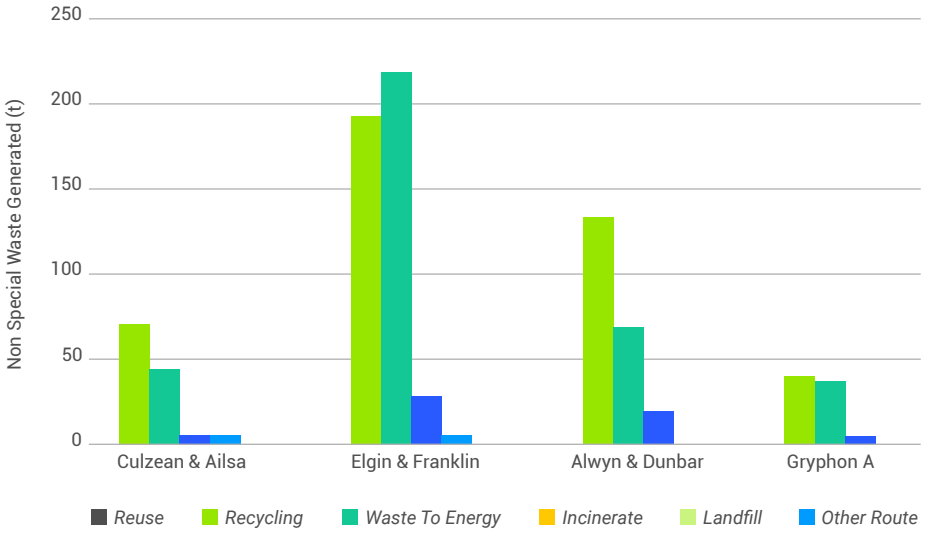


Figure 12: Mass (tonnes) of non-special waste generated by each TEPUK operating facility in 2021 and the disposal routes used



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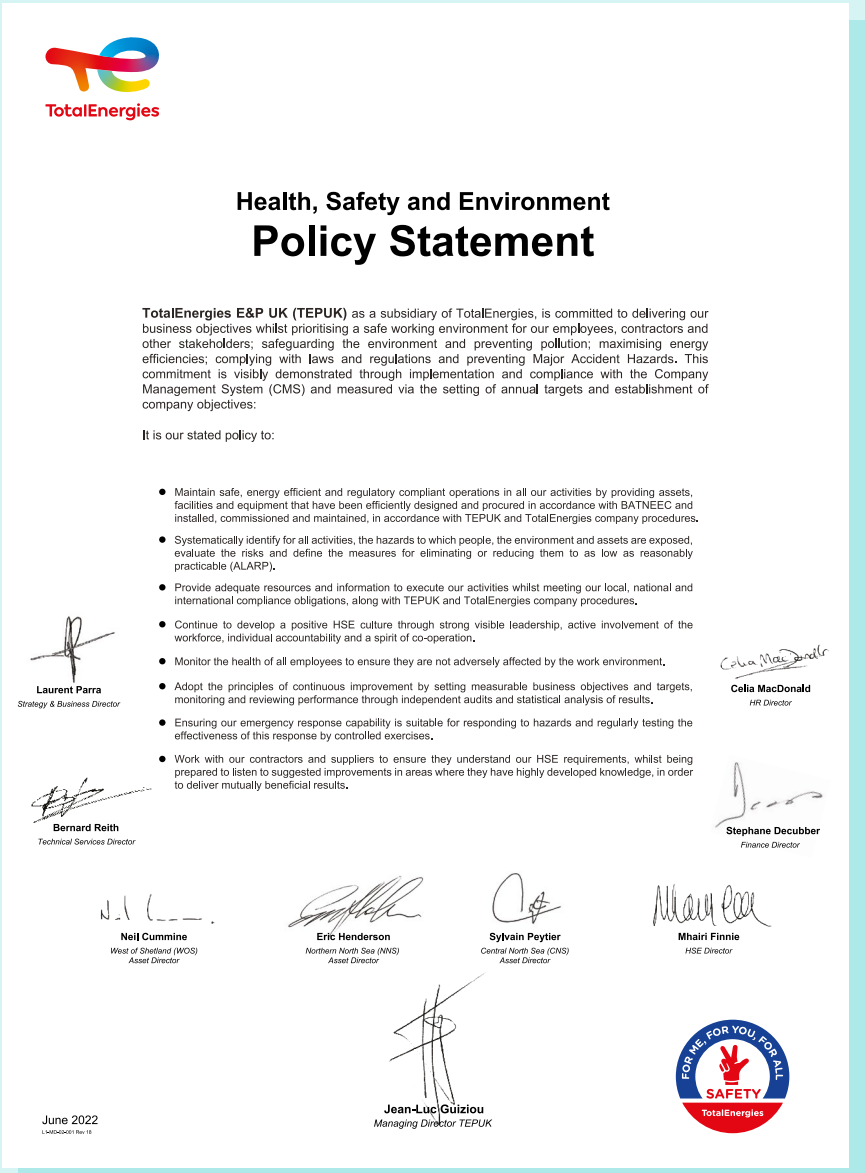
HSE Policy Statement



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Health, Safety and Environment
Policy Statement

TotalEnergies E&P UK (TEPUK) as a subsidiary of TotalEnergies, is 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; maximising energy efficiencies; 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 TEPUK and TotalEnergies company 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).
- Provide adequate resources and information to execute our activities whilst meeting our local, national and international compliance obligations, along with TEPUK and TotalEnergies company procedures.
- Continue to develop a positive HSE 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 and targets, 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 HSE requirements, whilst being prepared to listen to suggested improvements in areas where they have highly developed knowledge, in order to deliver mutually beneficial results.

Laurent Parra
Strategy & Business Director

Celia MacDonald
HR Director

Bernard Reith
Technical Services Director

Stephane Decubber
Finance Director

Neil Cummine
West of Shetland (WOS) Asset Director

Eric Henderson
Northern North Sea (NNS) Asset Director

Sylvain Peytier
Central North Sea (CNS) Asset Director

Mhairi Finnie
HSE Director

Jean-Luc Guiziou
Managing Director TEPUK

June 2022

FOR ME. FOR YOU. FOR ALL
SAFETY
TotalEnergies

TotalEnergies

If you have any comments, or would like further information on our environment or energy management please contact:
Public Affairs and Corporate Communications

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