



Assessments, Site Clean-up & Reporting

Module 7

Contents

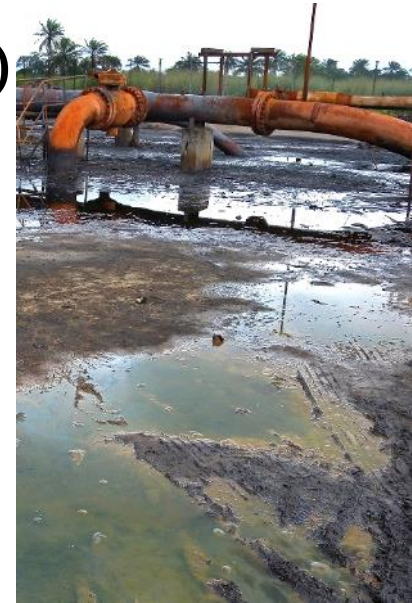
- Environmental & Social Impact Assessments (ESIAs)
- ESIA Scoping Reports
- Stakeholder consultation
- Environmental Appraisals
- Decommissioning Programmes & Plans
- Site Rehabilitation and Remediation
- Marking remains & safety zones
- Close-out or closure reporting



ESIAs and Best Practice

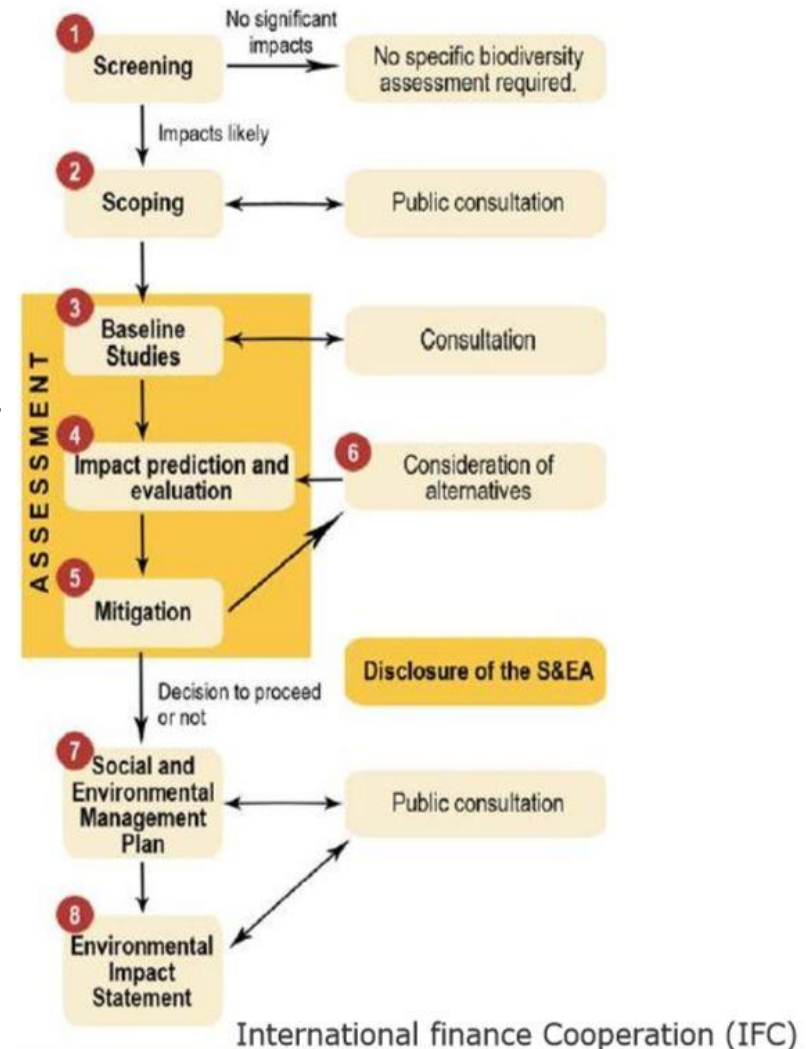
Environmental & Social Impact Assessment (ESIA)

- Might identify decommissioning **BEFORE** a project is started.
- Often indicates simply that a Decommissioning Plan will be submitted to the regulator for approval.
- ESIA might state that all costs are to be covered by the developer.
- ESIA may require that a fund be established (e.g. escrow account), specifically to pay for the decommissioning costs.
- However, costs are usually not going to be known 30 years in advance, nor are impacts.
- Best practice: decommissioning requires a standalone ESIA/EIA.



ESIA for O&G projects should include and identify the further need for BAT assessments

- ESIA process is a way to identify, predict and assess type and scale of potential environmental impacts, and opportunities to benefit conservation, associated with project activities.
- The ESIA informs decision makers and provides an opportunity to identify key issues and stakeholders early in the life of a proposed development.
- Consideration of alternatives is an integral part of the ESIA process.
- Alternatives could be evaluated based on BAT (or other decision tools).
- Further need for BAT assessment of systems and sub-systems during FEED could be highlighted.



Environmental and social issues

Comparative Assessment (CA) Best Available Techniques (BAT) and other **TOOLS** are used by the industry to help select the **best decommissioning option** by comparing each on a basis of complexity, safety, economics and impact to the environment.

Alternatives to decommissioning (also called Secondary Life) include:

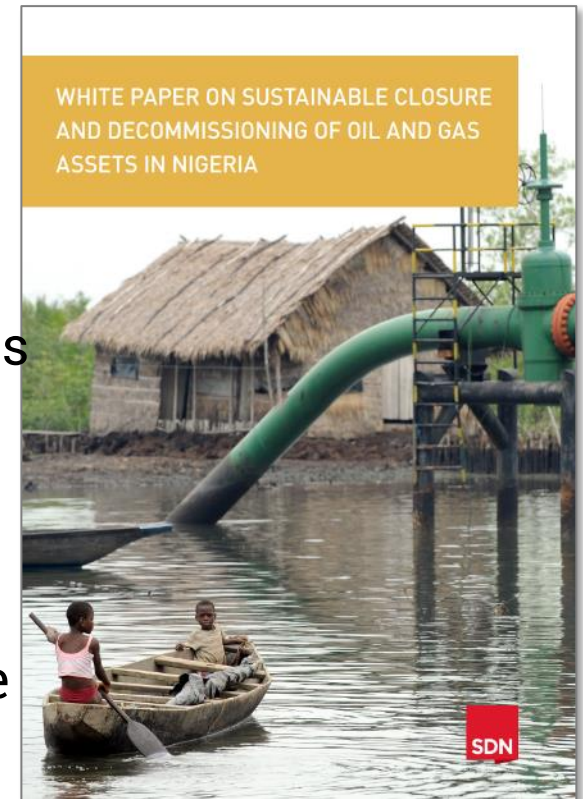
- Use of platforms for wind and power generation
- Water power generation (tide, currents and waves)
- Rigs to Reefs (see above)
- Aquaculture (installing nets and cages within structures)

However, most of the above alternatives raise significant issues of safety, cost linked to necessary structural alterations, and accessibility (especially in rough conditions).

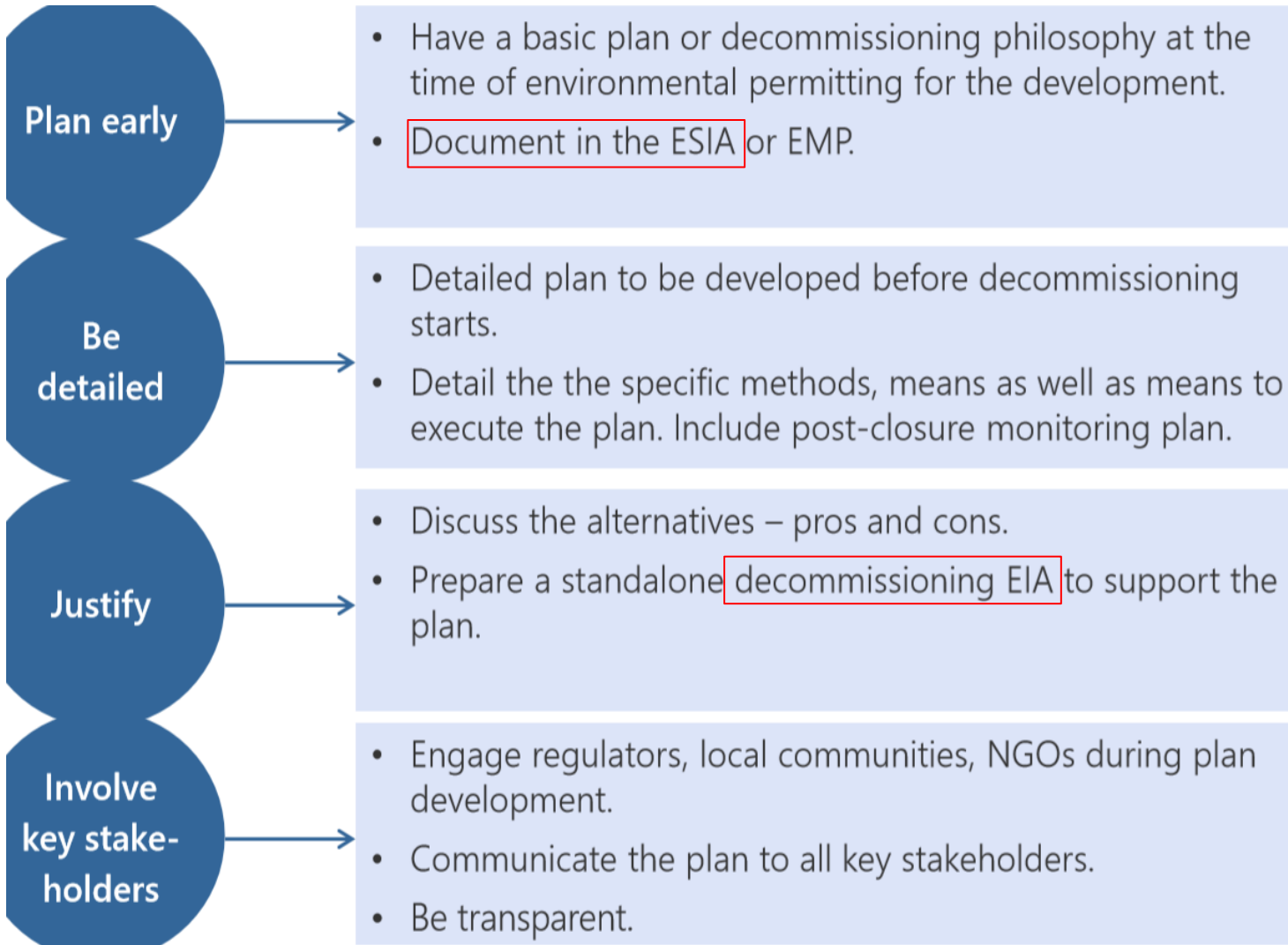
Potential Environmental/Social Impacts

The following are some of the most common environmental impacts associated with decommissioning of oil and gas infrastructure:

- **Discharges to sea:** sewage, food waste, ballast water, treated bilge
 - **Gaseous emissions:** from vessels & equipment
 - **Underwater noise:** from vessel operations, dynamic positioning system, cutting methods
 - **Physical disturbance to seabed:** suspended sediment, local smothering, rock dump
 - **Waste and NORM*:** waxy deposits, oily sludges or NORM scale need to be handled
 - **Odours, noise and disturbance** from onshore waste facilities to local residents
 - **Metals:** trace amounts from sacrificial anodes (e.g. Zn, Al) might enter sediment
- * Naturally occurring radioactive material



Preparing the Decommissioning Plan



Decommissioning: UK main points

- Decommissioning Programme will typically be developed **up to 3 years before** decommissioning begins.
- **Some installations** soon to be decommissioned will have been subject to the ESIA process during licensing, **other will not have.**
- Decommissioning of offshore O&G facilities on UKCS is governed by a range of legislation (and of EU) and guidance but falls principally under the Petroleum Act 1998 (as amended 2008).
- Petroleum Act requires a formal **Decommissioning Programme**, which must be approved by the Department of Energy and Climate Change (DECC) before decommissioning commences.
- DECC Guidance Notes require Decommissioning Programme be **supported** by an **Environmental & Social Impact Assessment**, which considers the potential environmental impacts.

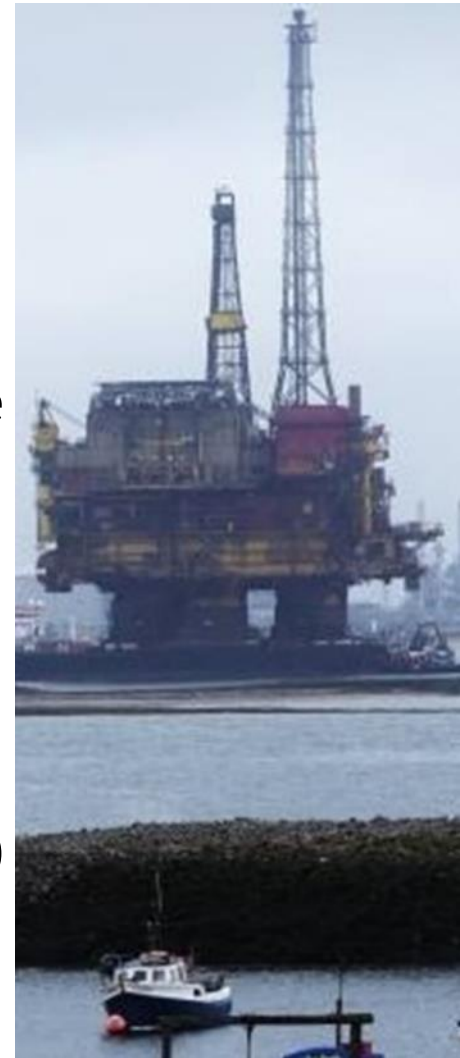
Stakeholder consultation

Statutory Consultees for Decommissioning (UK) offshore

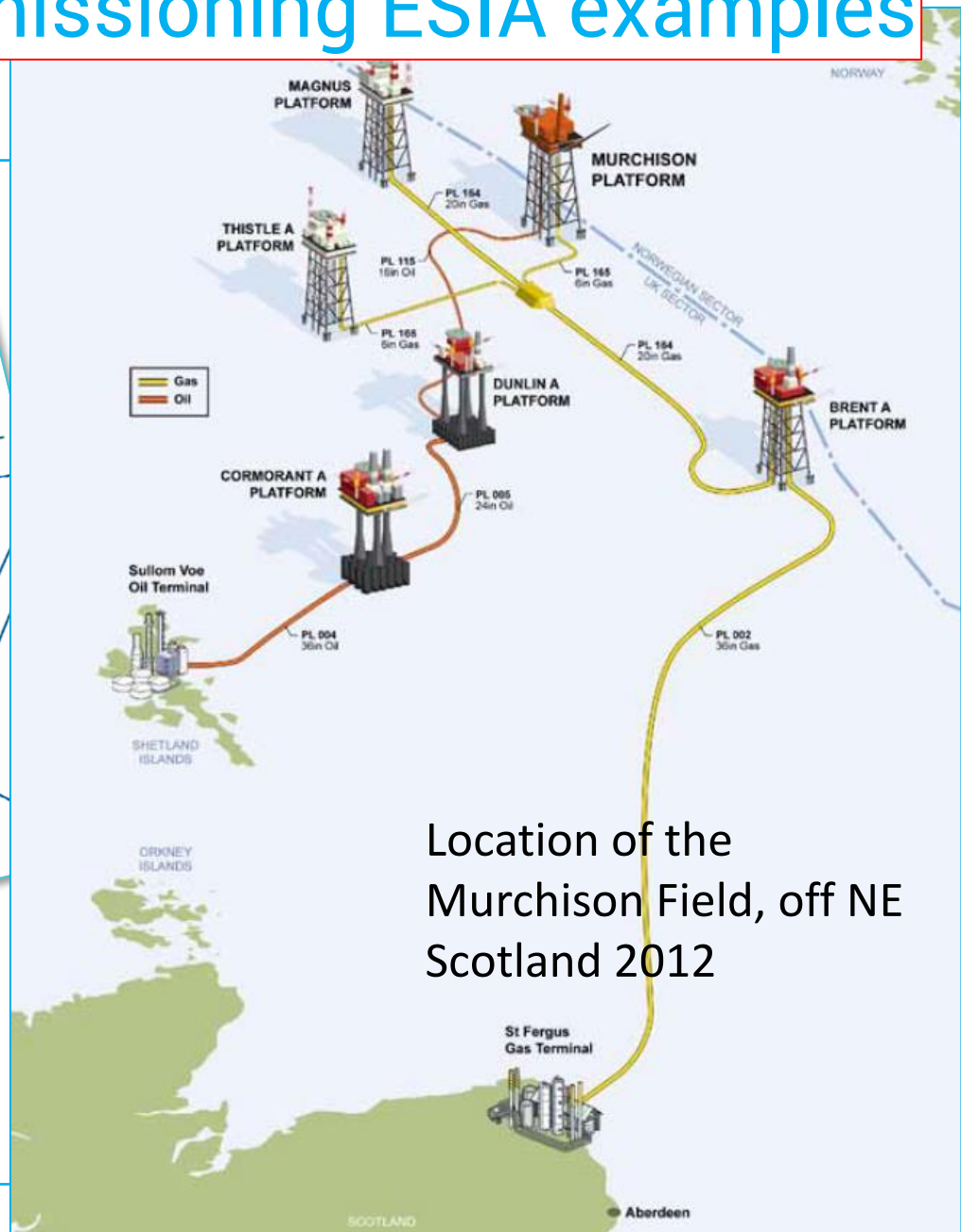
- The National Federation of Fishermen's Organizations
- Scottish Fishermen's Federation
- Northern Ireland Fishermen's Federation
- Global Marine Systems Limited (subsea cable experts)

In addition, the following entities would be considered for most offshore and onshore decommissioning projects:

- Marine and coastal protected areas agencies
- Local authorities (cf. waste disposal, disturbance, use of roads, water supplies, etc)
- Representatives of local communities (including coastline and inshore water users)
- Whale watching & marine mammal groups



Decommissioning ESIA examples



Location of the Murchison Field, off NE Scotland 2012

ESIAs & Decommissioning: examples



Scoping Report, Decommissioning EIA

Table of Contents – Example 1

Executive Summary

1 Introduction

- 1.1 Objective
- 1.2 Scope
- 1.3 Approach
- 1.4 Regulatory Context

2 Project Description

- 2.1 Brent Alpha Overview
- 2.2 Brent Bravo Overview
- 2.3 Brent Charlie Overview
- 2.4 Brent Delta Overview
- 2.5 Pipelines Overview
- 2.6 Brent South
- 2.7 Provisional Materials Inventory

3 Environmental Baseline Summary

- 3.1 Key Environmental Sensitivities Offshore
- 3.2 Drill Cuttings & Marine Sediment Baseline Survey
- 3.3 Physical Nature of Drill Cutting Piles
- 3.4 Initial Screening Assessment of Cuttings Piles
- 3.5 Contents of GBS Cells
- 3.6 Environmental Baseline for Onshore Locations

4 Decommissioning Options

5 Description of Scoping Methodology

- 5.1 Scoping Workshop
- 5.2 Scoping Methodology
- 5.3 Workshop Findings

6 Summary of Output from Scoping Workshop

- 6.1 Category 1: Steel Jacket
- 6.2 Category 2: Drill Cuttings
- 6.3 Category 3: Cell Contents
- 6.4 Category 4: Topsides
- 6.5 Category 5: GBS
- 6.6 Category 6: Pipelines

7 Potentially Significant Impacts

8 EIA Approach & Further Studies

- 8.1 EIA Methodology
- 8.2 Approach to Assessing Some Key Environmental Issues
 - 8.2.1 GBS and Jackets
 - 8.2.2 Drill Cuttings
 - 8.2.3 Pipelines
- 8.3 Further Studies Required
- 8.4 Supporting Studies Being Undertaken

Appendix 1 Provisional Material Inventory

Appendix 2 Scoping Workshop Checklists

Scoping Report, Decommissioning EIA

Table of Contents – Example 2

1 Executive Summary

2 Description of Items to be decommissioned

2.1 Surface Facilities –Topsides and Jacket

2.2 Subsea Installations & Stabilisation

Features

2.3 Pipeline and Flowlines

2.4 Wells

2.5 Drill Cuttings

2.6 Inventory Estimates

3 Removal and Disposal Methods

3.1 Topsides

3.2 Jacket

3.3 Subsea Installations & Stabilisation

Features

3.4 Pipelines/Flowlines/Umbilicals

3.5 Wells

3.6 Drill Cuttings

3.7 Waste Streams

4 Environmental Impact Assessment

4.1 Environmental Sensitivities

4.2 Potential Environmental Impacts and their Management (Summary)

5 Interested Party Consultations

6 Programme Management

6.1 Project Management and Verification

6.2 Post-Decommissioning Debris Clearance & Verification

6.3 Schedule

6.4 Costs

6.5 Close Out

6.6 Post-Decommissioning Monitoring & Evaluation

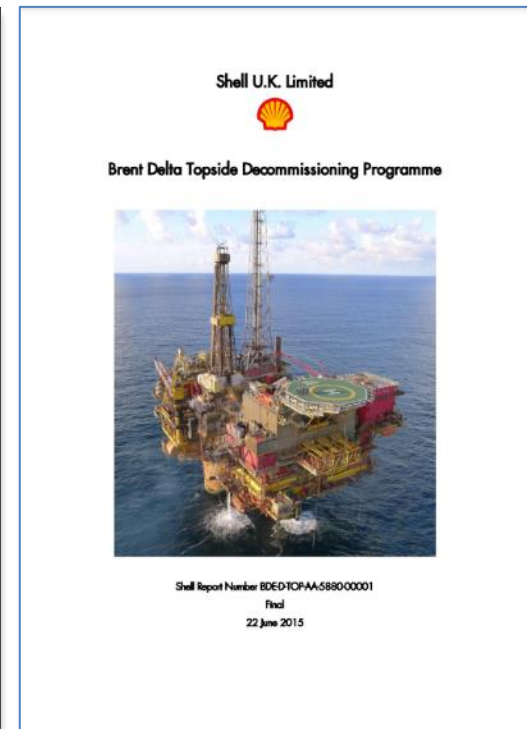
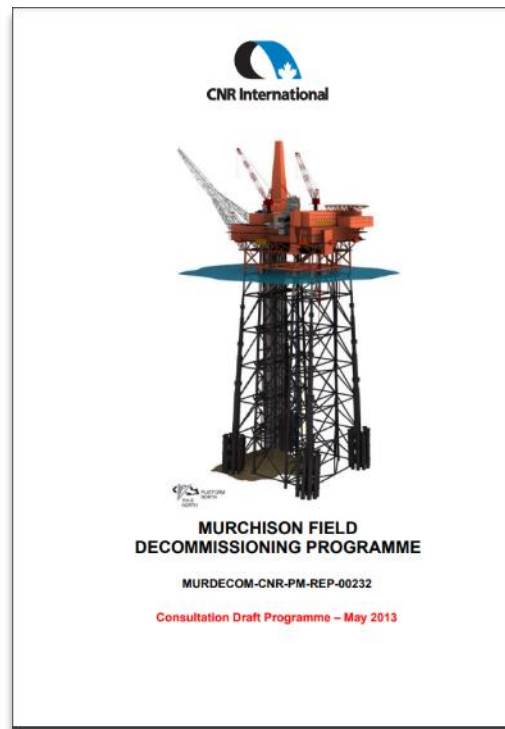
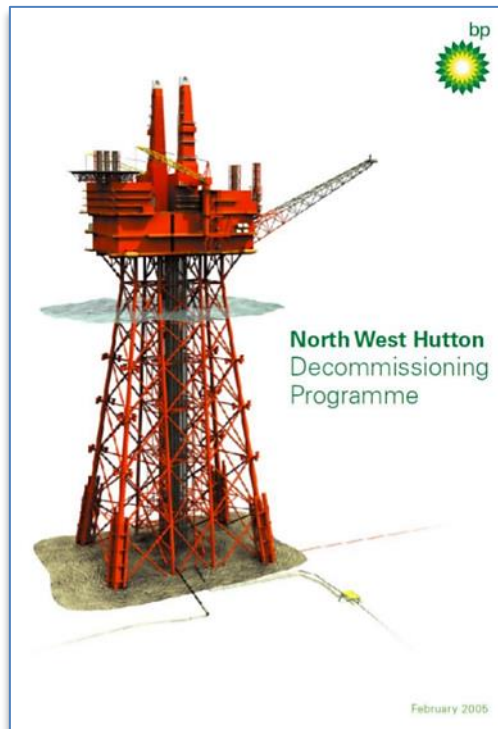
6.7 Management of Residual Liability

7 Supporting Documents

8 Partner Letter of Support

9 Expert Verification Statement

Decommissioning Programmes



Decommissioning Plan (or Programme)

Table of Contents

1. Introduction
2. Executive Summary
3. Background Information
4. Description of Items to be Decommissioned (Installations, Pipelines, Flow lines & Umbilicals, Materials on Seabed)
5. Inventory of Materials
6. Removal and Disposal Options (using MCBA, CA, BAT, and other industry tools to make best choice)
7. Selected Removal & Disposal Option
8. Wells
9. Drill Cuttings
10. Environmental Appraisal
11. Interested Party Consultations
12. Costs
13. Schedule
14. Project Management & Verification
15. Debris Clearance
16. Post-Decommissioning Monitoring & Maintenance
17. Supporting Studies
18. Structure of Combined Decommissioning Programmes

Key stages of the EIA process for decommissioning

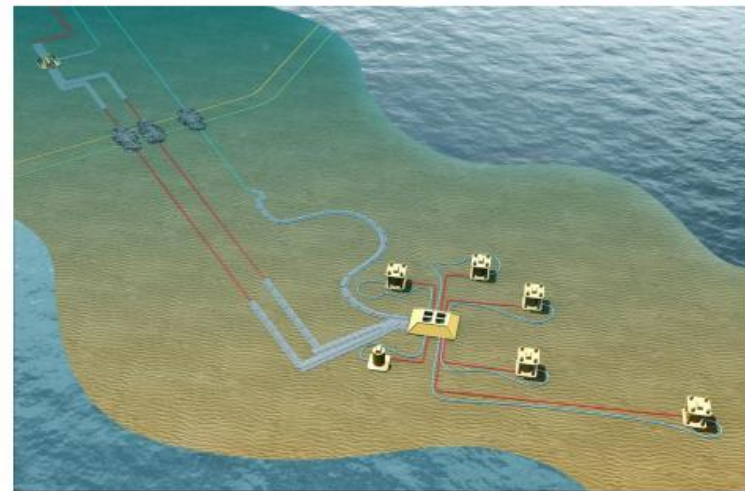
EIA Stage	Description
Scoping	Allows the study to establish the key issues, data requirements, and impacts to be addressed in the EIA and the framework or boundary of the study.
Consideration of alternatives	Demonstrates that other feasible approaches, including alternative project options, scales, processes, layouts, and operating conditions have been fully considered.
Description of project actions	Provides clarification of the purpose of the project and an understanding of its various characteristics, including stages of development, location and processes.
Description of environmental baseline	Establishes the current state of the environment on the basis of data from literature and field surveys and may involve discussions with the authorities and other stakeholders.
Identification of key impacts and prediction of significance	Seeks to identify the nature and magnitude of identified change in the environment as a result of project activities and assesses the relative significance of the predicted impacts.
Impact mitigation and monitoring	Outlines the measures that will be employed to avoid, reduce, remedy or compensate for any significant impacts. Mitigation measures will be developed into a project environmental management plan. Aspects of the project which may give rise to significant impact which cannot be mitigated to an acceptable or tolerable level of impact may need to be redesigned. This stage will feed back into project development activities.
Presentation of the Environmental Appraisal	Reporting of the EIA process through production of an EA that clearly outlines the above processes. The EA provides a means to communicate the environmental considerations and environmental management plans associated with the project to the public and stakeholders.
Monitoring	Project impacts will be monitored during the projects activities and following cessation of any operations to verify that impact predictions are consistent with the subsequent outcomes.

Decommissioning Environmental Appraisal

This Environmental Appraisal (EA) report, prepared by Shell U.K. Limited (Shell) on behalf of Section 29 Notice Holders, to **satisfy the regulatory requirement** for environmental assessment and to **inform the planning and execution** of the Decommissioning Programme's (DP) activities. **Submitted to the U.K. Department for Business, Energy and Industrial Strategy.**

The EA should be read in conjunction with the DPs to which it refers.

Kingfisher Field Decommissioning Final Environmental Appraisal – Part 1



Submitted to the U.K. Department for Business, Energy and Industrial Strategy

Shell Report Number KDP-PT-D-HE-0702-00001

22 June 2021

Sample Decommissioning Programme



Brent Field Decommissioning Programme

Technical/Supporting Documents

- [Comparative Assessment Process \(PDF, 758 kB\)](#)
- [Brent Topside TD \(PDF, 5 MB\)](#)
- [Brent Alpha Jacket TD \(PDF, 5 MB\)](#)
- [Brent Gravity Base Structure TD \(PDF, 13 MB\)](#)
- [Brent Cell Contents TD \(PDF, 13 MB\)](#)
- [Brent Drill Cuttings TD \(PDF, 9 MB\)](#)
- [Brent Pipelines TD \(PDF, 21 MB\)](#)
- [Stakeholder Report \(PDF, 488 kB\)](#)
- [IRG Report \(PDF, 6 MB\)](#)



Decommissioning Programme

- [Brent Delta Topside Decommissioning Programme \(PDF, 4 MB\)](#)
- [Brent Field Topsides Decommissioning Programme \(PDF, 3 MB\)](#)
- [Brent Field Pipelines Decommissioning Programme \(PDF, 5 MB\)](#)
- [Brent Alpha jacket Decommissioning Programme \(PDF, 3 MB\)](#)
- [Brent Field Decommissioning Programmes document \(PDF, 13 MB\)](#)
- [Environmental Statement \(PDF, 13 MB\)](#)
- [Environmental Statement Appendix 1 \(PDF, 5 MB\)](#)
- [Environmental Statement Appendices 2-6 \(PDF, 3 MB\)](#)

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Decommissioning: Final Steps

Materials Disposal

Platform materials can be refurbished and reused, scrapped and recycled or disposed of in specified landfills.

Site Clearance

For proper site clearance, operators need to follow a 4-step procedure:

- 1. Pre-decommissioning survey** maps the location and quantity of debris, pipelines, power cables, and natural marine.
- 2. Post-decommissioning survey** identifies debris left behind during the removal process and notes any environmental damage.
- 3. ROVs and divers** are deployed to further identify and remove any debris that could interfere with other uses of the area.
- 4. Test trawling (for marine areas)** verifies that the area is free of any potential obstructions.



After decommissioning, remediation

Process of removing pollutants & contaminants from land or water in last step of decommissioning

- Site remediation **often on land** deemed unlivable by local government bodies/ scientific groups – **brownfield sites** – and clean-up is performed so land can be developed/used safely.
- Can be performed because **sites are hazardous** (harmful pollutants and contaminants) to people nearby or the natural environment, incl. water table.
- **Toxic fumes** can travel, or leak into water table; chemicals can be flammable, explosive, or disease-causing.
- Typical sites: **wells, pipelines, storage facilities and processing plants.**



FINAL STEPS

- Site remediation, marking remains & safety zones
- **Close-out or Closure Report**



Key Principles of Sustainable Decommissioning Planning

7 - Financial assurance for decommissioning is an area that needs immediate clarification to ensure that costs of implementing activities are known in advance and funds are available to execute.



8 - Iterative process of learning and development for both operators, regulators, civil society and government through the establishment and review of a national decommissioning framework and regulatory regime will strengthen institutional capacity.



9 - Monitoring and enforcement of legislation to protect the social, economic and environmental wellbeing of the nation in a uniform way across the oil and gas sector can only be done when supported by a fair and uniform process, defined by the Government.



Decommissioning: Marking remains

UK Marking of Remains and Safety Zones

- Operators must ensure **min. 6 weeks advance notification** of change in status of decommissioned installations/ pipelines to UK Hydrographic Office (HO).
- Where agreed a concrete installation, 'footings' of a steel installation or pipeline remains in place, operator share position, depth and dimensions of remains immediately to HO for **inclusion on Admiralty charts**.
- HO Radio Navigation Warnings section contacted 24 hrs advance of offshore removal & tow of platforms, FPSOs, other surface structures.
- Drill cuttings accumulations only marked on Admiralty charts if considered to present danger to surface navigation, alter charted seabed depth significantly or present a hazard to vessels anchoring or trawling; recorded as a 'foul' or 'shoal depth'. Details of cuttings piles in this category reported to HO.

Decommissioning: Marking remains

UK Marking of Remains and Safety Zones

- Operator's responsibility to install and maintain aids to navigation for any remains of concrete installations that project above surface of sea.
- Nature of the aids to navigation to be employed should be discussed with OPRED, relevant lighthouse authorities and interested parties such as fishermen and other mariners.
- Operator's responsibility to ensure maintenance of any aids to navigation.
- Details of the action to be taken to advise mariners and mark any remains should be included in the decommissioning programme.
- HO should be kept informed upon the change, removal or addition of any aids to navigation on any offshore installations, for inclusion on Admiralty charts and list of lights and fog signals.

Decommissioning: Safety Zones

UK Safety Zones

- All offshore oil and gas installations projecting above the sea at any state of the tide are subject to a safety zone of a 500m radius around the installation.
- Zone remains in place during the execution of decommissioning and only ceases to exist when the structure no longer projects above the surface.
- Safety zones around a sub-sea installation also remain in place until decommissioning is complete, as reported in a close-out report.
- Work is ongoing to assess the administration and requirement for post decommissioning safety zones.



Close out Report: example from Shell UK

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Shell U.K. Limited



Brent Delta Topside Decommissioning Close-Out Report INTERIM



Frontispiece: Brent Delta Topside in 2013.

Shell Report Number: BDED TOPAA 6945 00001

6th Aug 2018

Decommissioning Port



Hunterston PARC

- 1.3 million sq metre facility
- 200,000 tonne capacity

Does Peelports Hunterston PARC Oil Rig Decommissioning Port require an Environmental Impact Assessment?

A **Schedule 1 EIA** should be instructed if the *project* falls within the Schedule 1 EIA project descriptions. During EIA pre-screening discussion Marine Scotland and Scottish Natural Heritage advised that the project is a Schedule 1 EIA development and an Environmental Impact Assessment should have been automatically instructed for the project.

MSc Decommissioning

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Decommissioning, MSc

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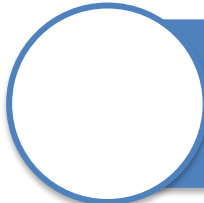
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Over the next decade, around 100 platforms and 7,500 kilometres of pipeline on the UK Continental Shelf are forecast for decommissioning, with costs estimated to be £59 billion to 2050. The industry aims to reduce this figure by 35%, a target set by the Oil & Gas Authority.

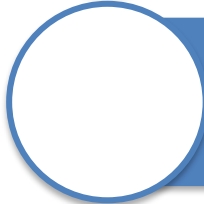
The MSc Decommissioning is the world's first and only Masters degree in decommissioning oil rigs, platforms and offshore structures. This programme focuses on the key aspects associated with decommissioning such as engineering, project management, business, law and health, and safety and environment and is specially designed for students from a broad range of backgrounds.

MSc Decommissioning is also available to study part-time [online](#) .

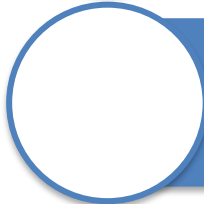
Key messages



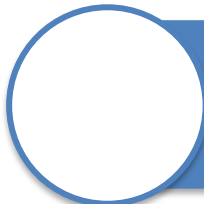
Decommissioning needs to be considered well before the infrastructure needs to be decommissioned



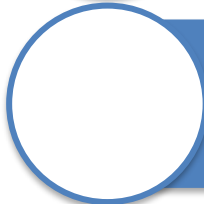
Best practice: decommissioning requires a standalone ESIA/EIA



It varies between countries, but often a Decommissioning Plan is supported by an ESIA



After decommissioning, site remediation is usually the next step, to ensure sites are not hazardous to people nearby or the natural environment, including the water table



Marking of Remains and Safety Zones can be a complex procedure, especially in the deep sea
