

***Evolution of OEUK Well Decommissioning Guidelines:
Overview and updates to the Decommissioning & CCUS guidelines***

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Agenda

Evolution of OEUK Well Decommissioning Guidelines

Background to Guidelines

Part 1: Standard Well Decommissioning

Well Decommissioning Guidelines

Use of Barrier Materials in Well
Decommissioning Guidelines

Part 2: Carbon Capture and Storage

Insight to UK CCUS Landscape

Well Decommissioning for CO₂ Storage
Guidelines

OEUK Wells Forum Guidelines

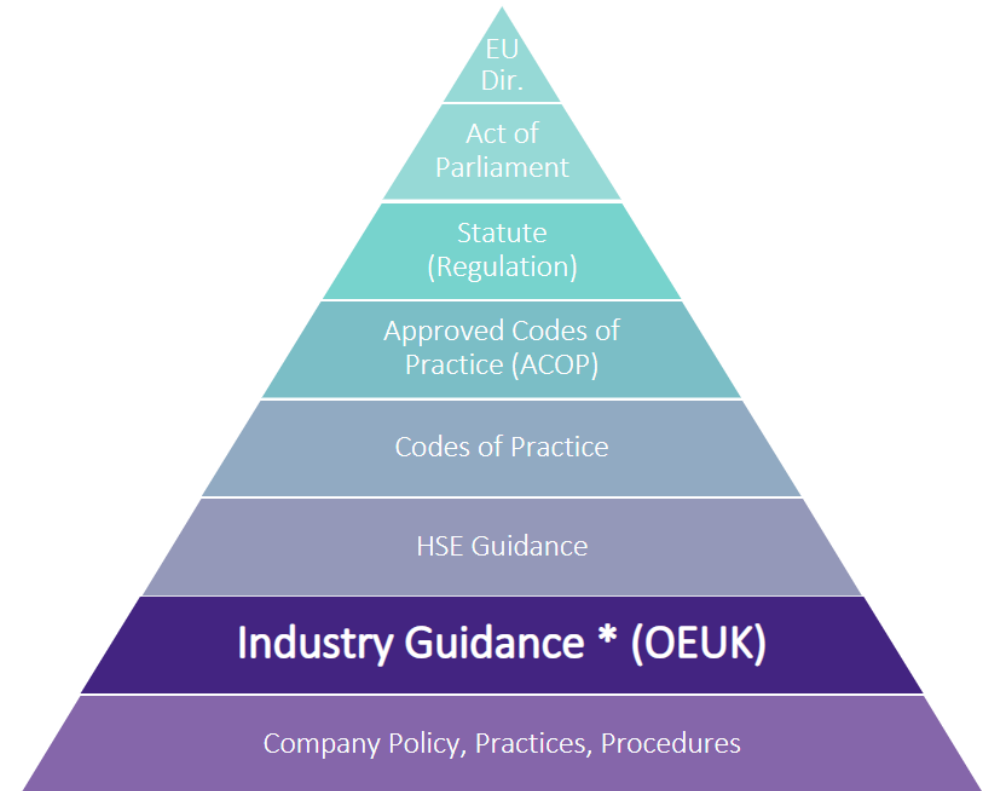
A track record for sharing good industry practice



OSPRAAG
Oil Spill Prevention and Response Advisory Group

OSPRAAG Technical Review Group Interim Report Oct 2010;

“The Wells Forum will form a project team with at least one dedicated resource to compile a series of Well Life Cycle Integrity Guidelines similar to the Guidelines for the Suspension and Abandonment of Wells”.



Current Regulations & Obligations

The Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996

Well Lifecycle

13.—(1) The well-operator shall ensure that a well is so designed, modified, commissioned, constructed, equipped, operated, maintained, suspended and abandoned that—

- (a) **so far as is reasonably practicable, there can be no unplanned escape of fluids from the well;** and
- (b) risks to the health and safety of persons from it or anything in it, or in strata to which it is connected, are as low as is reasonably practicable.

Well Decommissioning

15. The well-operator shall ensure that a well is so designed and constructed that, **so far as is reasonably practicable—**

- (a) it can be suspended or abandoned in a safe manner; and
- (b) **after its suspension or abandonment there can be no unplanned escape of fluids** from it or from the reservoir to which it led.

Well Materials

16. The well-operator shall ensure that every part of a well is composed of material which is suitable for achieving the purposes described in regulation 13(1).

Current Regulations & Obligations

CCUS

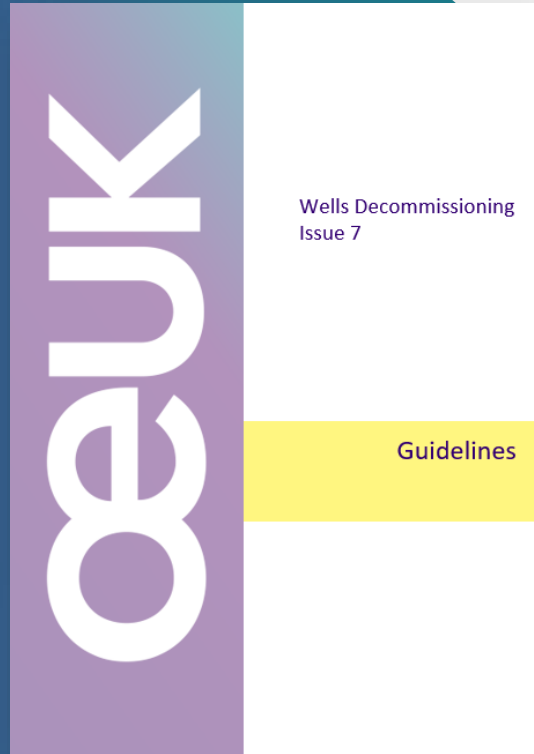
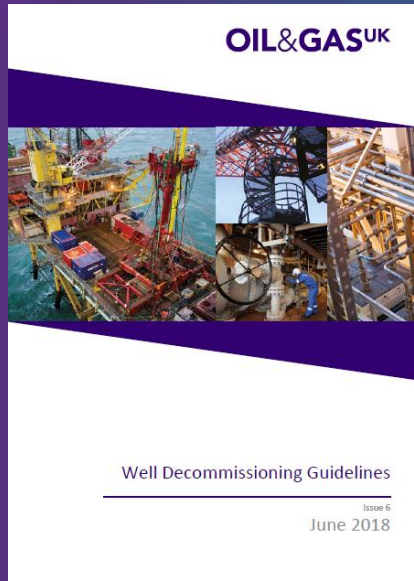
CO₂ Storage License Act 2010

Grant of storage permits 7 (c), provides that:

...Under the proposed conditions of use of the storage site, there is no significant risk of leakage or of harm to the environment or human health.....

NSTA Strategy Obligation 15:

...., relevant persons including the owners of such infrastructure, must ensure, and be able to demonstrate, that all viable options for that infrastructure's continued use including for reuse or re-purposing for carbon capture and storage projects have been suitably explored.



Workgroup Members



Suite of Well Decommissioning Guidelines:

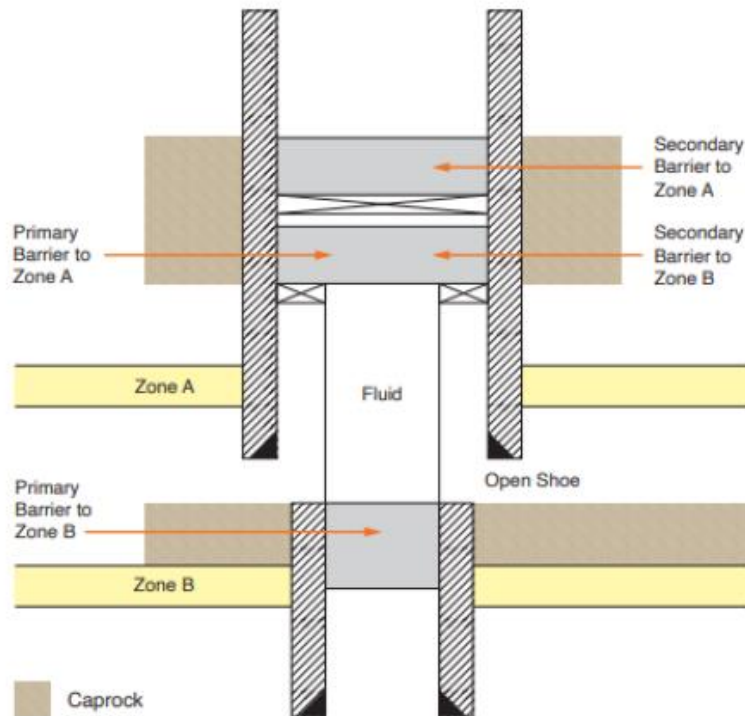
Well Decommissioning Guideline Issue 7

OEUK Well Decommissioning Guidelines Issue 7

“What has and hasn’t changed?”

Objective

To provide guidelines for the identification and isolation of formations with flow potential when a well is decommissioned or sidetracked.

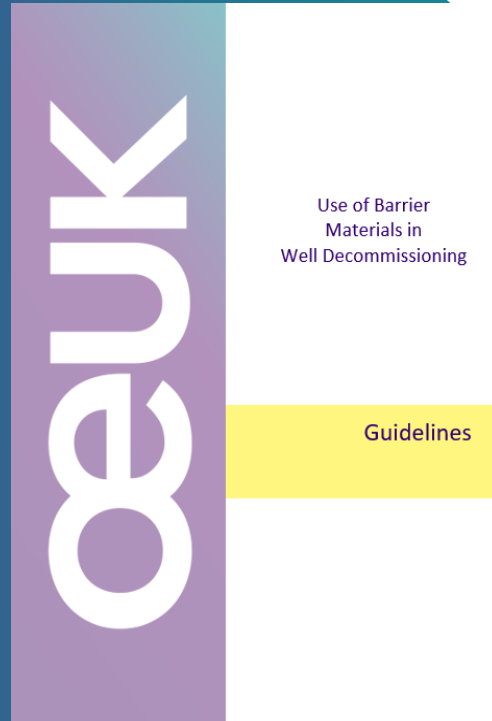
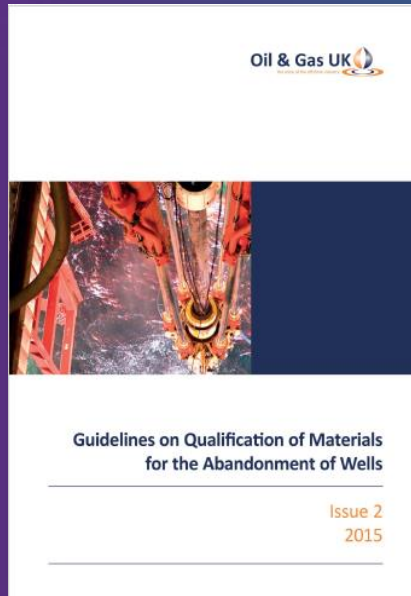


What hasn't changed from Issue 6

- The fundamental principals – fully lateral barrier, number and length of barriers, ALARP approach
- CCS considerations captured as separate guideline

What has changed:

- Expanded guidance on Evaluation of Zones with Flow Potential, including assessment flowchart and emphasis on field-based design
- Distinct guidance for non-cement permanent barriers
- Inclusion of PWC and Section Milling for annulus remediation
- Integration of *Guidelines for Well Decommissioning Cost Estimation Guideline (2015)*



Workgroup Members



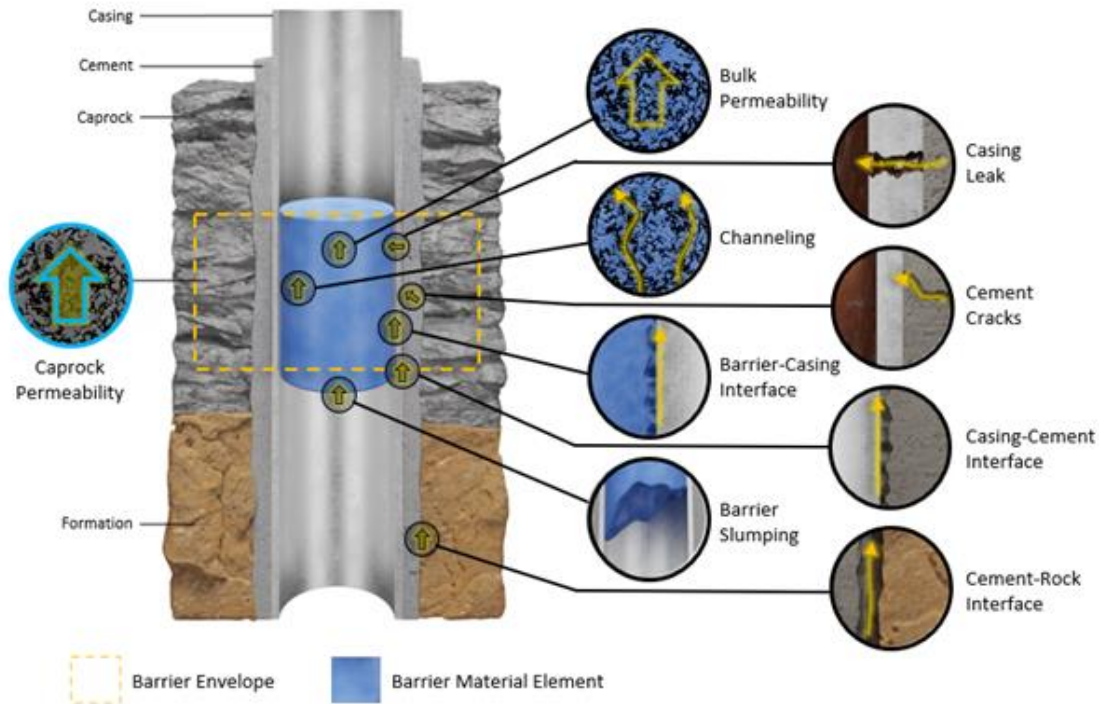
Suite of Well Decommissioning Guidelines:
Use of Barrier Materials in Well Decommissioning Issue 3

Use of Barrier Materials in Well Decommissioning Issue 3

“What has and hasn’t changed?”

Objective

To provide guidance and a methodology for selecting suitable barrier materials that can be used in a well decommissioning barrier envelope.



What hasn't changed from Issue 2:

- **Functional Requirements**
- **Material Characteristics**
- **Functional Failure Modes**

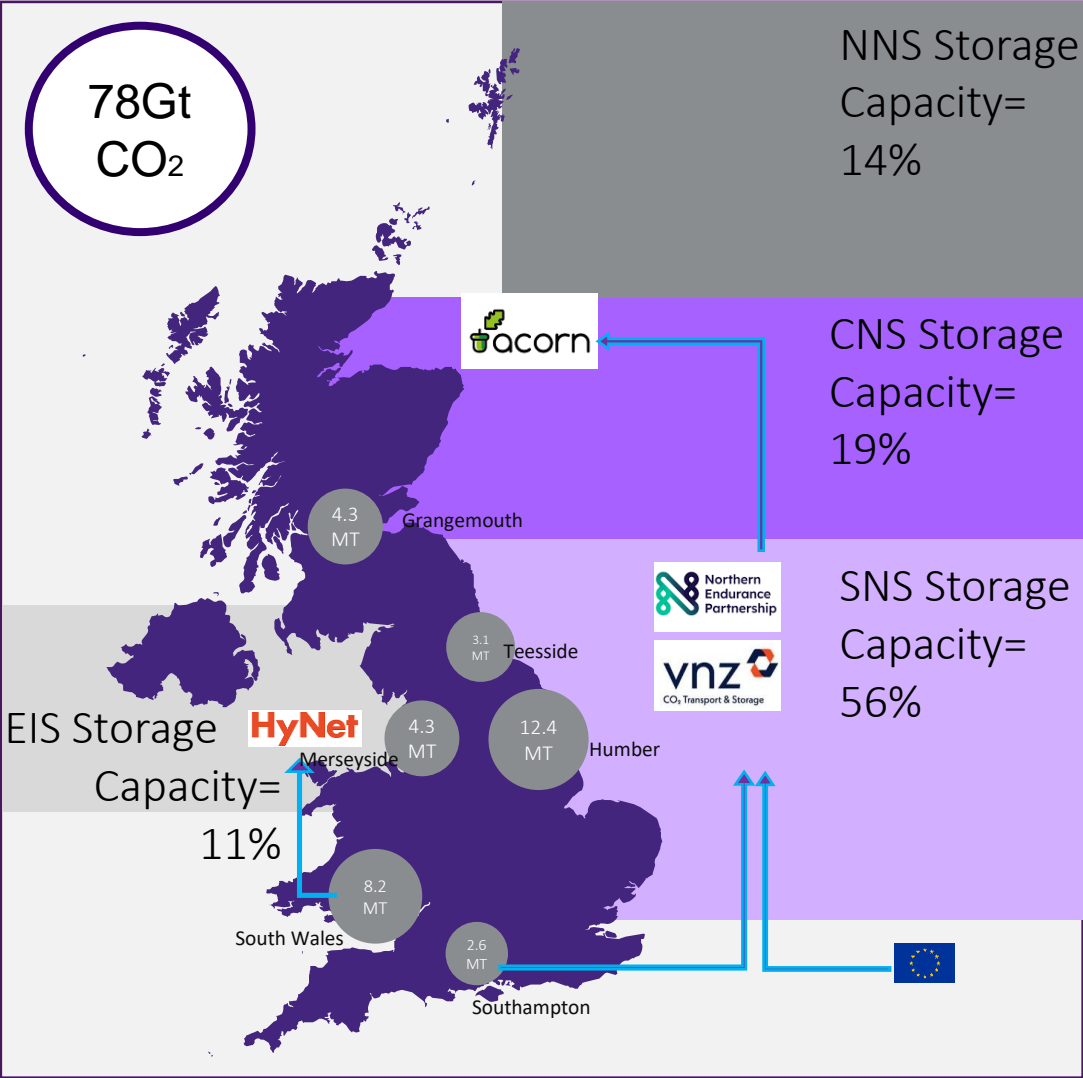
What has changed:

- **Material Qualification Workplan has been replaced Material Selection Methodology**
- **Evaluation of a Permanent Barrier (Material characterisation and downhole considerations)**
- **Verification of an Installed Barrier**
- **Removal of Material types and education elements**

Insight into UK CCUS

What does the future look like for the North Sea and Well Decommissioning?

UK to invest £20bn into CCUS



CO2 Storage Licensing Round

- 20 License Awards
- 12 Companies

100 Stores are required by 2050 for the UK to meet its net zero targets.



Workgroup Members



Suite of Well Decommissioning Guidelines:

Well Decommissioning for CO₂ Storage Guideline Issue 1

Well Decommissioning for CO₂ Storage Guidelines Scope

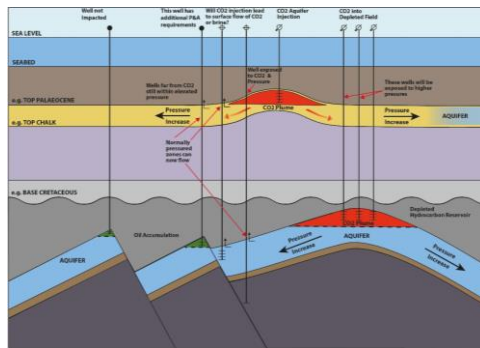
Oil and Gas Well Operator

These guidelines apply to all exploration, appraisal and development wells that are being decommissioned or sidetracked in a formation into which CO₂ injection for permanent sequestration is planned.

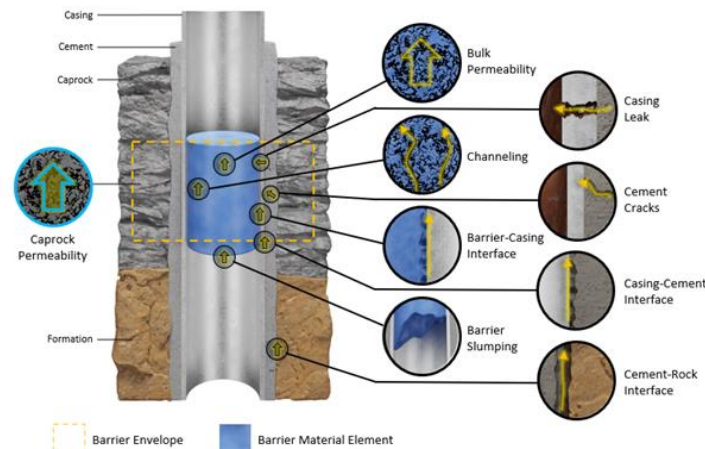
CO₂ Storage Developer

Wellbores decommissioned prior to the publication of these guidelines are considered as part of the verification process required to demonstrate the integrity of legacy well barriers for an intended CO₂ store.

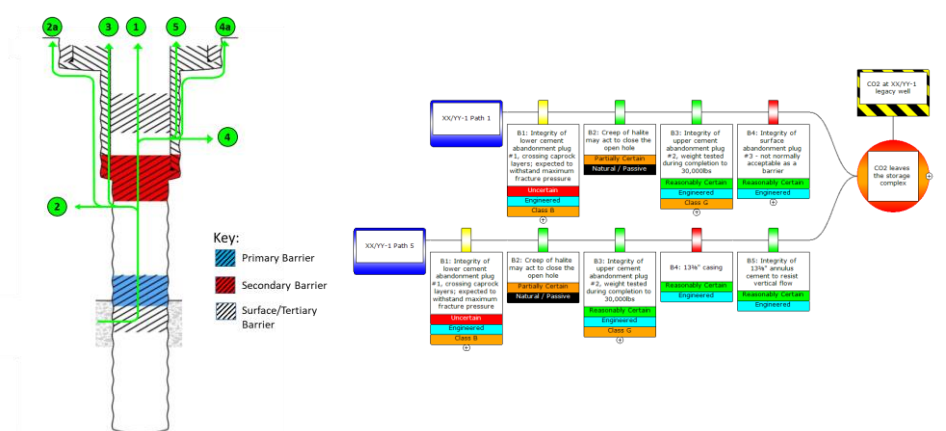
Future CO₂ Storage Conditions



Permanent Barriers for CO₂ Storage

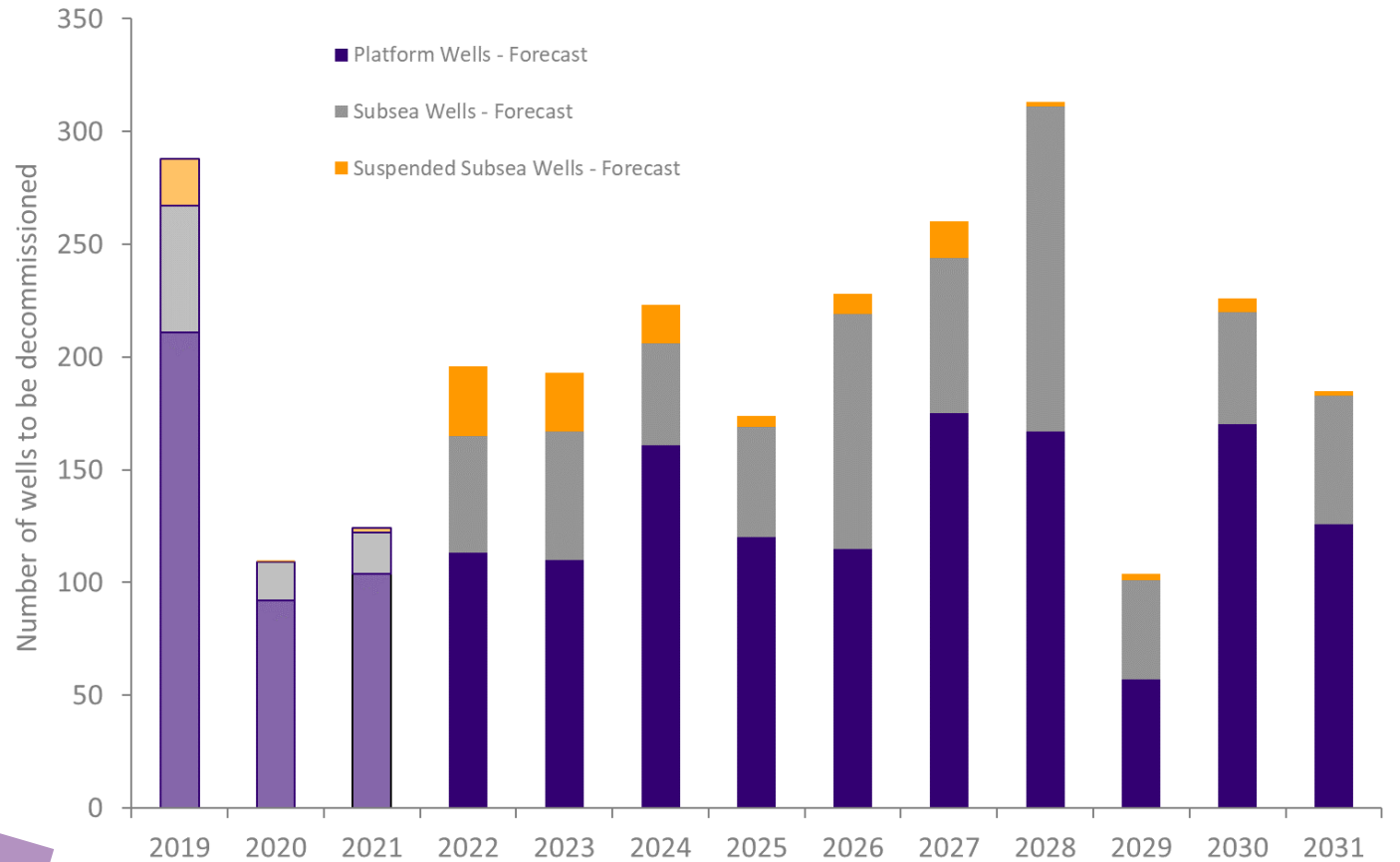
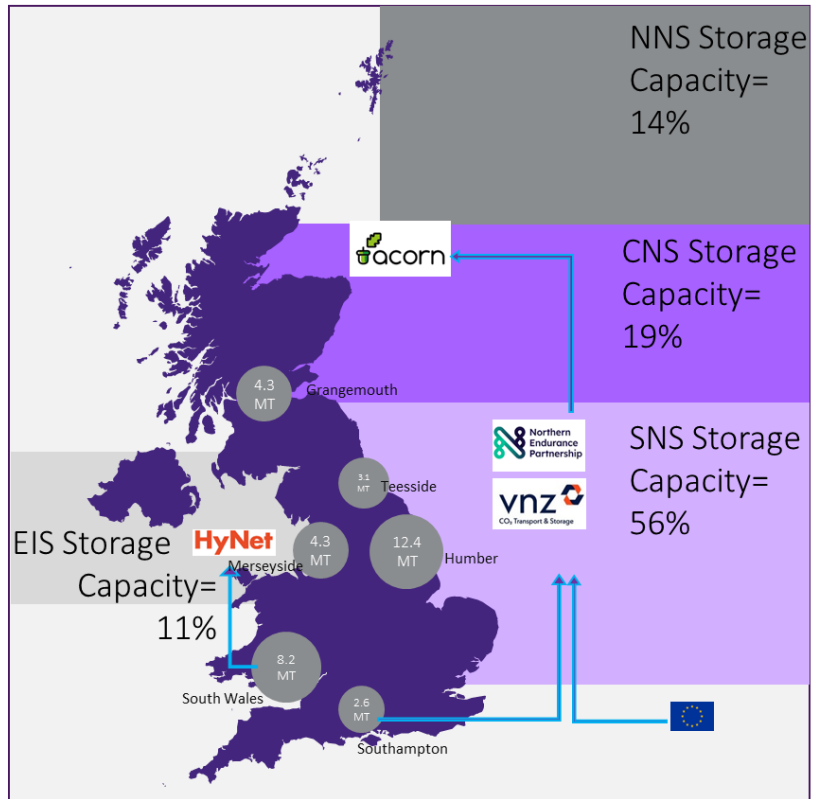


Verification of Permanent Barriers and Legacy Well Screening



The Big Picture...

Decade of Well Decommissioning – Decade of CCUS Development



Source: NSTA & OEUK

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