

PROJECT BRITANNIA

Ministerial Briefing – Repurposing North Sea Platforms for Offshore Hydrogen Production

One-Minute Summary

Repurpose end-of-life North Sea oil and gas platforms into offshore hydrogen production hubs powered by UK-designed small modular reactors (SMRs), delivering clean energy, preserving thousands of skilled jobs, and reducing taxpayer decommissioning costs.

Approximately 1,500 offshore installations exist across the North Sea, with around 470 end-of-life platforms in UK waters facing decommissioning. NSTA estimates total decommissioning costs at £44–82 billion, with £24 billion in taxpayer exposure.

Convert suitable platforms using a distributed 1+4 layout (one reactor platform separated 2–5 km from four hydrogen production platforms). Each cluster could produce 40,000–50,000 tonnes of hydrogen annually while implementing full circular economy principles (oxygen sales, brine valorisation, zero-to-minimum routine discharge).

Conceived by David Waugh, a retired gas engineer who witnessed the 1980s coal mine closures and is determined not to see Aberdeen, Teesside, and Humberside suffer the same fate. This is a community-driven solution grounded in decades of offshore operational experience.

Decisions Required / Ministerial Asks

| Decision/Action | Lead Department(s) | Timeline |
|---|-----------------------------------|-------------------|
| Establish regulatory pathway for offshore nuclear-hydrogen production | DESNZ, ONR, HSE | Q3 2025 – Q2 2026 |
| Include Project Britannia in UK Hydrogen Strategy review | DESNZ | Q4 2025 |
| Commission feasibility study on platform repurposing (first wave: 5 platforms) | DESNZ, Offshore Energies UK, NSTA | 2026 |
| Develop Skills Passport framework for offshore energy transition | DfE, DESNZ, regional authorities | 2026–2027 |
| Coordinate with Rolls-Royce on SMR deployment timeline and offshore suitability | DESNZ, BEIS | 2025–2026 |

What Is Project Britannia?

Project Britannia proposes to repurpose end-of-life North Sea oil and gas production platforms—currently slated for expensive decommissioning—into **offshore hydrogen production hubs** powered by UK-designed Rolls-Royce small modular reactors (SMRs).

Core Architecture

- **1+4 Distributed Layout:** One reactor platform provides baseload electricity to four hydrogen production platforms, separated by 2–5 km for safety and operational resilience.
- **Pink Hydrogen Production:** Nuclear-powered electrolysis of seawater produces hydrogen (5–15 g CO₂-eq/kWh lifecycle emissions, comparable to wind/solar).
- **Circular Economy Integration:** Oxygen sold to industrial users; brine processed into de-icing agents, chemical feedstocks, or used in sustainable aquaculture; waste heat utilised; lithium extraction possible as technology matures.
- **Export Infrastructure:** Leverages existing offshore pipelines and coastal terminals (Teesside, Humberside, Aberdeen).

Order-of-Magnitude Scale

Note on Platform Counts: Public terminology varies. "Platforms" typically refers to large production installations. The North Sea contains roughly **600 offshore oil and gas production platforms** across the entire basin, with approximately **470 in the UK sector**. The total count of **~1,500 installations** includes subsea structures, manifolds, and smaller facilities. Not all platforms are suitable for repurposing; suitability depends on structural integrity, location, and logistics.

| Parameter | Estimate |
|---|----------------------------------|
| Total North Sea platforms (whole basin) | ~600 |
| UK sector platforms (approximate) | ~470 |
| Total installations (UK sector, incl. subsea) | ~1,500 |
| Estimated decommissioning cost (NSTA) | £44–82 billion |
| UK taxpayer exposure (tax relief) | ~£24 billion |
| Hydrogen per converted platform (annual) | 40,000–50,000 tonnes |
| Lifecycle emissions (pink hydrogen) | 5–15 g CO ₂ -eq/kWh |
| SMR capacity per reactor platform | 300–350 MWe (Rolls-Royce design) |

Target Regions & Industrial Clusters

- **Teesside:** Existing hydrogen infrastructure, industrial demand, Net Zero Teesside project alignment.
- **Humberside:** Major industrial cluster, decarbonisation commitments, offshore wind integration potential.
- **Aberdeen:** Offshore supply chain hub, skilled workforce, North Sea operational expertise.

These regions face significant job losses as oil and gas production declines. Project Britannia offers a **just transition** pathway, preserving livelihoods and leveraging existing skills rather than repeating the social devastation of the 1980s coal mine closures.

Safety & Regulatory Posture

Safety by Design

- **Passive Safety SMRs:** Rolls-Royce designs incorporate inherent safety features requiring no active intervention for safe shutdown.
- **Offshore Isolation:** Natural separation from population centres; established maritime safety protocols.
- **Distributed Layout:** Physical separation (2–5 km) between reactor and hydrogen production platforms minimises cascading risks.
- **Proven Naval Heritage:** Builds on thousands of reactor-years of Royal Navy submarine operations with strong safety records.

Key Risks & De-Risk Plan

Primary Risks:

- **Regulatory Uncertainty:** No existing framework for offshore nuclear-hydrogen integration.
- **Public Acceptance:** Offshore nuclear may face public and political opposition.
- **Structural Integrity:** Not all platforms suitable; detailed engineering assessments required.
- **Timeline Optimism:** SMR deployment and regulatory approval timelines are uncertain.

De-Risk Actions:

- Commission independent safety and feasibility studies (Phase 1: 2026).
- Engage ONR, HSE, and maritime regulators early to co-develop regulatory framework.
- Phased approach: demonstrate first platform (2030–2032) before fleet-scale deployment.
- Transparent public engagement emphasising safety, jobs, and climate benefits.

- Structural surveys to identify most suitable platforms for conversion.

Delivery Roadmap (Conservative Timeline)

| Phase | Timeline | Key Activities |
|---------------------------------------|-----------|---|
| Phase 1: Regulatory & Feasibility | 2025–2027 | Establish regulatory pathway; feasibility studies; platform structural assessments; stakeholder engagement; Skills Passport development |
| Phase 2: First Demonstration Platform | 2028–2032 | Detailed engineering; SMR installation; platform conversion; commissioning; hydrogen production trials |
| Phase 3: Fleet-Scale Deployment | 2032+ | Roll-out across suitable platforms; pipeline expansion; industrial hydrogen offtake agreements; workforce scaling |

Why This Matters: The Human Story

Project Britannia was not conceived in a boardroom or by consultants. It emerged from the lived experience of David Waugh, a retired gas engineer who watched the 1980s coal mine closures devastate communities across Britain.

"I watched my friends lose everything when the pits closed," Waugh says. "I won't stand by and watch the same thing happen to offshore workers."

The proposal recognises that the UK's offshore workforce—riggers, engineers, technicians—possesses skills that are directly transferable to maintaining complex infrastructure in harsh offshore environments. Rather than dismantling their livelihoods along with the platforms, Project Britannia offers a **just transition**: preserving jobs, cutting taxpayer costs, and delivering clean energy.

This is not about borrowing from nature—it's about working with it. The hydrogen cycle is natural. We're simply accelerating it to stop burning carbon and protect the planet for future generations.

Recommendations

1. **Commission an independent feasibility study** (Q4 2025 – Q2 2026) to assess technical viability, costs, and regulatory pathways.
2. **Establish a cross-departmental working group** (DESNZ, ONR, HSE, NSTA, Offshore Energies UK) to develop the regulatory framework.
3. **Include Project Britannia in the next UK Hydrogen Strategy review** as a potential domestic production pathway.
4. **Engage Rolls-Royce and offshore operators** to align SMR deployment timelines with platform repurposing opportunities.

5. **Develop a Skills Passport framework** to recognise offshore workers' experience and facilitate upskilling for the energy transition.

Disclaimer: *This briefing is based on publicly available data, independent research, and technical estimates. While every effort has been made to ensure accuracy, figures should be regarded as indicative and subject to detailed engineering, regulatory review, and stakeholder consultation. The proposal originates from David Waugh, a retired offshore professional, and reflects a community-driven perspective on the energy transition.*