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# Reducing the cost of decom

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## Decommissioning the North Sea in a \$78 World

Nils Cohrs  
Head of Decommissioning

June 2018

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# Overview



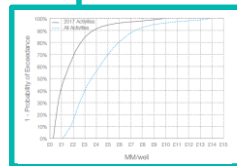
>35% cost reduction target



First decom cost estimate report



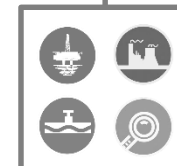
Updated cost estimate report and progress



Benchmarking cost reduction performance



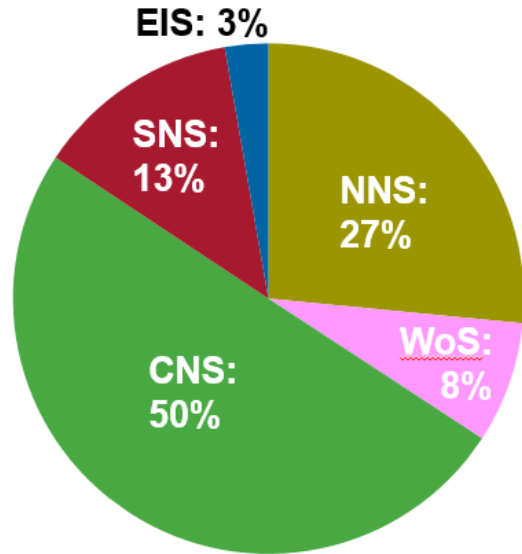
Shared learning



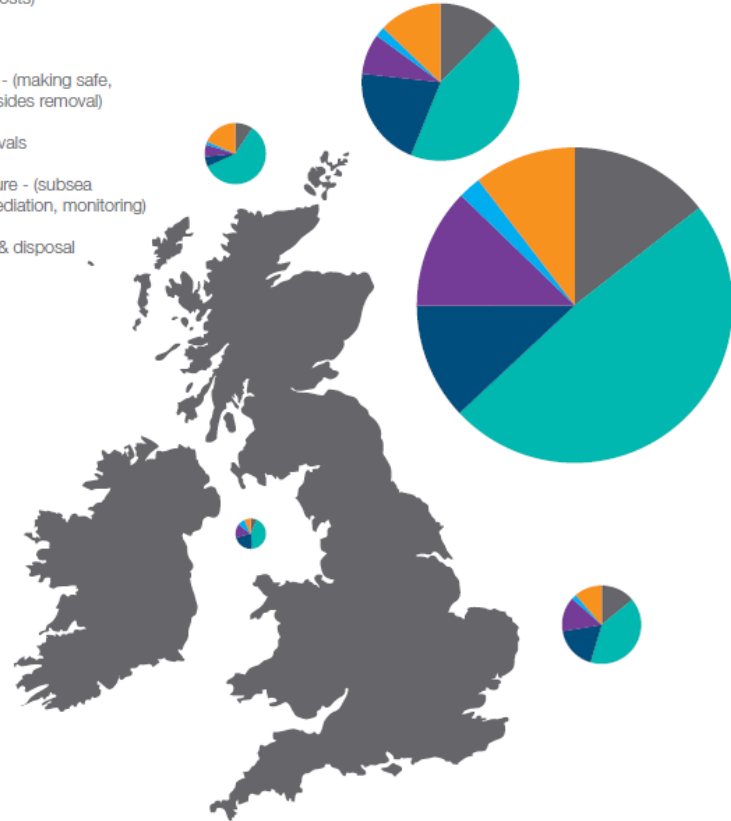
All current and future wells, platforms, infrastructure, pipelines and terminals

Strong progress towards cost reduction target

# Cost distribution: geographic

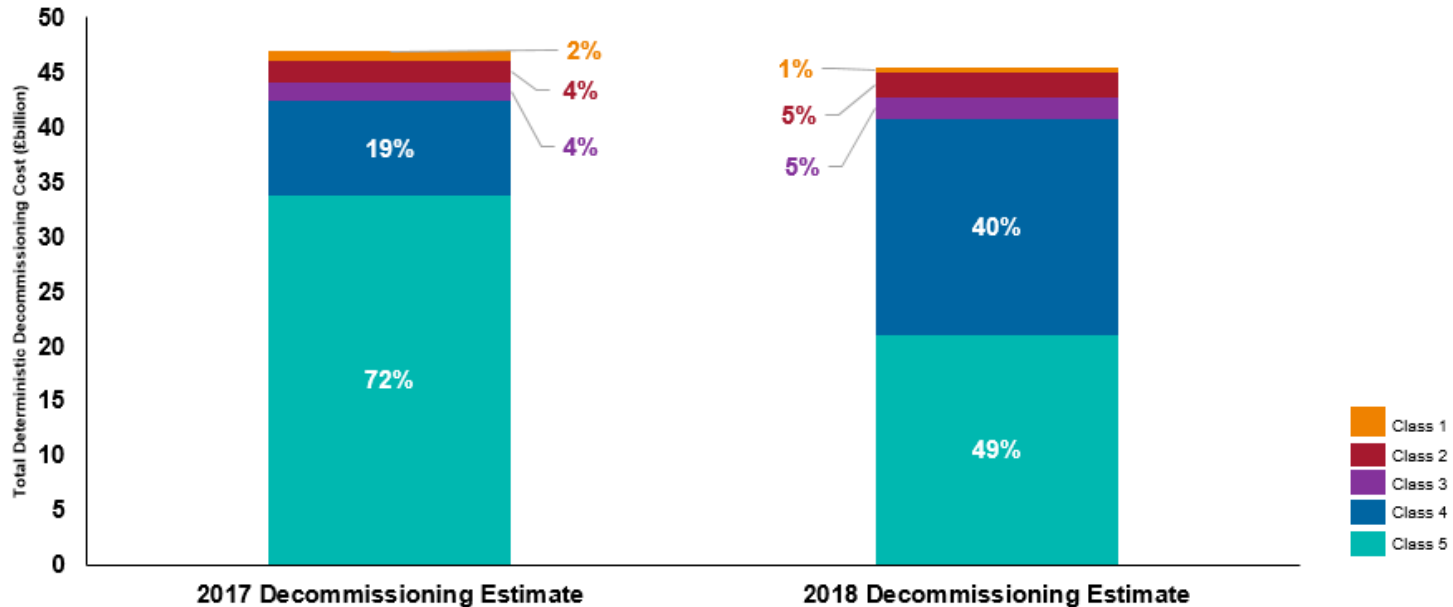


- Owners costs (Project management, facilities runnings costs)
- Well abandonment
- Topsides removals - (making safe, topsides prep, topsides removal)
- Substructure removals
- Subsea infrastructure - (subsea removals, site remediation, monitoring)
- Onshore recycling & disposal



# Estimate quality

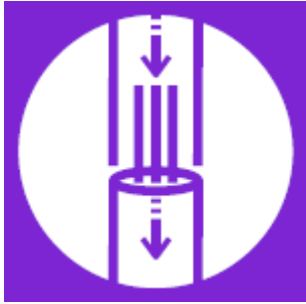
Deterministic decommissioning calculation: inputs by estimate quality



- Need to better define/engineer costs
- Still learning how cost uncertainty reduces with better project definition
- May be very different to other projects

# Benchmarking

## Well abandonment

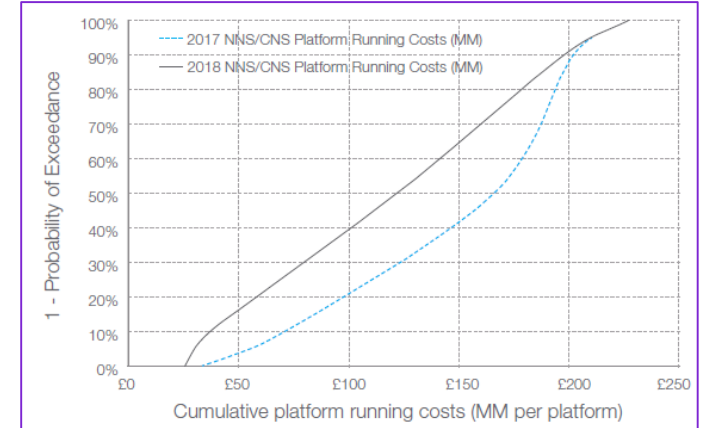
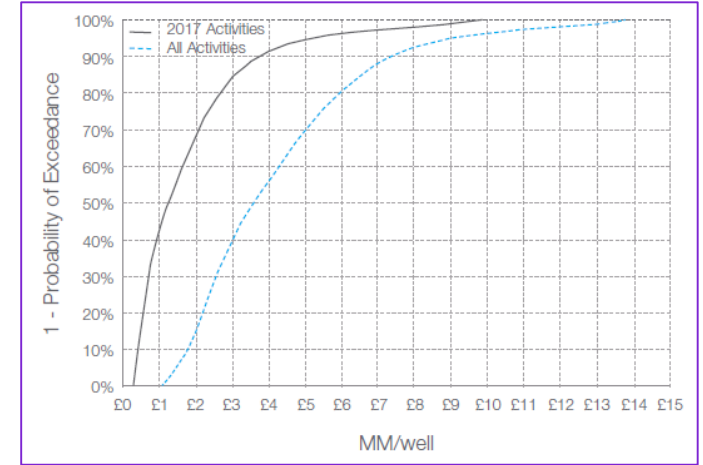


- Significant cost reductions
- Batch P&A methods, de-risking learnings, better milling performance, using risk-based methods when defining scope
- Wide variations in operator performance
- Wide geographic variations

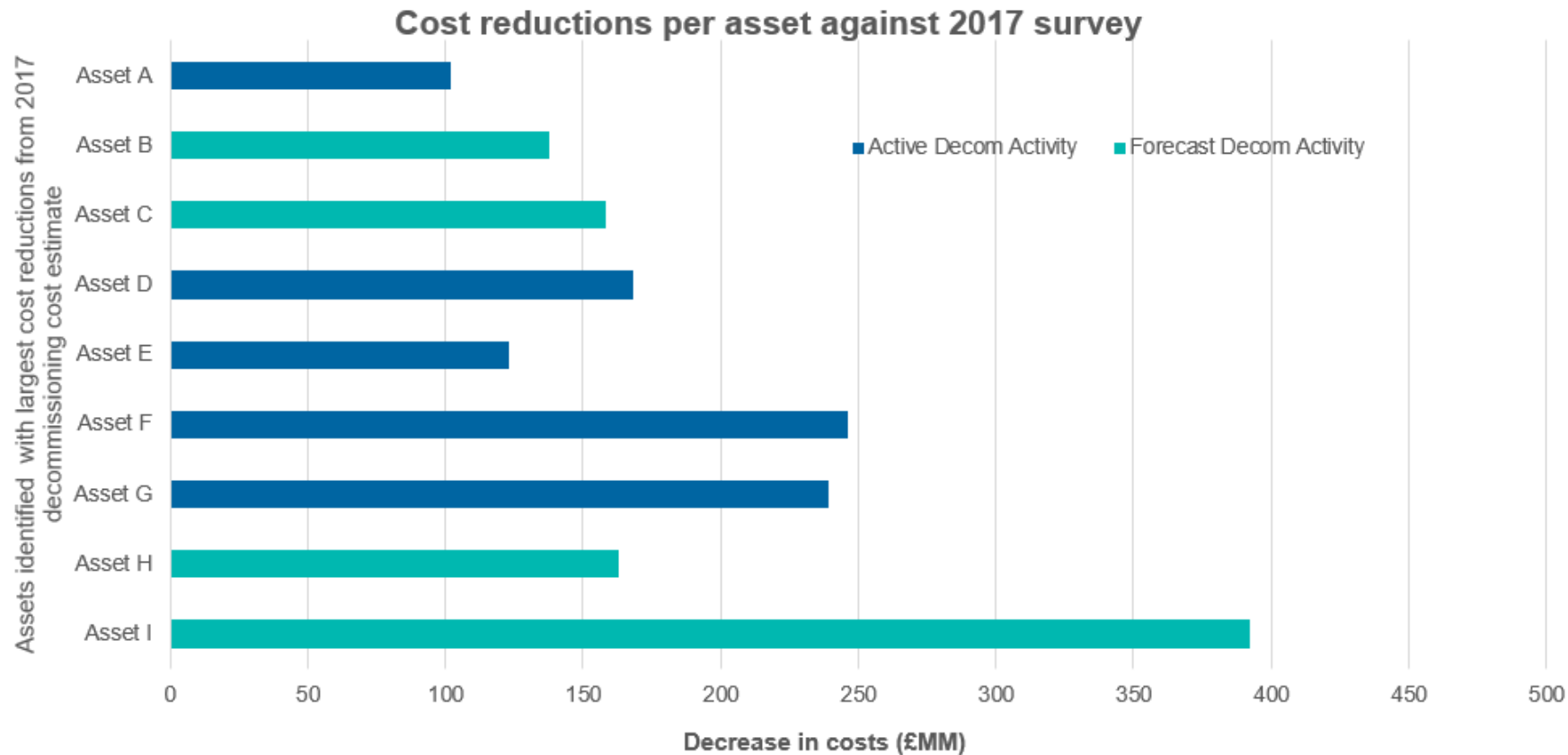
## Platform running costs



- NNS costs reducing substantially
- Better optimisation of late-life and Warm/Cold phases
- Rapid running cost reductions after CoP
- Scheduling well P&A and Make Safe activities to minimise inspection/ maintenance requirements



# Impact of a small selection



Nearly £2bn reduction from the top nine assets

# Shared learning



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## 1 | Operating / Late-life Phase



### Project management Planning Scope

Determine the strategic fit vs life-cycle of asset(s) in a company's portfolio. Are there more natural owners/operators at the late-life stage? Divest sufficiently early for the asset(s) to still be attractive.

Stewardship Discussions with the OGA, utilising the 'Decom Dashboard', will allow cost reduction opportunities to be identified and a structured capture plan agreed.

Consider submitting a Decommissioning Programme ahead of Creation of Production (CoP), to enable opportunistic decommissioning activities if/when cost-effective.

e.g. down-cycle costs may be lower than at other times

early regulator engagement will clarify requirements of cost-effective yet compliant decommissioning

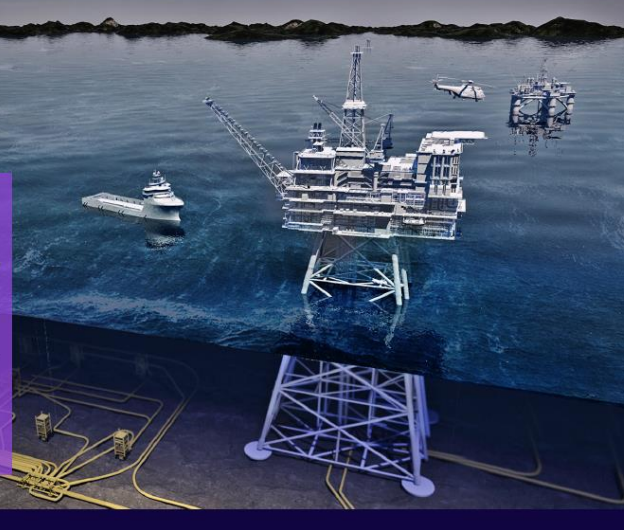
Explore sharing costs of environmental surveys/ datasets with nearby Operators incl. utilising existing, relevant reports

At late-life, align organisation & contracting strategy to maximise value through optimising both life-cycle costs and production

Submitting a topsides Decommissioning Programme separately to that for the substructure may give valuable timing flexibility for topsides removal, esp.

if issues associated with the substructure decommissioning (e.g. with OSPAR derogation cases) may result in delays to the Decom

Ensure organisational structure is incentivised/qualified to act on high value decom opportunities during late-life



### CNRI Ninian North Decom



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#### CNRI milestones achievement announcement

- Completed 24 well P&A campaign on 28 February 2018, 3 months ahead of schedule
- Achievement based on:
  - One-team approach, closely working together with the supply chain and selection of the right vendors and tools
  - Optimal banner subsection through in-depth substructure analysis
  - Innovative approach for Xmas tree removal
  - Continuously resetting the technical limits throughout the campaign



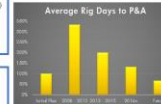
### Shell Brent Field Wells P&A success story



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#### Significant reduction in time and costs

- Brent Delta 40 well P&A campaign Q4 2008-completed Q2 2014. Completed 37 well P&A campaign on Brent Bravo 12 months ahead of schedule. Over 50% of Brent Alpha wells P&A by Q4 2017 - anticipated to complete 24 months ahead of original 2015 schedule. Brent Charlie - 4<sup>th</sup> well abandonment completed in 8.4 days.
- Achievement based on:
  - Competitive scoping - full transparency of costs and value, design and technical specification aimed at ensuring acceptable performance
  - Affordable Technology and Innovation required to overcome challenge of complexity, age, and nature of the Brent Field wells (154 in total)
  - Optimal banner selection through in-depth substructure analysis
  - Efficient execution - well monitoring pre and post P&A, integrated planning, upfront well P&A
  - Collaboration with other operators via P&A Forum
  - Supply chain transformation - collaboration with supply chain partners, integrated 2 contracts model -drilling contractor and Integrated Service Provider -multi-tasking and reducing POB, team building, accurate demand forecast, continuous improvement, recognition.



#### OGA Decom Team comments

This performance review supports messages from industry that delivering the cost reduction target is achievable through:

- Collaboration with other Operators and implemented lessons learned
- Challenging the norm and current work practices
- Working together closely with the supply chain and adapting transformational models
- Adapting available technology in an innovative way
- Integrated planning

#### Key facts

- Brent Bravo campaign (Q1 2011-Q1 2017) Average rig days = 45; best 16 days;
- Brent Alpha campaign (Q4 2016 - Ongoing) Average rig days 23; best 8 days
- Brent P&A campaign achieved a year on year cost reduction relative to 2014 of over 50% by 2017.



### Collaborative Well P&A Success Story



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#### Collaborative well P&A drives down decommissioning costs

- The KX well (operated by ConocoPhillips) is located within a subsea manifold operated by Spirit Energy. The manifold also houses their Alison B3 well, which was planned to be plugged and abandoned (P&A).
  - Opportunities were recognised and agreement was reached for Spirit Energy to also plug and abandon the KX well.
  - Both wells contained synergies having originally been drilled back in 1995 by the same jack-up drilling rig so the completions, casing design, wellbore and trees were similar. Spirit Energy was also the owner of bespoke tooling interface equipment required for these wells.
  - Spirit Energy is recognised for best practice within the industry for having a strong track record on Southern North Sea subsea well plugging and abandonments. They have previously performed four abandonments that required the same bespoke subsea tooling, a significant feature of the proposed work-scope, allowing learnings to be leveraged across wells.
  - Using one jack-up rig to plug and abandon wells on the manifold meant that significant savings were realised on the rig move, interface and Dive Support Vessel (DSV) costs.
  - Efficiencies were also realised through batch operations across the wells.
- Achievement based on:
- Collaboration between operators and owners to minimise costs through knowledge sharing across the activities.
  - Collaborative commercial behaviours to establish the framework to enable shared operators.
  - Efficient execution.



#### OGA Decom Team comments

Both collaboration between operators and campaign execution at a large scale are identified as major opportunities in the industry to achieve significant decommissioning cost reductions and this is an excellent example that is indeed possible.

#### Key facts

- Batched operations between the two wells generated increased efficiency enabling full P&A to be completed 40% ahead of APPE duration estimates.

New microsite to share lessons and great individual case studies



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# Thank you

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