Oil & Gas Authority

UKCS Decommissioning Benchmarking Report 2020

Contents

All costs are in £2019 unless otherwise stated

1. Executive summary

Official government forecasts suggest that oil and gas will remain an important and critical part of the UK energy mix for the foreseeable future, as we transition to net zero. Managing the basin's declining production to maximise value from the UKCS is still vital to meet our energy demands as long as they exist, as well as reducing reliance on imports and their associated carbon footprint. Ensuring that decommissioning is carried out safely, and in a timely, cost effective manner not only helps value extraction from the UKCS, but also demonstrates industry's commitment to responsibly manage the UK's hydrocarbon legacy.

This report provides comparison data which benchmarks a wide range of UKCS decommissioning activities. It follows the publication of the UKCS Decommissioning Cost Estimate 2020 in August. The reported cost/benchmark information is derived from the perspective of the customer (i.e. does not necessarily reflect the costs incurred by the service provider) and, with a very small number of defined exceptions (see appendix), is based on recently incurred, 'actual', expenditure.

The intent is that the benchmarking graphs will communicate the key insights without the need for detailed text. The second section of this report provides guidance on their interpretation. Supporting text will therefore only be present by exception, should there be an important element of the graphs that needs explanation.

2. Benchmark representation of cost performance and uncertainty

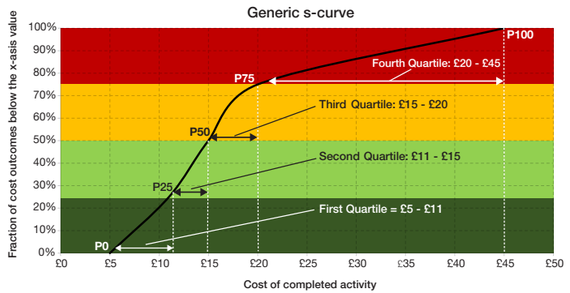
Cost information is collected from all UK decommissioning operators. Comparable data, such as costs of decommissioning platform wells in the Southern North Sea, is screened against a data quality rule-set (see Appendix), sorted from large to small, and then graphed as in Figure 1 to characterise the cost variances experienced for that parameter.

Figure 1 illustrates the definition of several key benchmarking terms used. In the generic example:

- the highest 25% of activity unit costs were executed for between £20 - £45. Unit costs in this range are referred to as being in the Fourth Quartile
- the second highest 25% of activity unit costs were executed for between £15 - £20. Unit costs in this range are referred to as being in the Third Quartile
- the second lowest 25% of activity unit costs were executed for between £11 - £15. Unit costs in this range are referred to as being in the Second Quartile
- the lowest 25% of activity unit costs were executed for between £5 - £11. Unit costs in this range are referred to as being in the First (or 'Top') Quartile

The terms P25, P50 and P75 refer to the unit cost values below which 25%, 50% and 75% of these activities are executed. The simple relation between these values and the quartiles are illustrated in the figure.

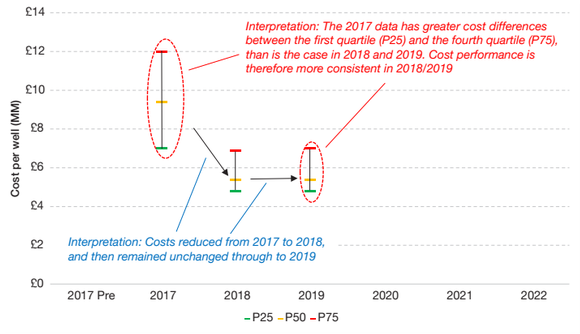
Figure 1: Example 's-curve' to illustrate definitions of quartiles and P-values



Other graph types utilised in this report to illustrate the cost performance data are:

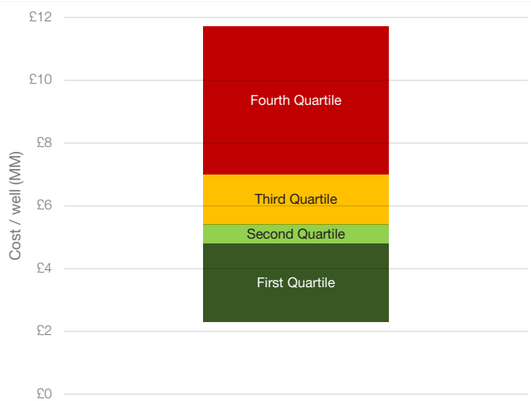
Cost trend graphs (see Figure 2 exemplar): The graphic illustrates cost and cost uncertainty trends, and includes examples of the types of insights which can be derived.

Figure 2: Example of unit cost trend graphic



Representation of cost performance quartiles (see Figure 3 exemplar): The graphic contains most of the same information as s-curves (Figure 1), but more clearly illustrates the unit cost quartiles. In this example, the first cost performance quartile is £2.3MM - £4.8MM per well (i.e. the cheapest 25% of wells have costs in this range), the second quartile cost performance is £4.8MM - £5.3MM per well, etc.

Figure 3: Example of cost performance quartiles



3. Benchmarks

The information in this section summarises the cost performance of key cost drivers, based on actual cost experience i.e. not including cost estimates/forecasts (the few exceptions are listed in the Appendix). The terms quartiles, P25, P50 and P75, referenced in the graphs, are explained in the previous section.

Decommissioning Project Management (Projects < £150MM)

New benchmark. This benchmark was not previously calculated as the number of completed projects on which to base an analysis was too low. Filtering of the dataset now available suggests that Project Management levels and uncertainty are functions of the project size, with £150MM being the approximate interface between the smaller and larger project populations.

	Percentage
P25	7%
P50	10%
P75	16%

Figure 4A: Project Management (Total project: <£150MM)

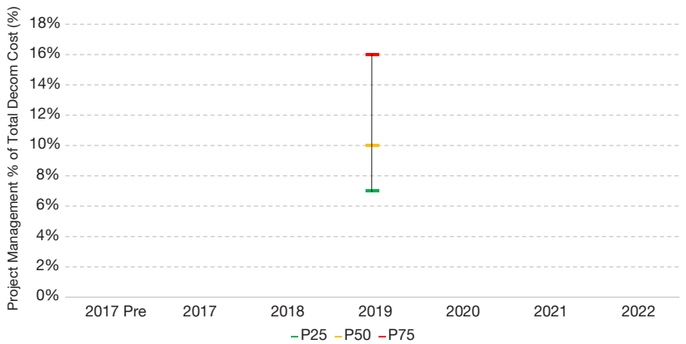


Figure 4B

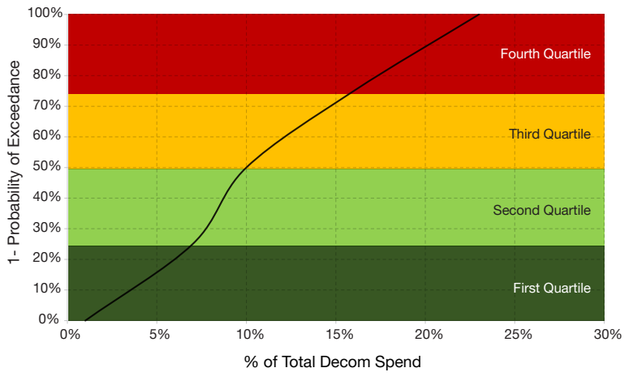
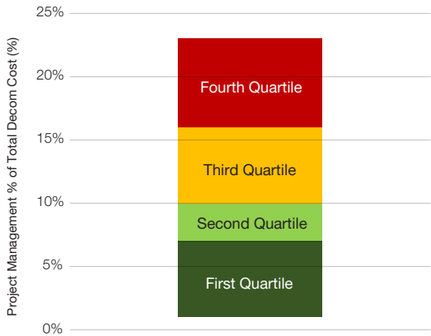


Figure 4C



Decommissioning Project Management (Projects > £150MM)

New Benchmark. This benchmark was not previously calculated as the number of completed projects on which to base an analysis was too low. Filtering of the dataset now available suggests that Project Management levels and uncertainty are functions of the project size, with £150MM being the approximate interface between the smaller and larger project populations.

	Percentage
P25	8%
P50	9%
P75	10%

Figure 5A: Project Management (Total project: >£150MM)

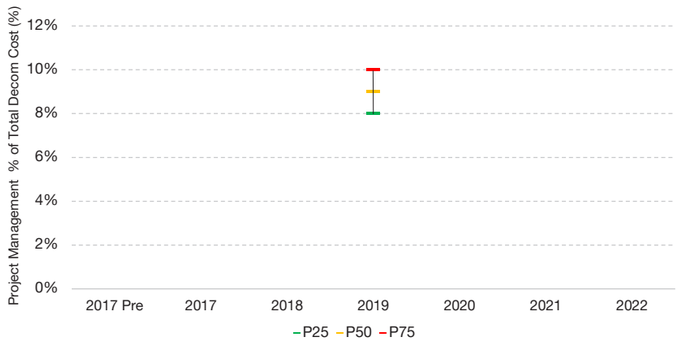


Figure 5B

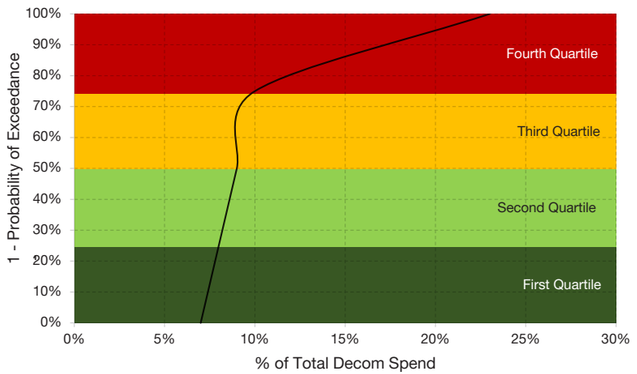
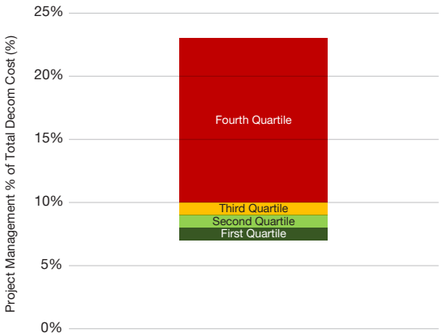


Figure 5C

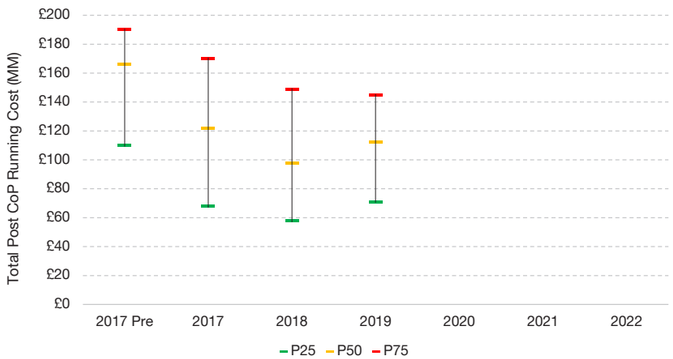


Platform Post-CoP Running Costs in the Northern North Sea (NNS) & Central North Sea (CNS)

These have reduced substantially, largely due to better optimisation of the late-life and warm/cold phases of decommissioning, with rapid reduction in running costs after cessation of production (CoP). Scheduling well decommissioning and Permanent Isolation/Cleaning activities so as to minimise the duration of the inspection/ maintenance-intensive warm phase, and then de-manning, has typically proven very cost effective.

Due to the infrequent and multi-calendar-year nature of this metric, these datapoints include estimates for platforms still being decommissioned, where the relevant operator has a well defined plan and recent decommissioning experience with similar infrastructure.

Figure 6A: Large Platform Running Cost distribution: NNS & CNS



	Units: MM
P25	£71
P50	£112
P75	£145

Figure 6B

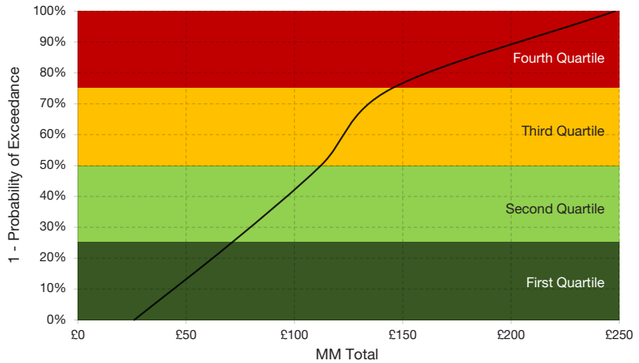
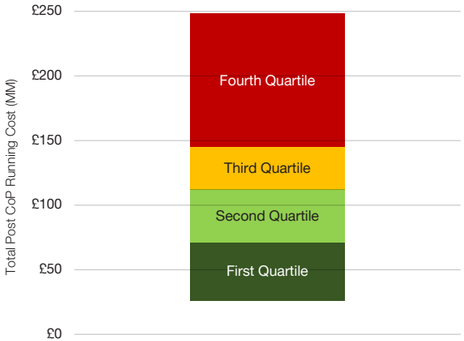


Figure 6C

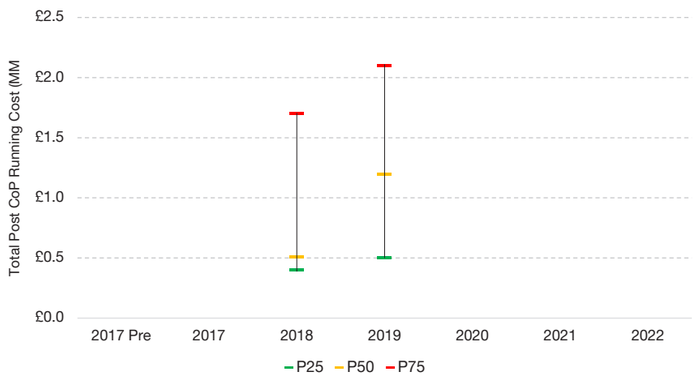


Platform (Normally Unattended Installation (NUI)) Post-CoP Running Costs in the Southern North Sea (SNS) & East Irish Sea (EIS)

While these costs are typically very low, at the high end they can be considerably impacted by poor commercial frameworks with host infrastructure or 3rd-party duty holders.

	Units: MM
P25	£0.5
P50	£1.2
P75	£2.1

Figure 7A: Platform (Normally Unattended) Running Cost distribution: SNS & EIS



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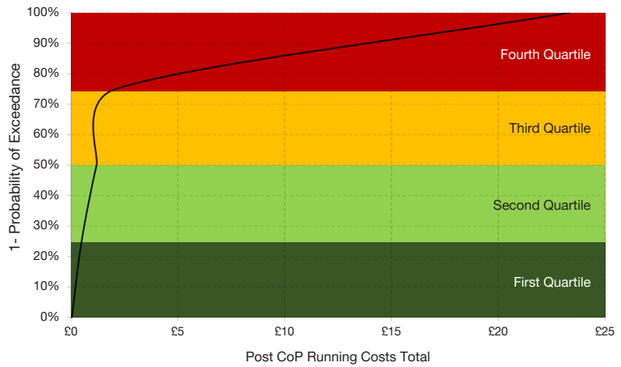

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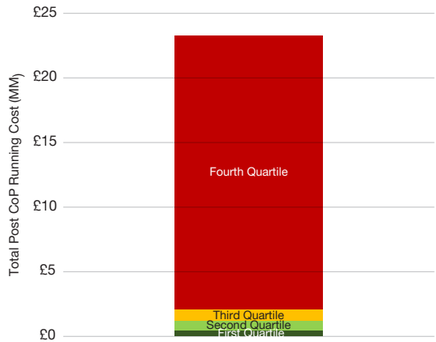


FPSO Post-CoP Running Costs in the NNS & CNS

New benchmark. Other than a very small number of outliers, these costs are spread over a narrow range.

	Units: MM
P25	£10.3
P50	£11.2
P75	£11.3

Figure 8A: FPSO Post-CoP Running Cost distribution: NNS & CNS

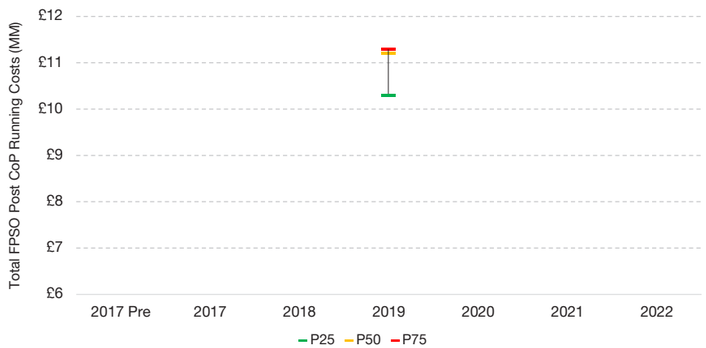
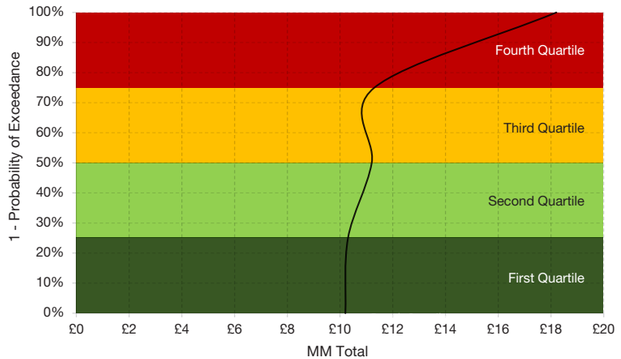


Figure 8B



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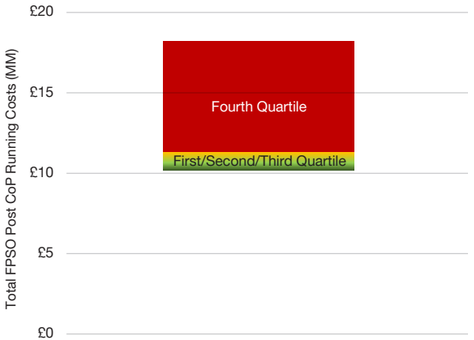


Platform well decommissioning costs in the NNS & CNS

The 2017 reductions of 65% in unit NNS/CNS well decommissioning cost have not been sustained, largely due to reduced activity by lower cost Operators, and high impacts from platform-rig reactivation (included in this benchmark). Unit costs per well (P50) have returned to pre-2017 levels, and 4th quartile costs are even higher than experienced then. Significant variation in the well decommissioning costs delivered by different Operators is an issue identified previously, and still to be resolved.

	Units: MM
P25	£2.5
P50	£3.7
P75	£6.5

Figure 9A: Change in platform well decommissioning cost distribution: NNS & CNS

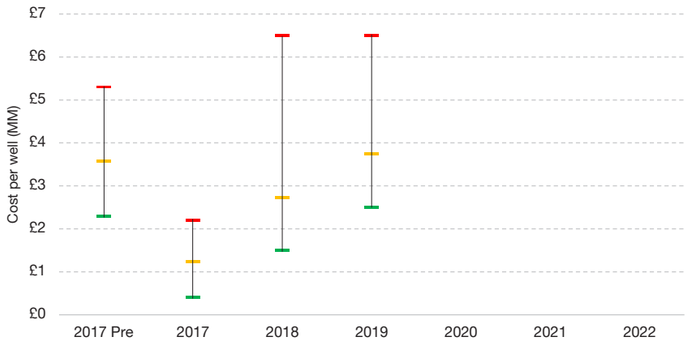


Figure 9B

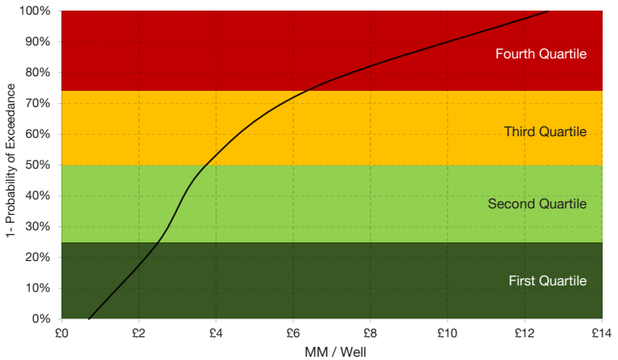
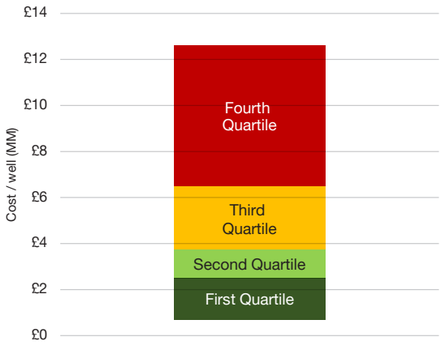


Figure 9C



Platform well decommissioning costs using jack-up rigs in the NNS & CNS

Certain platforms in the NNS and CNS do not have integrated rigs, and utilise jack-up rigs in either cantilever or tender mode when plugging and abandoning wells. Costs are largely unchanged from last year.

	Units: MM
P25	£3.7
P50	£4.3
P75	£6.2

Figure 10A: Platform well decommissioning cost distribution using jack-up rigs: NNS & CNS

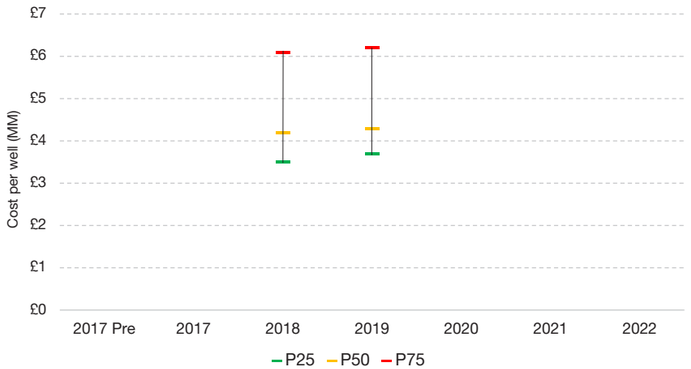


Figure 10B

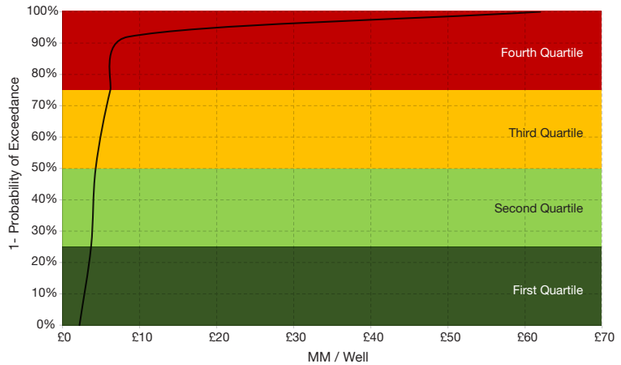
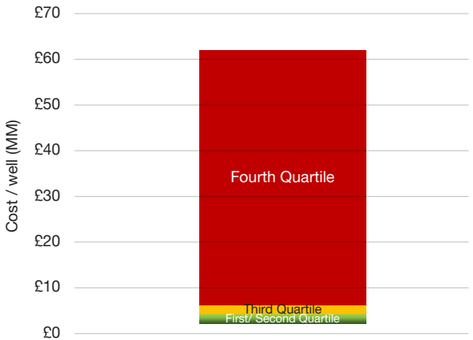


Figure 10C



Platform rig reactivation costs: NNS & CNS

New Benchmark.

	Units: MM
P25	£12.3
P50	£18.7
P75	£49.6

Figure 11A: Platform rig reactivation cost distribution NNS & CNS

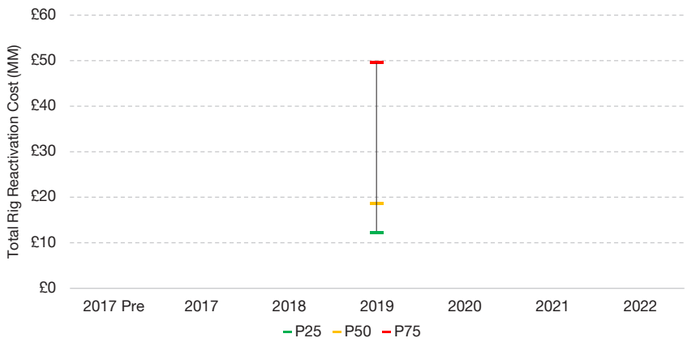


Figure 11B

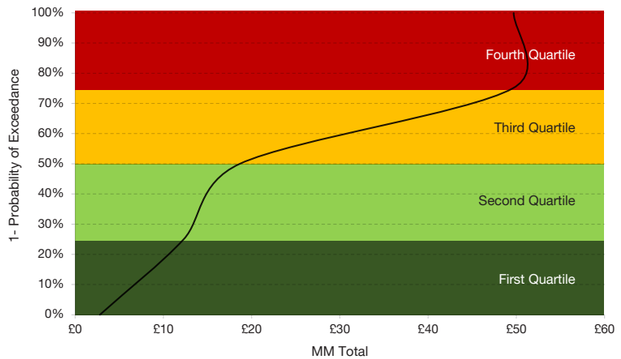
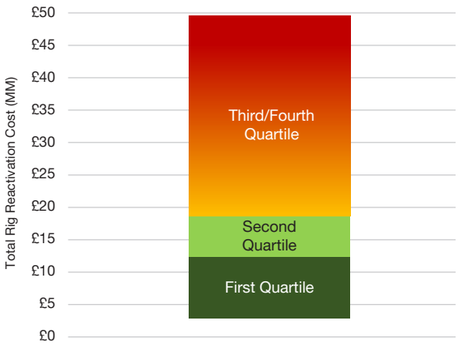


Figure 11C



Platform well decommissioning costs in the SNS

There has been a slight reduction in unit SNS well decommissioning costs. The variations in the cost performance of different operators has narrowed.

	Units: MM
P25	£1.6
P50	£2.5
P75	£3.2

Figure 12A: Platform well decommissioning cost distribution: SNS

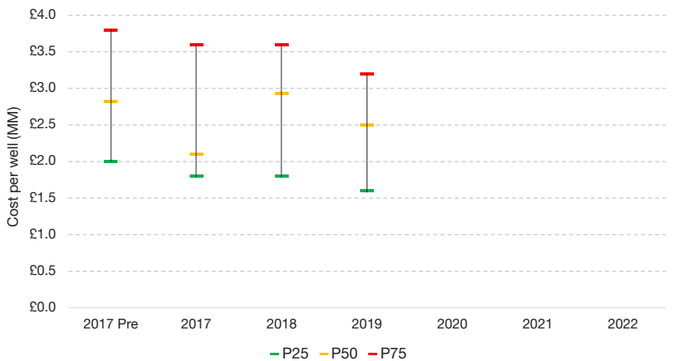
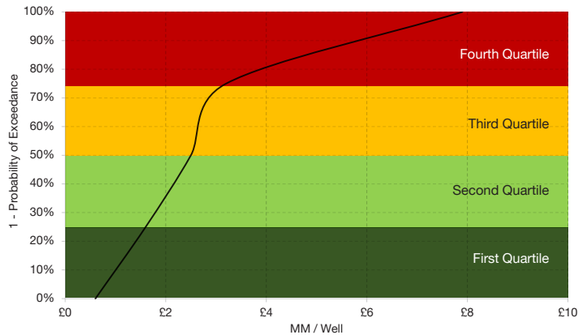


Figure 12B



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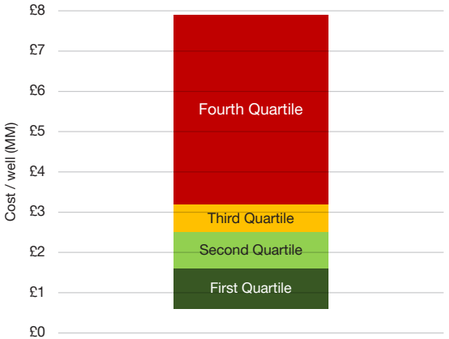


Subsea development well decommissioning costs in the NNS & CNS

Unit costs have halved since 2017, and cost uncertainty much reduced. This positive performance has been sustained.

	Units: MM
P25	£6.0
P50	£7.3
P75	£9.3

Figure 13A: Subsea development well decommissioning cost distribution: NNS & CNS

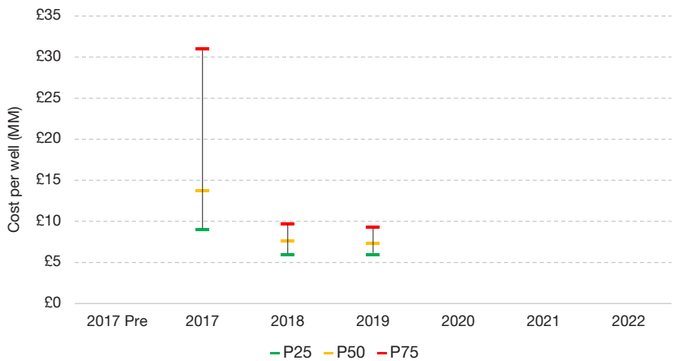


Figure 13B

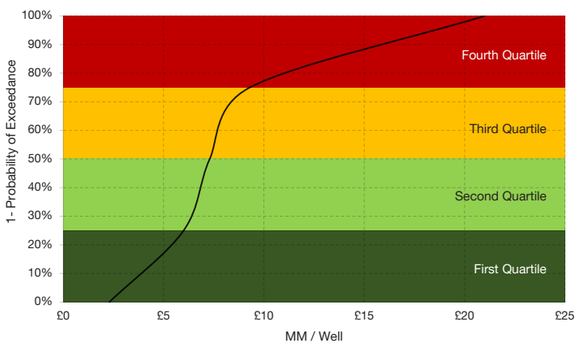
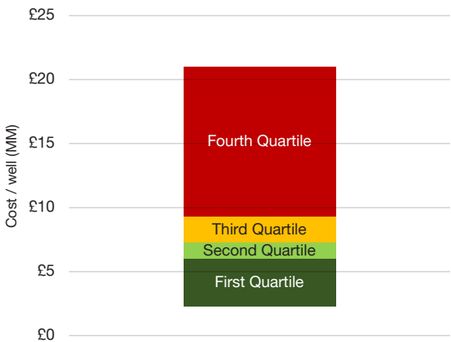


Figure 13C



Subsea development well decommissioning costs in the SNS

Unit costs and cost uncertainty have both reduced substantially since 2017.

	Units: MM
P25	£4.8
P50	£5.4
P75	£7.0

Figure 14A: Subsea development well decommissioning cost distribution: SNS

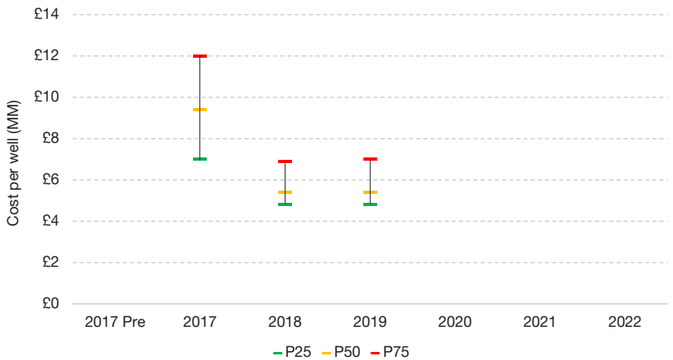


Figure 14B

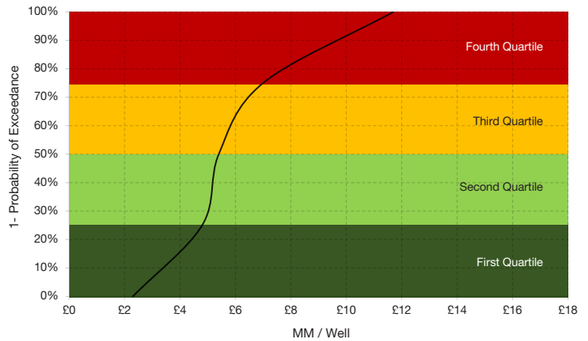
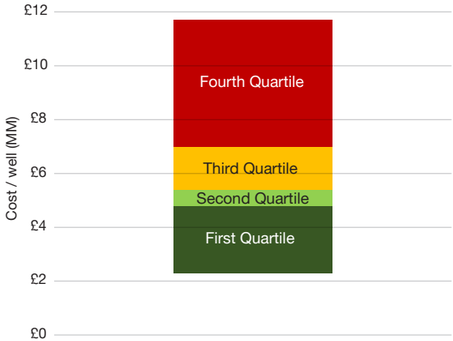


Figure 14C



Subsea Exploration and Appraisal (E&A) well decommissioning costs in the NNS & CNS

New benchmark. Suspended E&A wells typically have lower decommissioning costs than subsea producers and injectors, due to the absence of completion tubing and/or a simplified casing scheme. Cost data for these wells are therefore analysed separately to development wells.

The costs reflected here represent the full abandonment of a well i.e. 'Type 0' wells which have negligible remaining scopes are not included.

	Units: MM
P25	£2.2
P50	£2.7
P75	£7.8

Figure 15A: Subsea E&A well decommissioning cost distribution: NNS & CNS

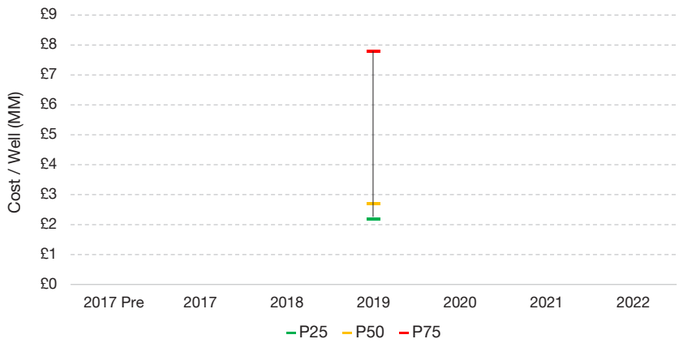


Figure 15B

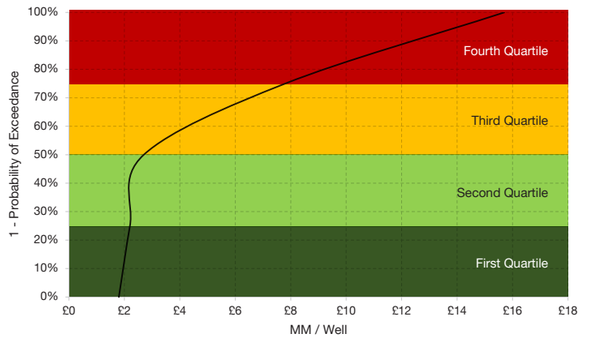
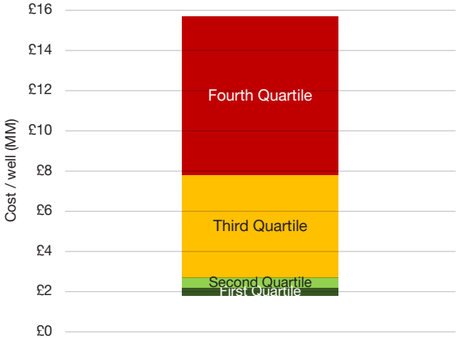


Figure 15C



Subsea E&A well decommissioning costs in the SNS & EIS

New benchmark. Suspended E&A wells typically have lower decommissioning costs than subsea producers and injectors, due to the absence of completion tubing and/or a simplified casing scheme. Cost data for these wells are therefore analysed separately to development wells.

The costs reflected here represent the full abandonment of a well i.e. 'Type 0' wells which have negligible remaining scopes are not included.

	Units: MM
P25	£2.5
P50	£4.1
P75	£6.6

Figure 16A: Subsea E&A well decommissioning cost distribution: SNS & EIS

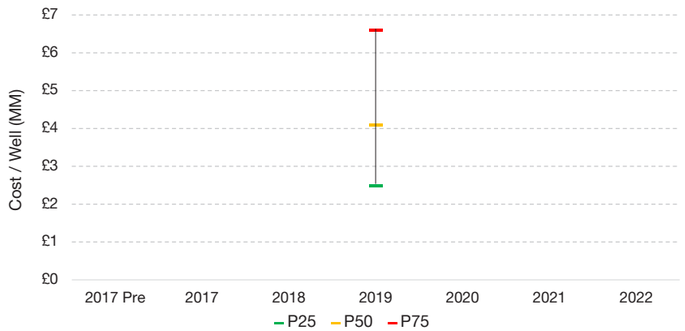


Figure 16B

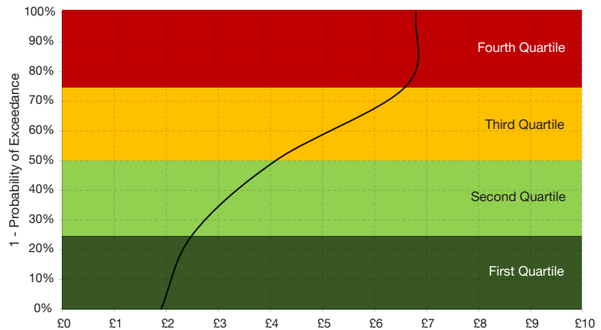
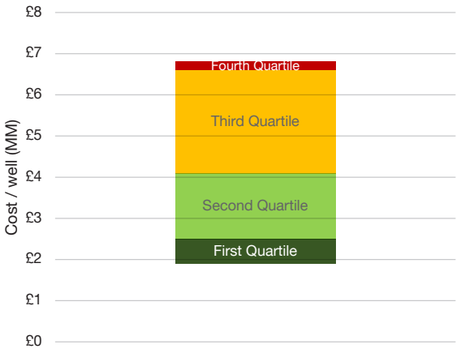


Figure 16C



FPSO removal (incl. disconnection and tow) in the NNS & CNS

New Benchmark.

	Units: MM
P25	£11.2
P50	£21.1
P75	£27.9

Figure 17A: FPSO disconnection and tow

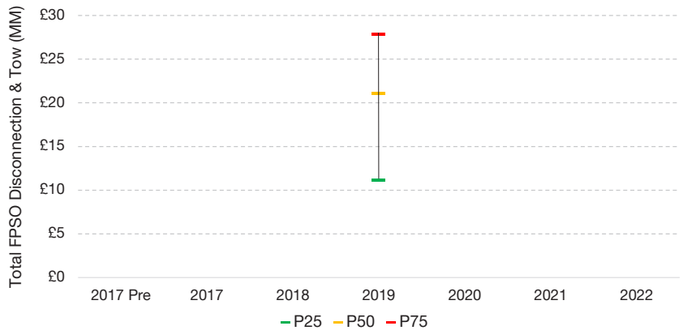


Figure 17B

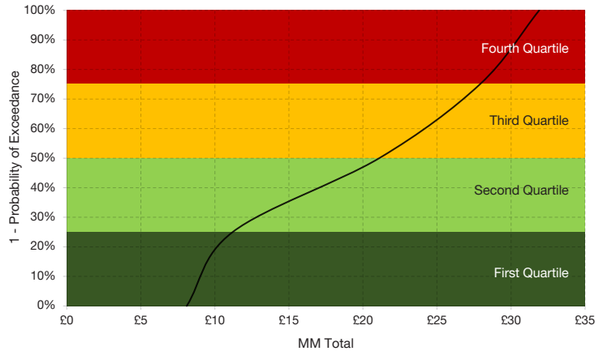
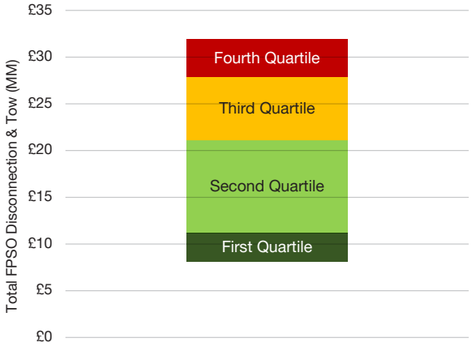


Figure 17C



Appendix: Data screening rule-set

A simple rule-set is utilised when selecting data for inclusion when calculating the benchmarking metrics. The main purposes of the rule-set are to ensure that:

1. data is sufficiently current to be relevant
2. there are sufficient datapoints to create a meaningful s-curve
3. high certainty is achieved for the few benchmark categories[1] which are not completely based on historic-costs/actuals or fixed-price contracts

The rule-set evolves based on experience of where it results in misleading results. The rule-set as of Quarter 2 2020 is listed opposite:

[1]Project Management, Post-CoP Running Costs, Permanent Isolation and Cleaning

Relevant S-curves	S-curves are done by WBS, unless a subset of data from one WBS can be accurately tracked, e.g. subsea and platform well P&A within the 'Well Abandonment' WBS.
Data validity criteria (1)	The S-curves should only include data points from the start of the previous year if there are 5 or more data points in this period, except for well P&A where the previous 2 years of data will be taken. (Reasoning: well P&A often done in batch mode which can take >1 year from P&A start to finish) If there are <5 data points in this period then data can be taken from previous years to get the minimum 5 data points required. If there are not 5 data points available then there will be no benchmark calculated.
Data validity criteria (2)	Data points can either be actuals where work has been fully executed by an operator and the actual cost is known, or costs where there is a high level of certainty e.g. fixed price contract in place or high percentage of work complete. *For Running Costs, we class a high degree of certainty when either the PM spent is >80% or when the associated platform well P&A is underway and the amount of running cost spent is >30% of the total running costs expected to be spent. *For Project Management, we class a high degree of certainty as when either the PM spent is > 80% or the total decommissioning estimate is certain (i.e. complete, underway, contracts placed for majority of the activity) and > 50% spent. The actual PM is typically considered certain as the Operators core project team wont fluctuate significantly during a decommissioning project. *For Isolation & Cleaning, we class a high degree of certainty when >80% of the spend has occurred. Note: the data points that are not actuals should be shown on the S Curve in grey font and the actuals should be shown in black font.
Benchmark calculation	Add the data into the data table within the appropriate WBS tab. Sort the data by the appropriate benchmark metric e.g. Cost highest value to lowest value. Percentiles and point numbers will calculate automatically and update the S Curve. The P10, P50 and P90 will calculate automatically and update the 'Benchmark Table' to which it is linked. Check the numbers are as expected.

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