



WorleyParsons

resources & energy



Decommissioning assistance in brownfield work

Alan William Stokes

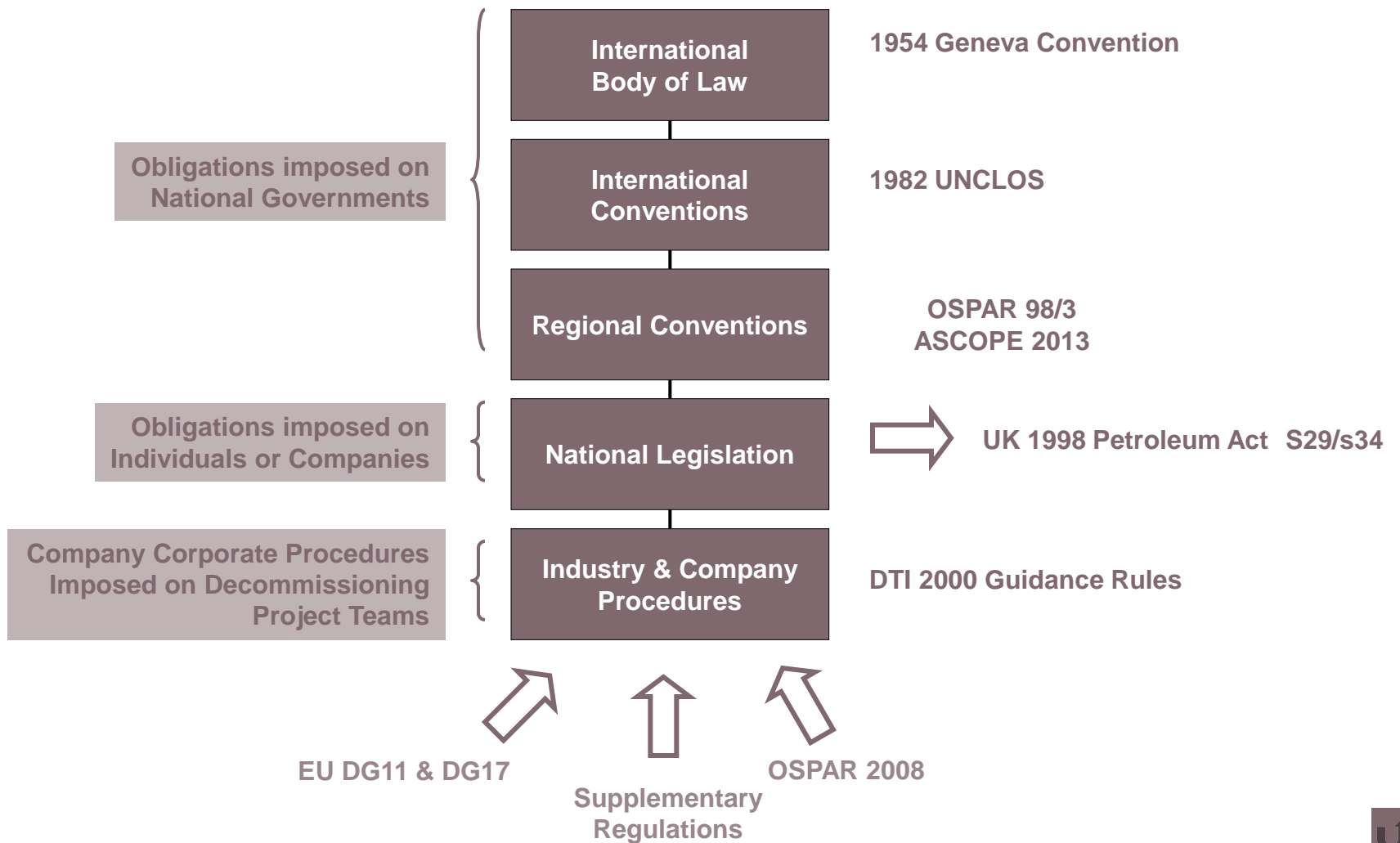




The Numbers

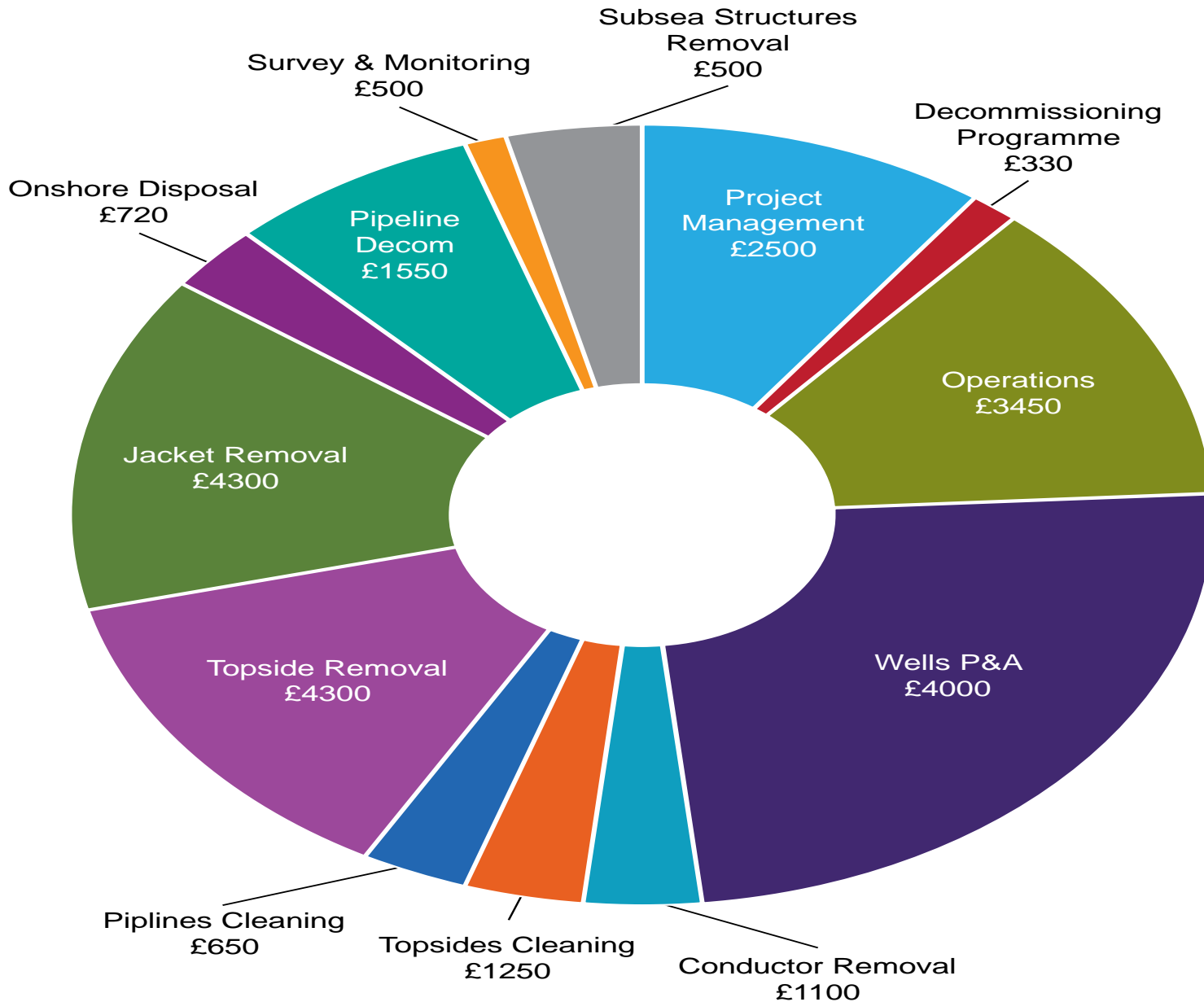
- ▶ 10% to 20%
- ▶ Top 10
- ▶ Infinity
- ▶ Up to 50%
- ▶ Amount allocated to Decommissioning liability on Balance Sheets of Oil Companies
- ▶ Decommissioning Project ranking
- ▶ Long term liability to the operators
- ▶ Tax rebate for decommissioning costs

Legislation



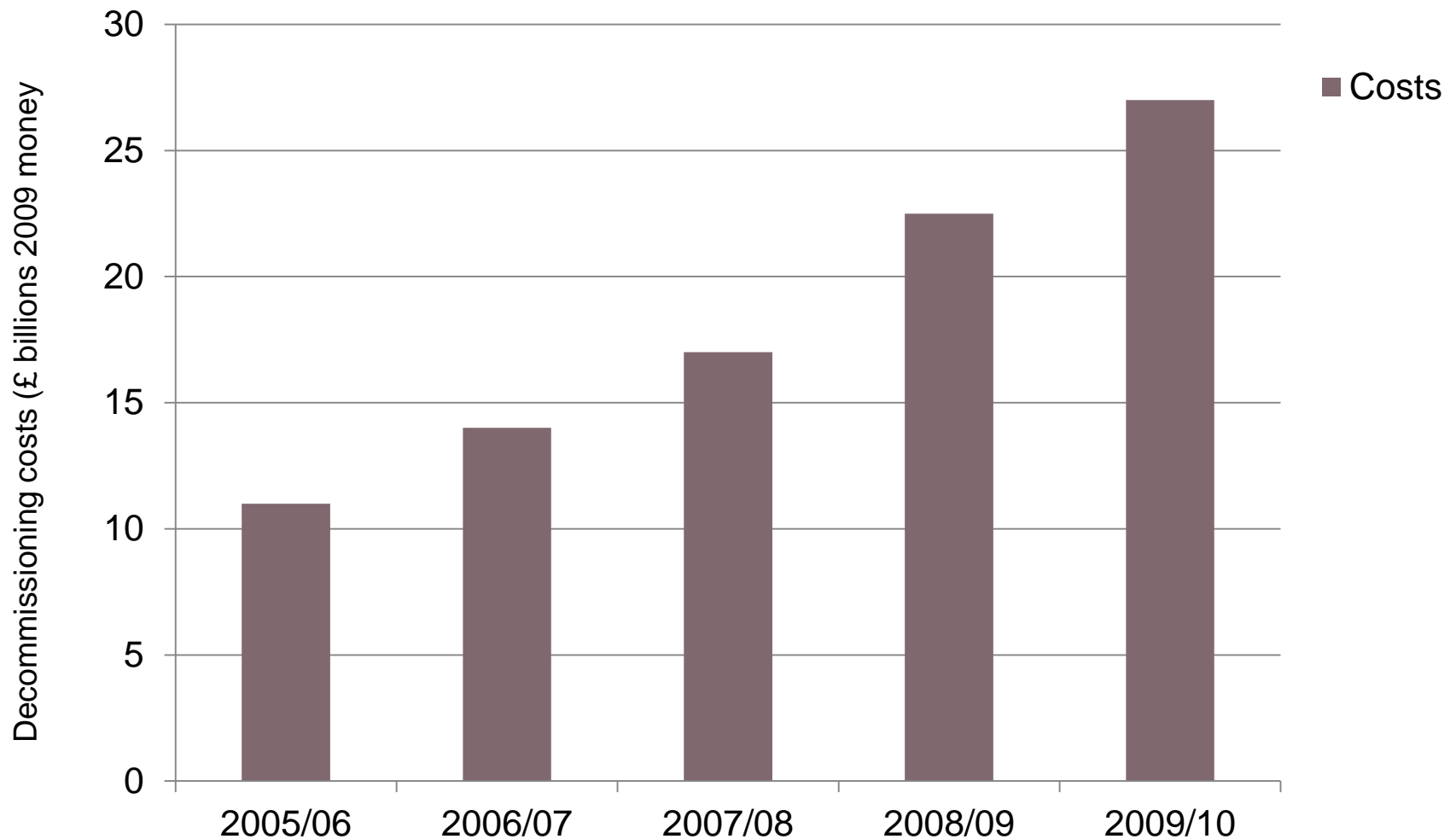
Global Decommissioning Business Value





Millions of pounds to be spent (Oil and Gas UK)

The cost of decommissioning for the UK has more than doubled in the last 5 years

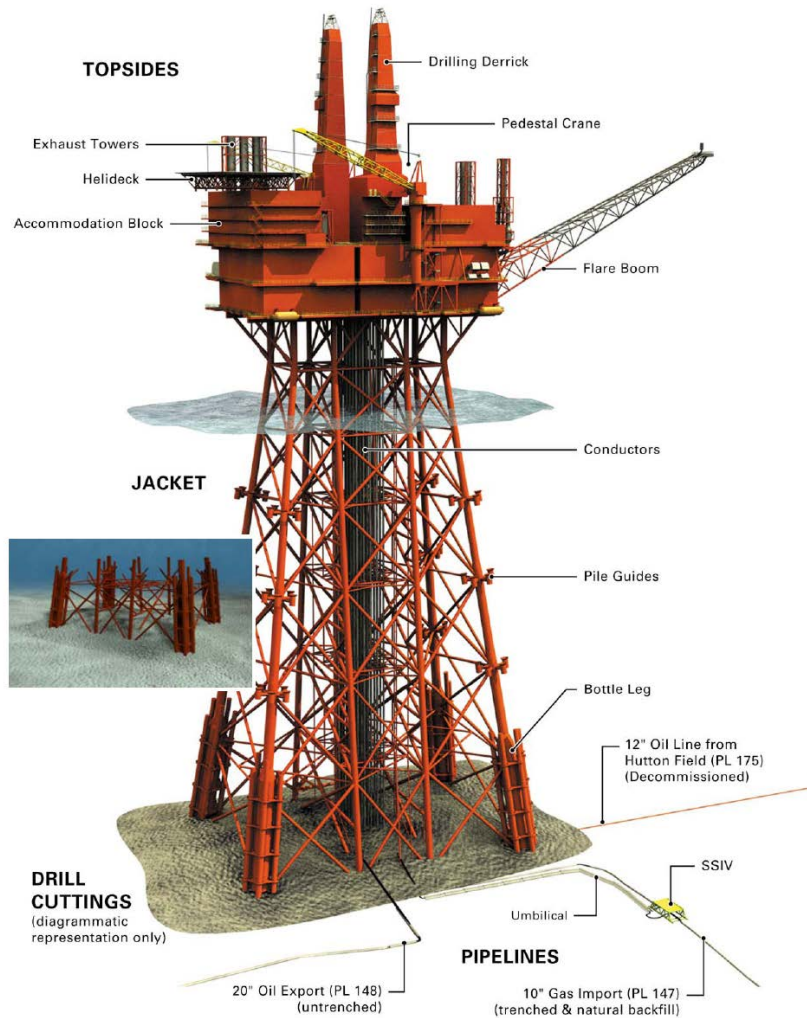




Explanation for Cost increases

- ▶ **Operations.** Maintenance and operations costs after Cessation of Production were not fully included
- ▶ **Wells Plug and Abandon.** Durations extended due to experience
- ▶ **Topsides and Jacket Removal.** Lift vessel rates increase and weather downtime increased
- ▶ **Pipeline Decommissioning.** More complex
- ▶ **Project Management.** Project complexity and increased number of close out documents

Challenges



- ▶ Preparation for Cessation of Production
- ▶ Suspension Live
- ▶ Well Abandonment
- ▶ Engineering Down and Cleaning
- ▶ Disconnection
- ▶ Removal
- ▶ Disposal
- ▶ Continuing Liability



What is Decommissioning

► It is not

- A reverse installation lifting operation
- A gas axe and scrap operation

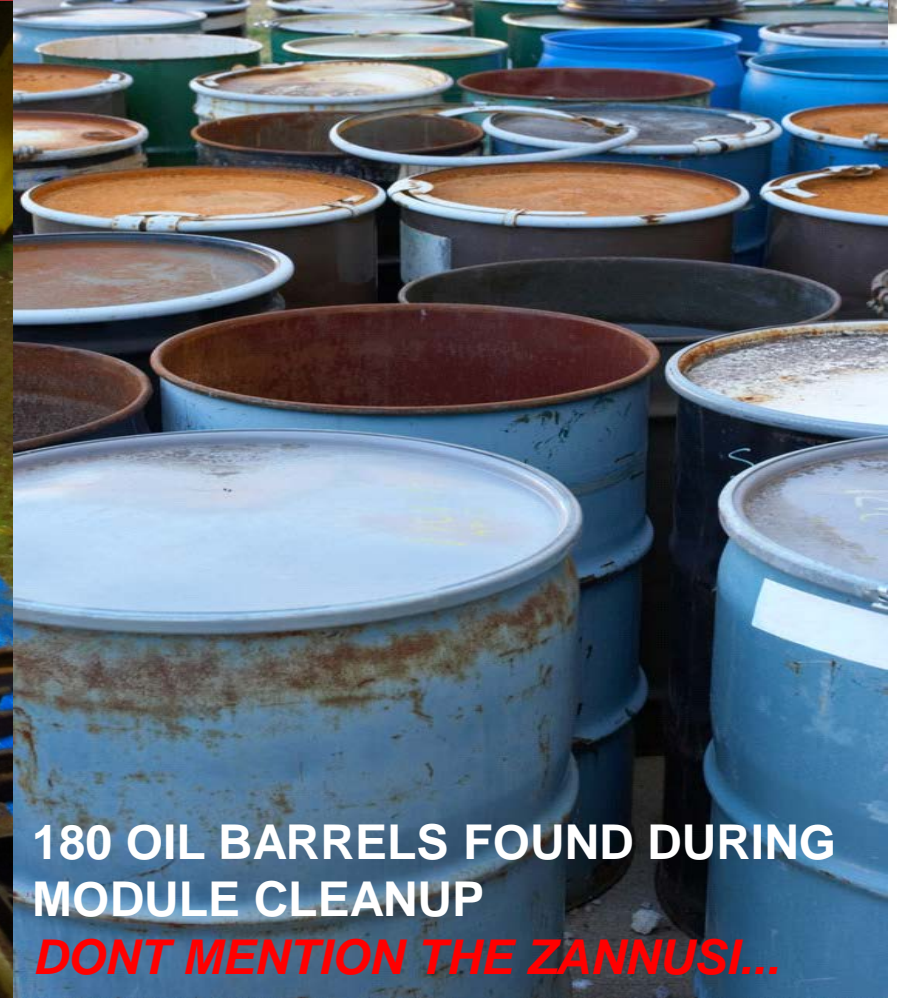
► It is

- Well plug and abandonment
- Safe removal of oil and gas
- Utilisation of existing equipment
- Design of overwater and underwater lifts
- Minimisation of offshore manhours
- Unexpected events. (Actual costs have been 40% greater than budget)

dropped objects sweepings and module pre-cleaning..



POTENTIAL DROPPED OBJECTS



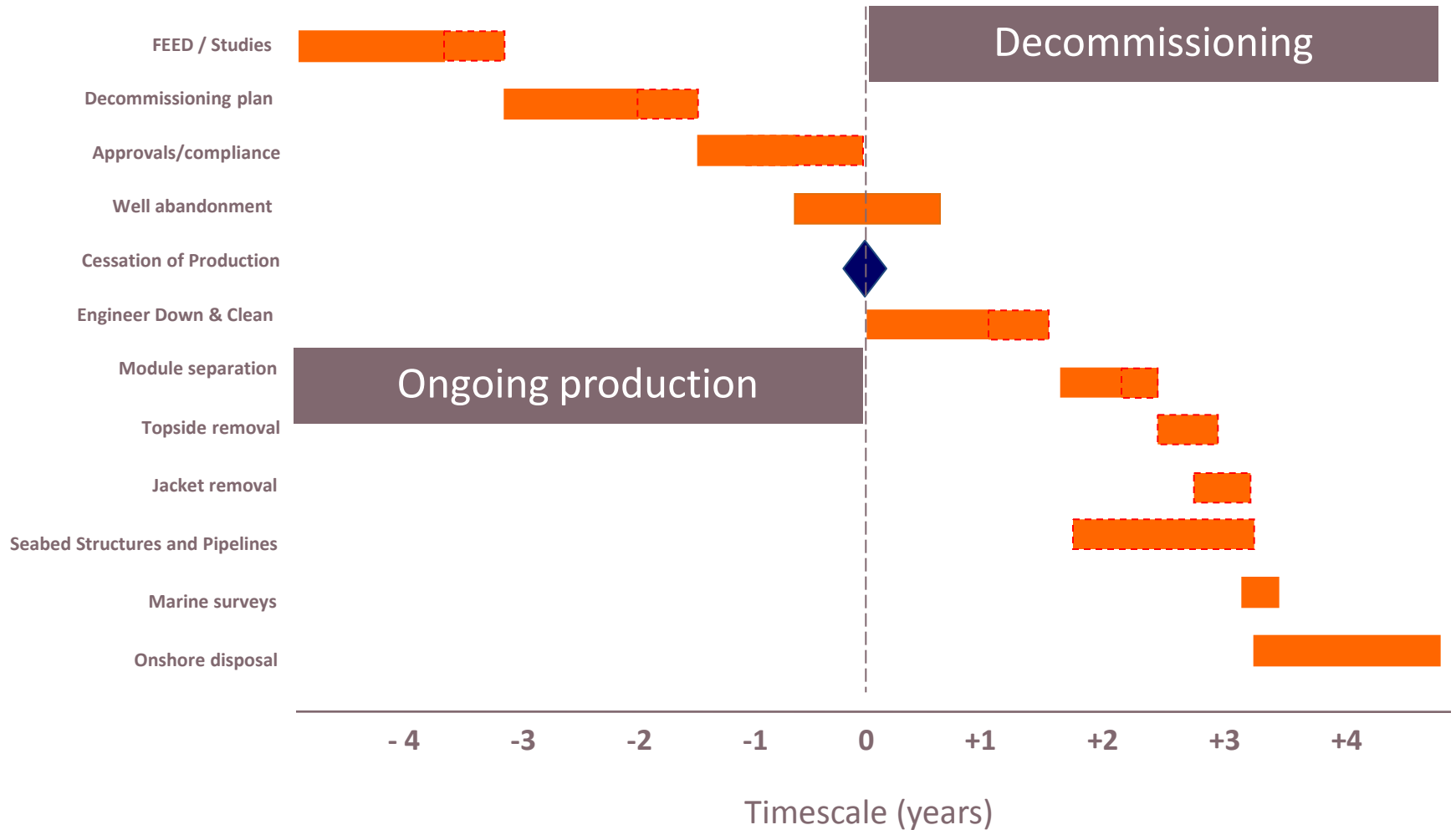
**180 OIL BARRELS FOUND DURING
MODULE CLEANUP**
DONT MENTION THE ZANNUSI...

Environment Is Everything



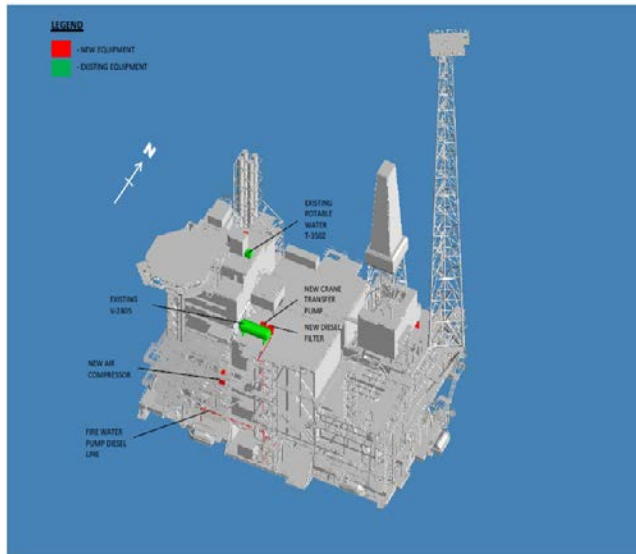
Ref. Wood Group PSN

Decommissioning timeframe

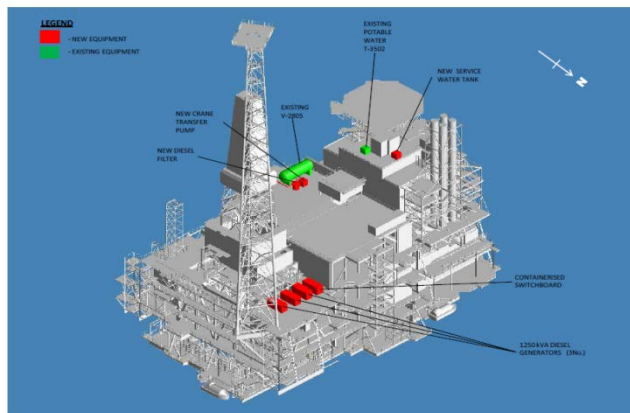


Conversion of Miller to a Minimal Manned Installation

Miller Platform from the South Face



Miller Platform from the North East Corner



- Decommission oil and gas pipelines
- Engineer down oil and gas systems
- Revise maintenance tasks for a hydrocarbon free platform
- Engineer and commission temporary power generation and distribution
- Refurbish utilities
- Revise escape routes
- Draft decommissioning programme
- Design of strengthening for reverse installation lifts and single piece lift of topsides

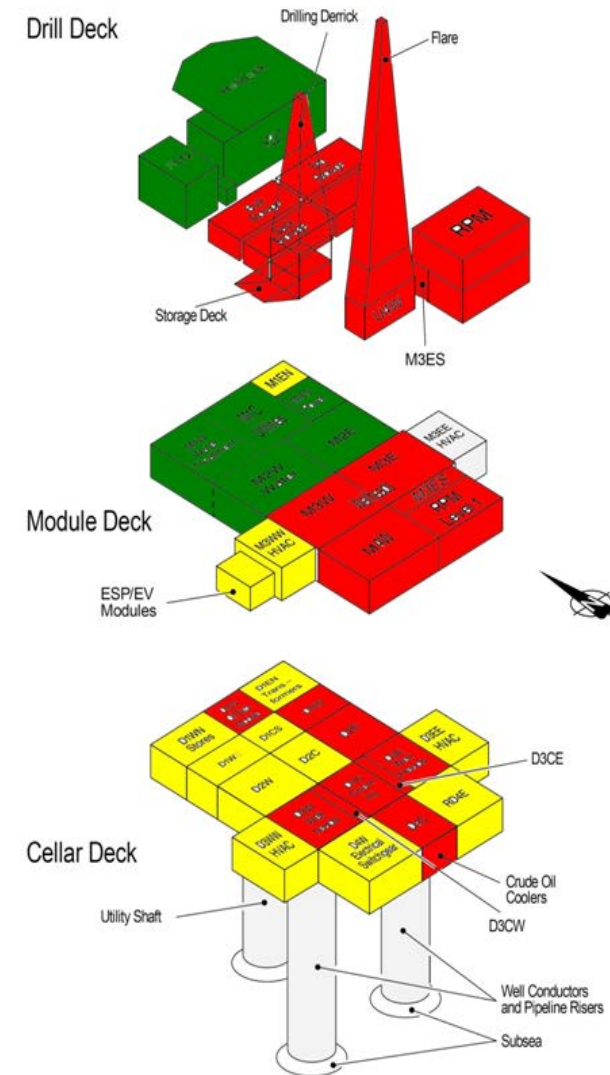
Brent Delta

- ▶ Concrete Gravity Base
- ▶ Topsides 23,500 tonnes
- ▶ 48 well Slots
- ▶ Oil and Gas export pipelines
- ▶ Gravity base 300,500tonnes
- ▶ Major project for Shell Expro

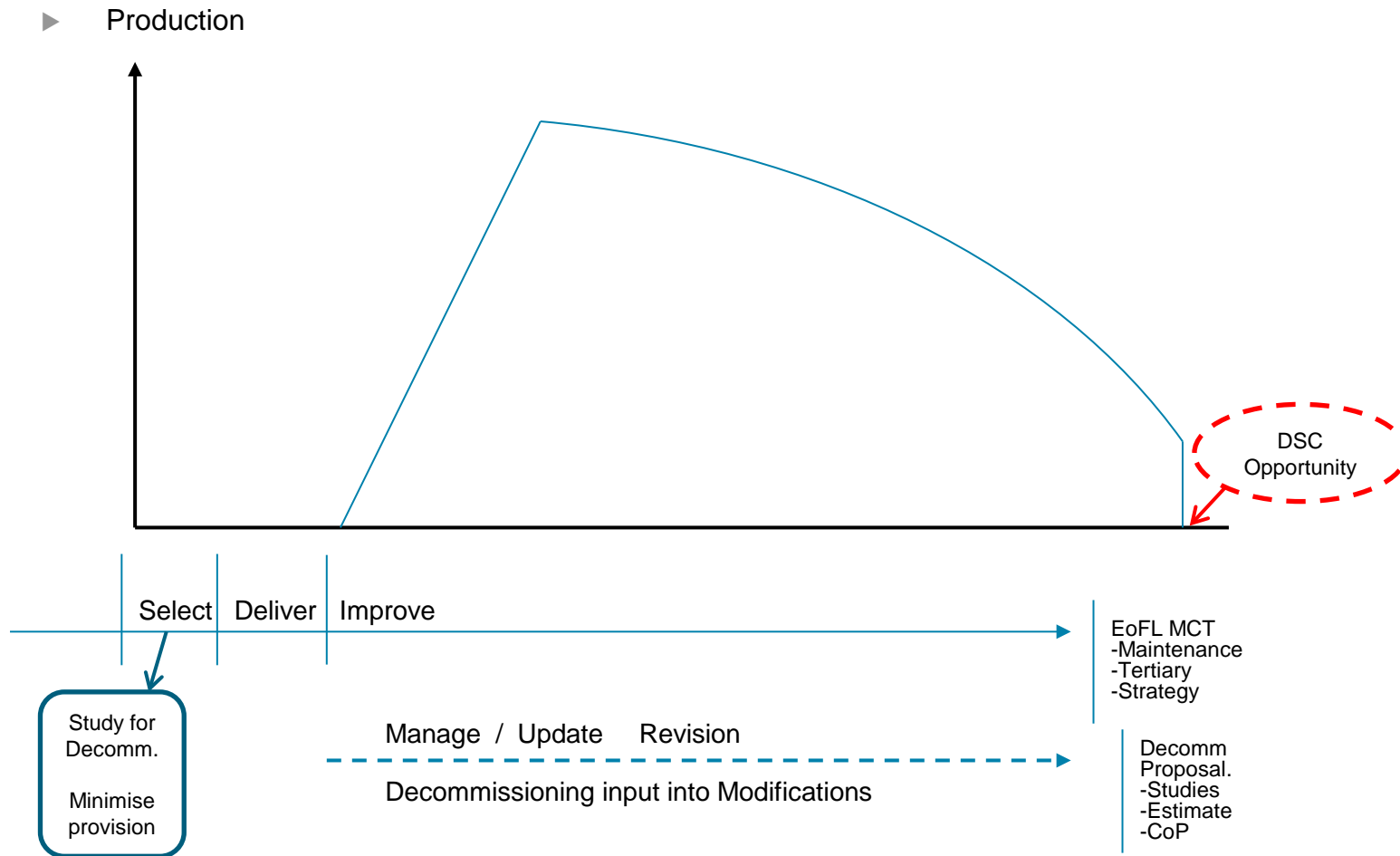


Brent Delta Decommissioning Services Contract

- ▶ Maintenance of Safety Critical Elements
- ▶ Clean modules and remove any potential dropped objects
- ▶ Engineer and install Temporary utilities (water, compressed air, power generation, electrical distribution and diesel) as a mix of new skids and tie-ins,
- ▶ Engineer Down and Clean Process Plant
- ▶ Decommission oil and gas pipelines
- ▶ Module, Process and Utility Separation
- ▶ Riser removals



Late Field Life Opportunities



Typical opportunities for the Engineering Contractors

For each major offshore structure:

- Planning for decommissioning - Engineering studies and consultancy
 - 15 to 20 engineers for two years in preparation for Cessation of Production (CoP)
 - Approx AUS\$9M fee revenue per asset
- Implementation of decommissioning plans via a Decommissioning Services Contract (DSC)
 - 45 engineers and project team for three years (ca AUS \$20-35M)
 - 50 offshore posts (100 personnel) for two years (ca AUS \$ 30M)



Innovations

- ▶ Buoyancy tanks for jacket removal
- ▶ One piece caisson removal
- ▶ Steel rubber composite sea fastening
- ▶ In-situ weighing of topsides
- ▶ Under water cutting for steel and concrete
- ▶ Temporary utilities
- ▶ Use of Test separator for well fluids
- ▶ Equipment for well plug and abandonment
- ▶ Fit for purpose control of work sites
- ▶ Team work together



Brownfield Messages

- ▶ As Built drawings waste of time Need surveys e.g. Brent pipes
- ▶ Electrical interconnection reducing ability to isolate a system e.g. Forties egg boxes
- ▶ Need flexibility in power generation e.g. Miller and NW Hutton and Brent
- ▶ Utilities need to go for four years after CoP e.g. Brent
- ▶ Tertiary steel work rust traps
- ▶ HVAC different regime
- ▶ Cranes are vital



Magic Bullet

- ▶ Directors want to reduce 10 to 20% liability on their balance sheets. Therefore engineers have to reduce the cost
- ▶ Pieter Scheldt, Versabar one piece removal yes but as the competition with HMC, therefore will only drop the price by 10%
- ▶ Wells P and A Weatherford and Tetra new kit yes but we still have to put three cement plugs in an elderly well
- ▶ Continuity of work by grouping assets yes but only to remove mob and demob costs and a 10% reduction in hours due to learnings

Way Forward

- ▶ Decommissioning is a new industry using existing skills
- ▶ Current offshore safety regime is suitable for decommissioning
- ▶ We need a new attitude to execute the work efficiently



- ▶ New projects must include design for removal
- ▶ Fit for purpose Design specifications
- ▶ Remember we are spending money that can be used elsewhere



Questions

- ▶ I have enjoyed talking about Offshore Decommissioning now it your turn for questions. I value your comments

UK Market 2012 to 2017

£4.5 billion

market share

