

# DECOMMISSIONING WITH PETROFAC

16<sup>th</sup> July 2020



Petrofac 

# Agenda

Item	Description	Presenter
1	Introduction to Presenters	Laurence Milne
2	Introduction to Petrofac	Laurence Milne
3	Service Line Introduction	Video
4	Well Engineering	Angus Hunter
5	Supply Chain Engagement - Partnering with Petrofac	Amy Barnett
6	Open Discussion	All

# INTRODUCTION TO PRESENTERS

**Laurence Milne**, Business Development Manager, EPS West

**Angus Hunter**, Wells Manager, EPS West

**Amy Barnett**, Senior Contracts Lead, EPS West

# INTRODUCTION TO PETROFAC

**Laurence Milne**, Business Development Manager, EPS West

# Introducing Petrofac

- **Petrofac is a leading service provider to the oil and gas industry**, with approximately 11,000 employees across the world
- Constituent of the **FTSE 250 Share Index**
- **We have 38 years of international experience. Our track record spans several hundred projects** across our key markets of the Middle East, Far East, Africa, CIS and Russia, Americas, Europe and the UKCS
- **Our capabilities span the oil and gas value chain:** life of field services from concept to EPC, commissioning, start-up, operations, maintenance and decommissioning, underpinned by training, competence and workforce development capabilities
- Strong track record of supporting on and offshore operations to help unlock the value of our clients' oil and gas assets
- The **Middle East** is our heartland
  - More than **30 years** of work in-country with two major operational centres
  - Close to **4,000** staff in the region, 2,000 of which are based in the UAE
  - We have delivered some of the region's largest and most successful oil and gas projects
  - Ranked number one EPC contractor six times by Arabian Oil & Gas and in 2018 by Refining & Petrochemicals Middle East
- **In the UKCS we are leading the way**
  - Around 4,000 people in the region
  - Pioneered the concept of the **outsourced asset management** model (Duty Holder) in the North Sea in 1997 and in more recent times as **outsourced well operator** for multiple clients in the UKCS
  - Launched the UK's first integrated **emergency response service** centre

**OUR FOCUS ON  
OUR VALUES  
DRIVES  
EVERYTHING  
WE STAND FOR**

## **OUR VALUES**

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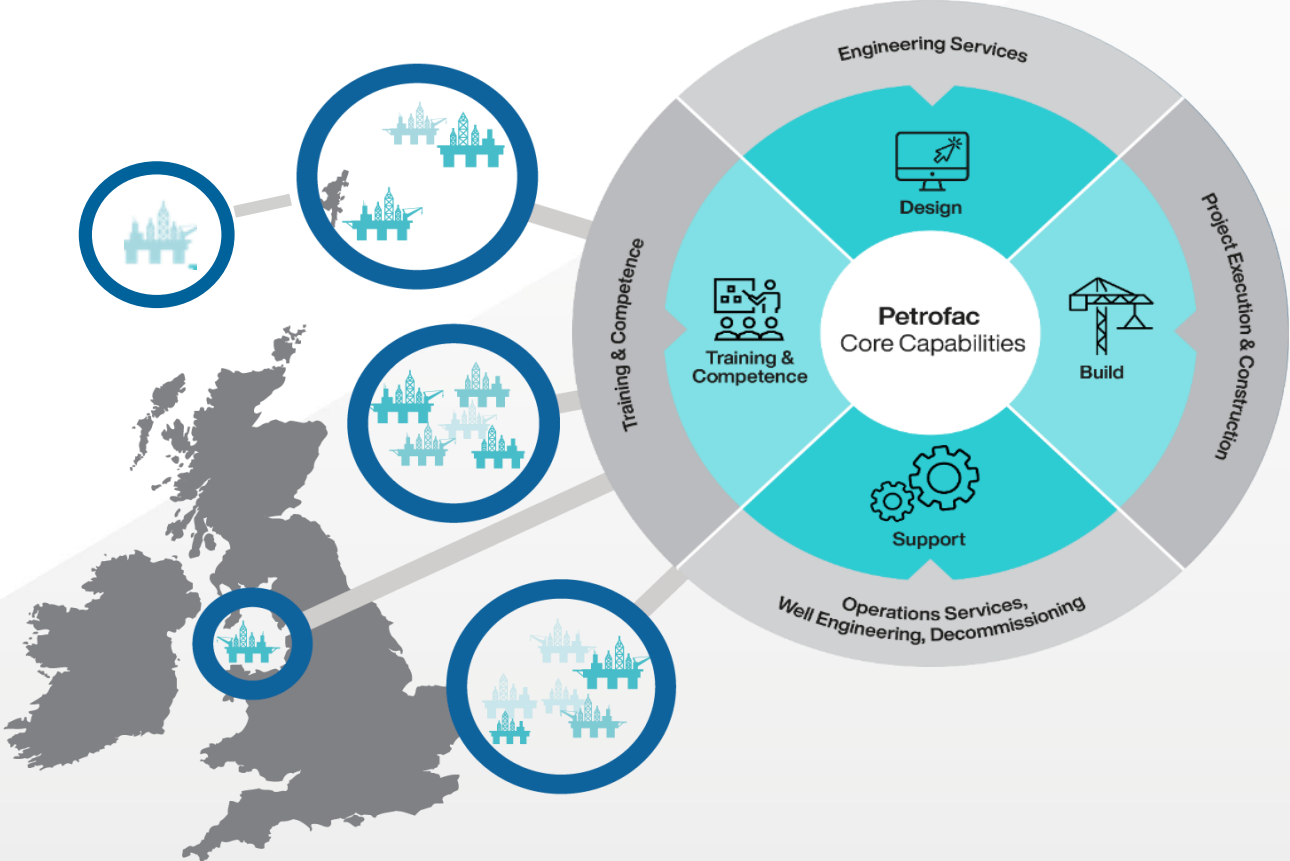
Petrofac people are:

- **safe**
- **ethical**
- **innovative**
- **responsive**
- **quality and cost-conscious**
- **driven to deliver**

# Service Line Introduction



# Petrofac Delivering in the UKCS





## CURRENTLY PROVIDING:

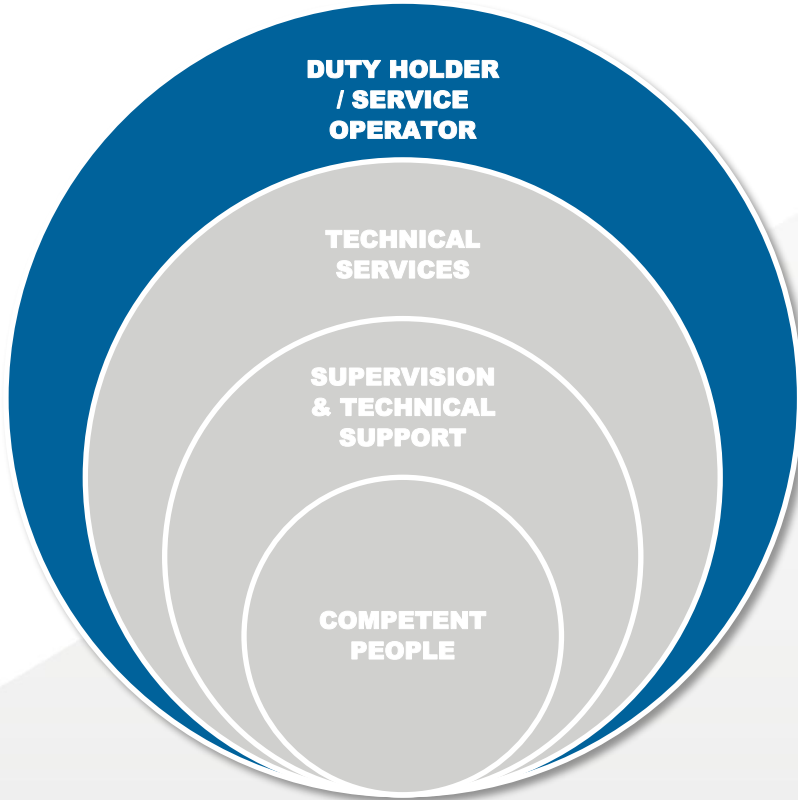
- **Decommissioning Installation Operator**  
DNO – Schooner and Ketch
- **Late Life Asset Management (LLAM),**  
ENI Hewett (UKCS)
- **Well Decommissioning,** HESS Rubie and Renee, Spirit Energy EIS DP3 & DP4
- **Well Decommissioning Studies,** RSRUK, Dana Petroleum

## PREVIOUS PROJECTS:

- **Hutton TLP topsides separation** project, Conoco (UKCS)
- **AH001FPU strip down and rebuild,** Ithaca/Petrofac (UKCS)
- **Bacton Gas Terminal decommissioning,** ENI (Onshore, UK)
- **BP Miller Decommissioning Duty Holder,** BP North Sea
- **Decommissioning Cost Estimates,** multiple, confidential (Europe and Africa)
- **Asset management review,** Repsol Sinopec (UKCS)
- **Well Decommissioning Campaigns,** Tullow Horne and Wren, Tullow Thames, Siccar Point – Cambo

# BP Miller Decommissioning

2016 - 2018



In collaboration with Saipem, we safely removed the Miller platform just 24 months from contract award

As Duty Holder, we implemented fit-for-purpose control of work and management systems...



...integrated planning for core asset activities, optimised maintenance and support modifications

The earlier we can get involved, the more value we can drive



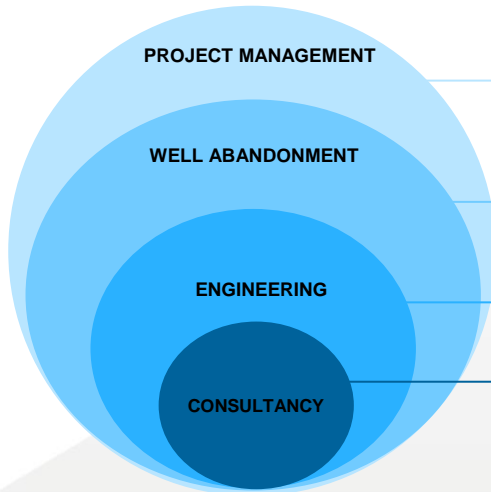
## WELL ENGINEERING

**Angus Hunter**, Wells Manager, EPS West

# Well engineering



Comprehensive **well operator, well project management and engineering services** delivered across the **well life cycle**.



**PROJECT MANAGEMENT:** The complete spectrum of services ranging from full-scale well engineering and well construction through to small integrated project teams.

**WELL ABANDONMENT:** From initial review, through to abandonment methodology selection, detailed planning and engineering, and project execution, we provide a full service capability to enable clients to safely and cost effectively abandon wells.

**ENGINEERING:** Covers all aspects of well engineering and well site operations from discrete studies to entire field development planning, including integrity and abandonment.

**CONSULTANCY:** Providing qualified and competent personnel to support your operations in the areas of wells, subsea, completions and testing.



**TURUS®:** Our unique well management software underpins everything that we do. It provides a step change in efficiency and quality, fully integrates our systems and processes, and provides our clients with complete visibility, transparency and auditability of our projects.

# Key Success Factors in Well Decom

- **Culture** – A high performing one-team culture across multiple companies and excellent motivation to fully implement safe operations was established during the planning phase with an integrated set of team expectations and 8 ingredients identified in a team recipe for a *Right First Time* result.
- **Commercial model** – Fostering more decom, earlier, relies on driving down unit costs in what is a zero return activity for Operators. Innovation in commercial models that encourages improved outcomes, is as important as equipment, systems and process innovation.
- **Good planning** – Awareness of technologies to develop solutions requires supplier engagement. Lunch and learns, industry presentations all important. Following a project delivery process that enables technical challenge, contingency planning and peer scrutiny inclusive of wellsite and office teams delivers optimised operational plans.
- **Well executed** – first-time experiences for some personnel with project equipment; MODU-based diving, subsea tree handling equipment, MPD equipment etc. Strong team focus on process safety controls, pre-task briefings and hands-on supervision to ensure all personnel stayed safe during non-routine operations.
- **Lessons learned** – Large cost savings were realised during batch operations, including batching of diving operations. Continuous improvement processes such as after action reviews contributed well toward optimisation and recalibrating timings to account for project learning.
- **Rig** – low rig equipment downtime and excellent crew service level was assured following an extensive equipment and management systems inspection and acceptance process



New Technology / Innovation	Benefit	Savings
<b>Well Re-entry</b>		
<p><b>Simplified MPD system for live well re-entry (SPE-195718-MS)</b> — Re-entry of a percolating gas well required pressure control and riser barriers to control and divert hydrocarbon returns while drilling through failed shallow cement barriers.</p>	<p>Cost effective control of a major accident hazard compared to alternative options of re-entry using coiled tubing in a large OD wellbore. The minimal rig up of RCD, drilling choke and pressure gauges was cost effective.</p>	<p><b>25% saving</b> on a CTD solution and 9 rig days saved.</p>
<p><b>TA Cap Test Tool (TACTT)</b> - Made it possible to check for potential trapped pressure below the TA Caps, as there was no recorded confirmation of whether back-pressure valves had been installed in the MLS systems.</p>	<p>Mainly risk-mitigation but avoided the potential of having to rig up an MPD system to re-enter the well. A JV partner who had a similar tool in stock shared the opportunity at an AWOP workshop – the value of peer scrutiny and industry lesson sharing.</p>	<p><b>± £1,090,000</b> less than use of MPD system, Per well</p>
<p><b>Slant Well Re-Entry Unit</b> – Conversion and marinisation of a modular utilities drilling unit for platform slant well re-entry and decom. Rotational skid mounted design capable of line intervention, cementing, pipe handling, rotation and large OD tubular recovery on slant and vertical platform wells.</p>	<p>Integrated and automated solution for skid mounted access and well work compared to existing slant well intervention masts which were interface and time intensive and less capable. Efficient transit across the platform well bay supported by rig tender services.</p>	<p>An enabling technology</p>
<b>Annulus Isolations</b>		
<p><b>Subsea Perf &amp; Circulate Cement</b> - Set shallow abandonment cement plug by setting EZSV, perforating 13½" casing below plug, circulating &gt; 800 ft of cement into 18½" x 13½" annulus, then setting a 500 ft cement plug in the bore.</p>	<p>This approach to recementing a casing rather than reaching for recent technology illustrates the benefit of where keeping things simple can be cost effective, Negated requirement to section mill casing, avoided the associated risk of getting stuck while section milling - due to milling flow returning up the larger outer annulus, leaving swarf packed off around milling BHA.</p>	<p><b>± £428,000</b> less than section milling</p>
<p><b>Perf, Wash &amp; Cementing systems</b> – Perforated the 13½" casing, washed the 20" x 13½" annulus and set a shallow 100ft abandonment cement plug across the perms, annulus and casing.</p>	<p>Negated requirement to section mill casing, avoiding the associated risk of getting stuck while section milling - due to milling flow returning up the large outer annulus, leaving swarf packed off around milling BHA. Also enabled a contained solution for oil-based fluid recovery from the annulus in the absence of casing hanger pack-offs in an MLS system.</p>	<p><b>± £390,000</b> less than Section Milling</p>

New Technology / Innovation	Benefit	Savings
<b>Tubular Recovery</b>		
<p><b>Rigless Tubular Recovery</b> — abrasive severance, surface casing jacking system, band saw and utilisation of a barge crane to recover large OD casing from wells on a NUI.</p>	<p>The NUI was load limited and deck space constrained. The well decom was completed with a barge rather than a rig, saving several millions. The combinations of technologies to enable rig-less recovery of large bore casing from a NUI was a key enabler for the project.</p>	<p>An enabling technology</p>
<p><b>Downhole Casing Jack</b> – Allowed the application of maximum pull at stuck point, to free the 9<math>\frac{5}{8}</math>" casing from cement in the 13<math>\frac{3}{8}</math>" x 9<math>\frac{5}{8}</math>" annulus to achieve the depth required for barrier placement.</p>	<p>Negated requirement to either cut &amp; pull in multiple sections, or section mill casing, with the same stuck pipe risks, while also removing risks of high energy release loading on the rig.</p>	<p>± <b>£382,000</b> less than section milling &amp; ± <b>£140,000</b> less than 6 multiple cut &amp; pulls</p>
<b>Commercial Models</b>		
<p><b>Incentivised commercial model</b> – Sharing the cost savings with the supplier and the client drives behaviours to deliver the very best result</p>	<p>Collaborative operational planning with key suppliers to accept programme risks, develop contingency solutions, and fully optimise the programme to reduce well decom durations.</p>	<p><b>8% reduction</b> in well decom costs.</p>

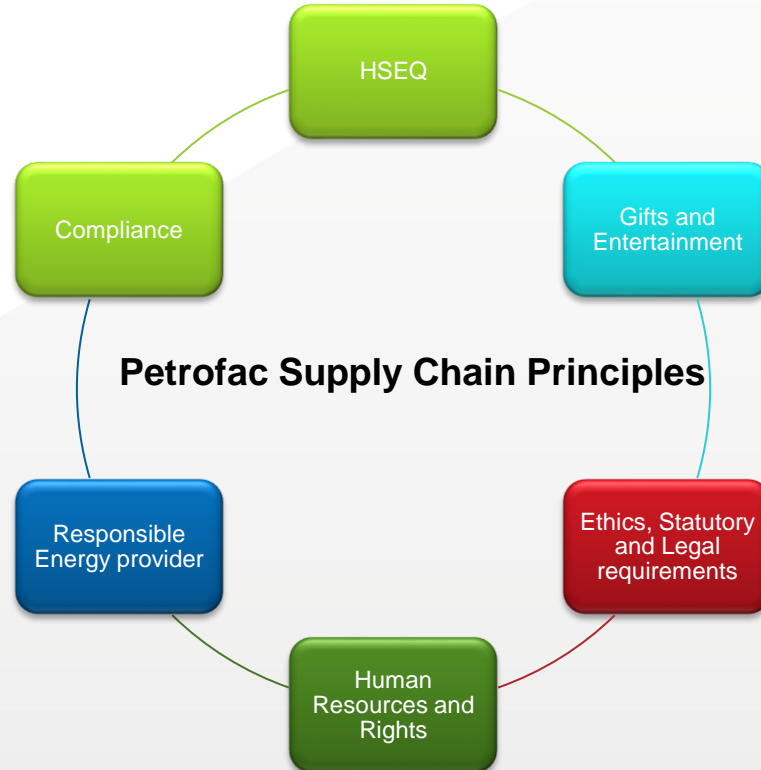
## SUPPLY CHAIN

**Amy Barnett**, Senior Contracts Lead, EPS West



# Petrofac Supply Chain Principles

Petrofac's Supply Chain Principles set out best practices for business conduct. It establishes our principles and **expectations** on how our employees and **the wider supply chain** will conduct business.



# Supply Chain 2019 Overview

**£271** million  
Supply chain spend in 2019

**267**  
Existing supplier Contracts in 2019

**794**  
Suppliers completed Due Diligence through compliance

**40**  
Supply chain professionals

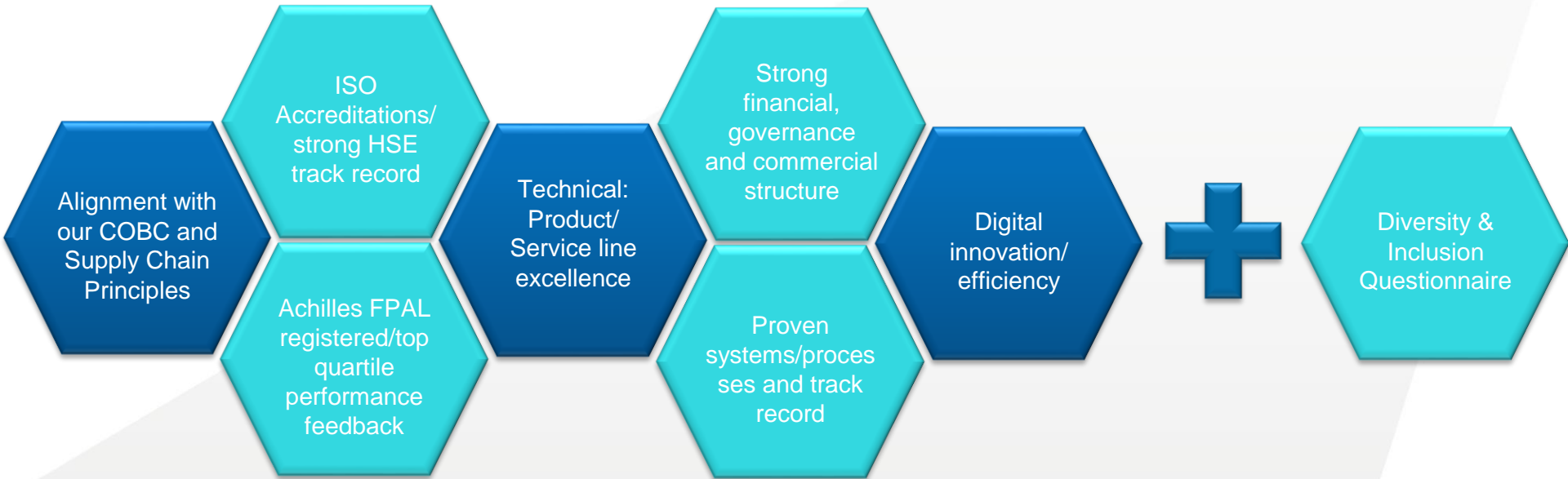
**35982**  
Purchase Orders Placed in 2019

**207**  
Master Agreements in 2019

**4**  
Key Locations  
Aberdeen, Great Yarmouth, Houston, Woking

**140**  
FPALS completed in 2019

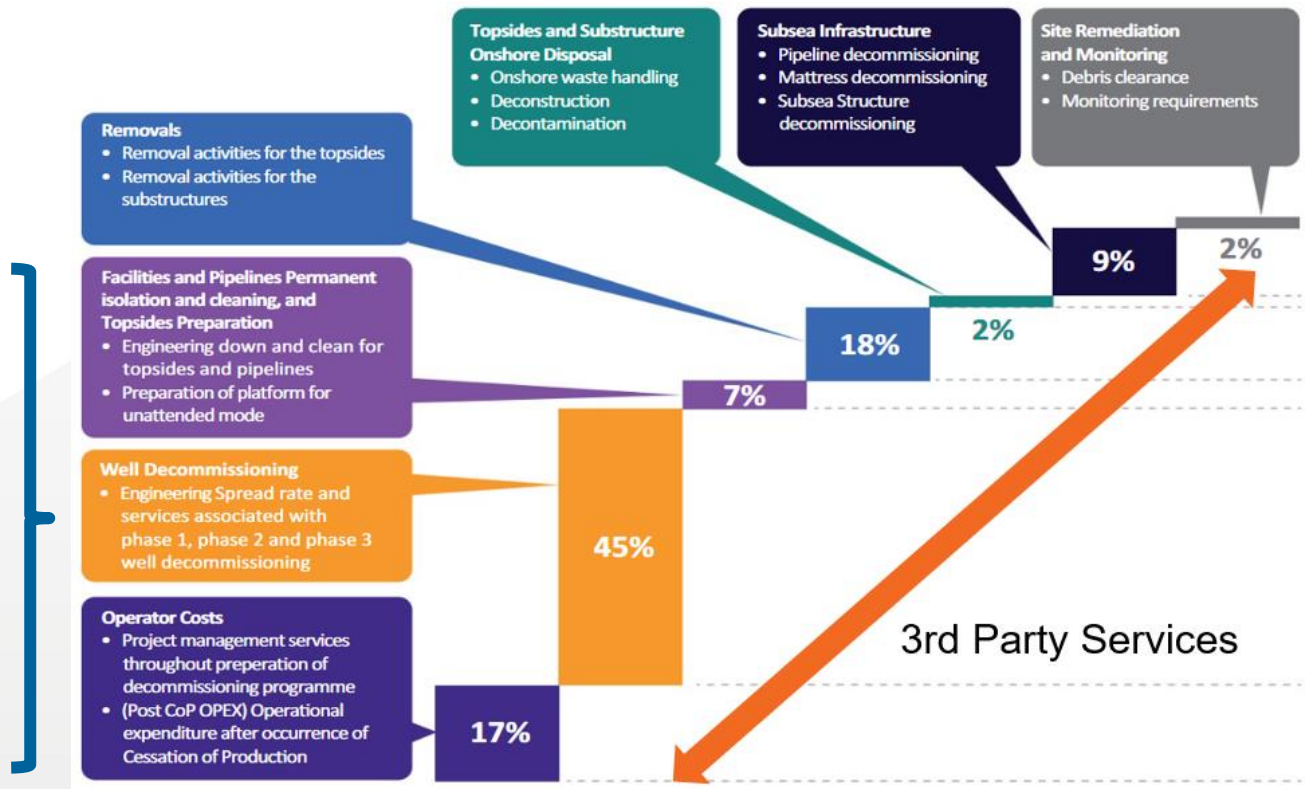
# Supplier qualification and selection



# Decommissioning Supply Chain vs OGUK Work Breakdown Structure (WBS)



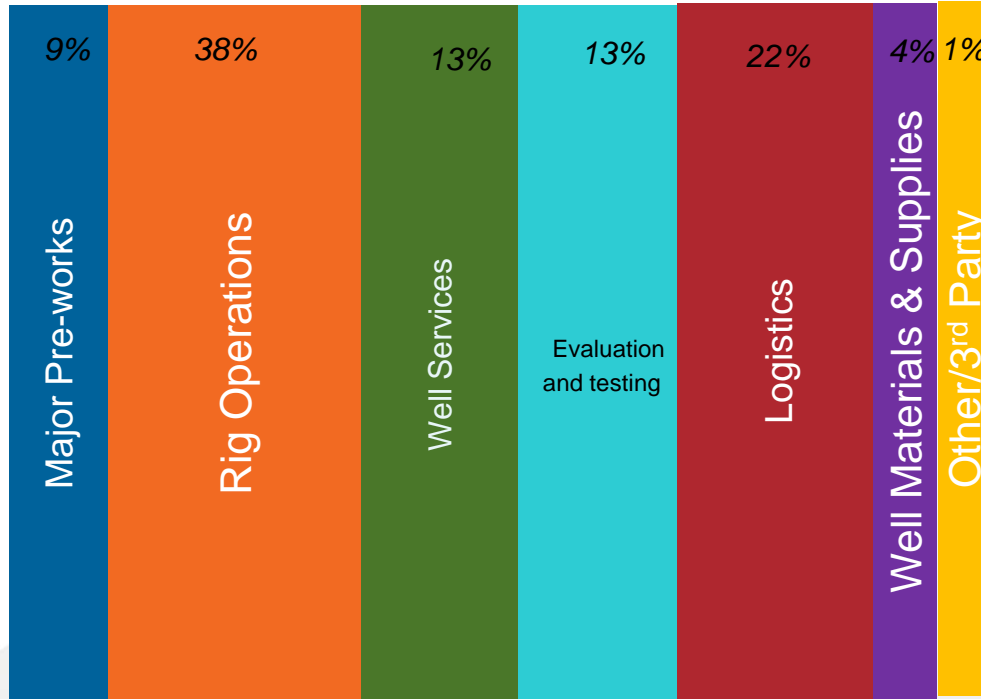
Petrofac are positioned to provide up to 69% of decommissioning WBS under our current service provision and commercial/supply chain strategy



Source: Decommissioning Insight Report - OGUK

# Well Decommissioning Supply Chain

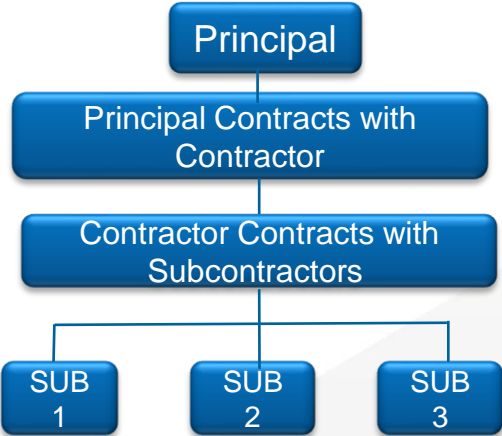
← Typical well decommissioning program →



- ### Supply Chain opportunities
- **DSV, Site survey**
  - **Rig and support services**
  - **Fluids and chemicals**
  - **Cement, TRS, Wellhead OEM, Fishing**
  - **Slickline, logging, subsea test kit**
  - **Vessels (term and spot), fuel, aviation, shore base**
  - **Permitting, consents**

# Supply Chain Engagement In Lump Sum Contracting

## Typical Lump Sum Contracting Model



Tell us about your experience

Tell us about your capability

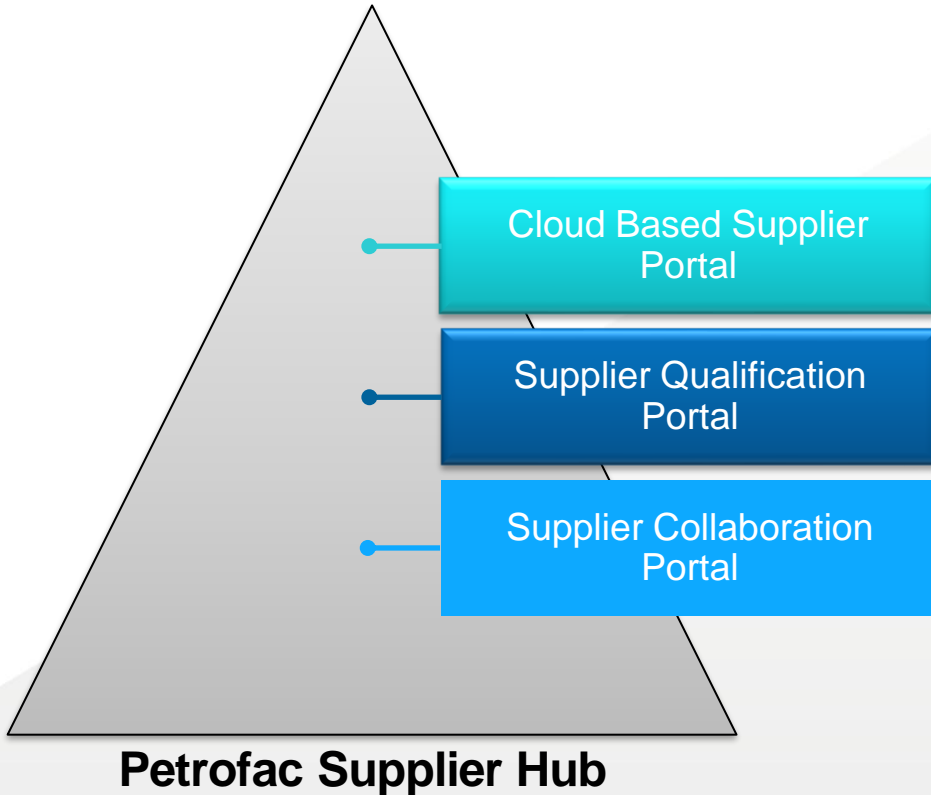
Share examples of case studies and lessons learned

Help us understand your appetite for commercial risk/reward

Tell us about innovation, technology and efficiencies

# Digital Supply Chain

- What does this mean for Petrofac's suppliers?



## Key benefits to the supply chain:

- Self-service supplier onboarding functionality
- Submit quotes/tenders and track status of RFQ/ITT
- Submitting electronic invoices
- Qualifying registered suppliers against scope/project specific requirements
- Automated alerts on expiring certification, qualifications and due diligence
- Collaborate with buyers / contract engineers and provide live expediting updates
- Measure supplier performance against pre-agreed criteria e.g. delivery dates

THANK YOU

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# Open Discussion