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Authority

2018 UKCS Projects Insights Report



Key Insights



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Projects performance has improved in 2018

Projects started up in 2018

10

10 projects started up

Projects consented in 2018

20

20 projects consented



Total projects spend £6.8 billion



125,000 boepd added



Project UDC has dropped from £19/boe in 2013 to £8/boe in 2018



60% of projects delivered on time. Historical performance 25% deliver on time



BP's Clair Ridge the one major project



490 million boe added to reserves



10% overspend on estimated budget
Historical performance 35% overspend



Approved capex of £3.9 billion



Value of NPV £5 billion (under central price assumptions)



Breakeven £20/boe

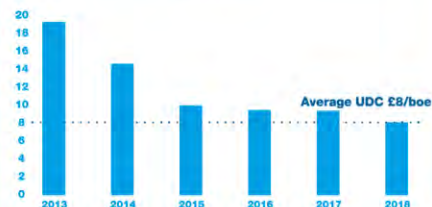
Project UDC has dropped 58% since 2013

For projects consented 2018 average Unit Development Cost (UDC) is £8/boe

Surpassed target for 2018 reserves added

3 billion boe

For projects consented 2018 average Unit Development Cost (UDC) is £8/boe



Target 300 mmboe additional reserves annually

There is over 2 billion additional barrels that industry is targeting for identified projects



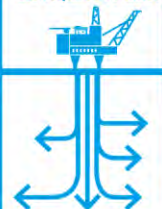
Standalone develop infield

It is expected that all future projects use some form of existing infrastructure. It is estimated that 75% of future projects will be subsea tie backs to existing infrastructure and 25% of future projects are infield projects (FDPAs) or standalone developments



Average capex spend per project is less than £200 million when West of Shetland projects are excluded

A significant number of subsea developments are required to deliver the required volumes



Future WOS Projects account for 50% of current potential resources and estimated capex. These technically challenging projects are vital to the industry. Collaborative work, technology and the supply chain are key to unlocking the full potential of this area



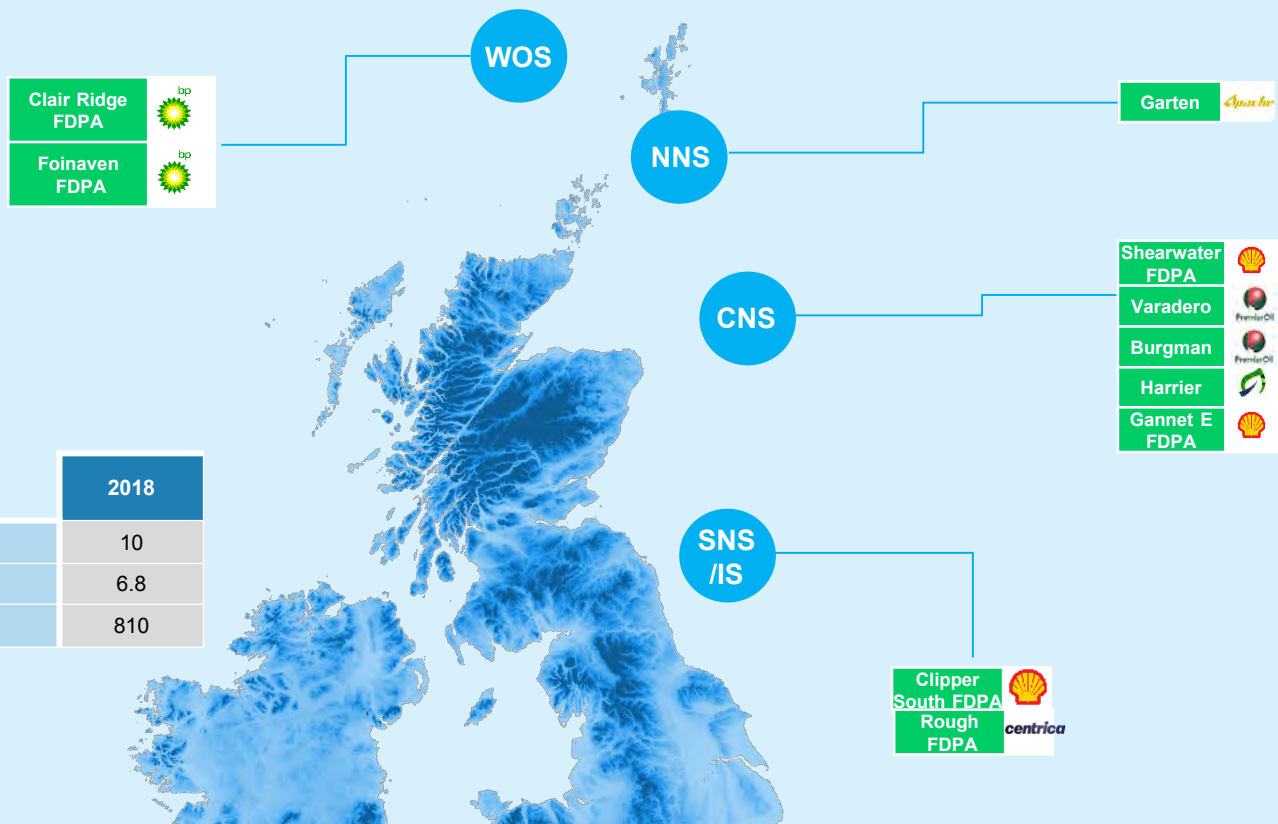
Project activity is increasing and projects are delivering value

Industry needs to work collaboratively to unlock the full potential

Projects Delivered in 2018



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	2018
Number of projects	10
CAPEX (£ billion)	6.8
Reserves (mm boe)	810

Ten projects started up in 2018 and added additional peak daily production of 125,000 boepd

2018 Performance

2011 – 2017

2018



25% of oil and gas projects were delivered on time



60% of projects delivered on time



Projects averaging 10 months' delay



Projects averaging 7 months' delay



Projects average overspend was 35%



Projects average overspend was 10%

Projects delivery is improving but more can be done

Subsea Project Delivered at Pace: Garten

Discovery to first Oil in less than 12 months

Apache's Garten project

- Fast track success story.
- Subsea tie back to the Beryl Alpha
- Exploration well drilled in Jan 2018
- Start up in December 2018

Keys to success

- Established project team
- Existing alliance contracts
- Fully integrated the supply chain
- Early Engagement with OGA support

CULTURE AND LEADERSHIP

Set clear expectations
Facilitate approvals
Empower the team

CHALLENGE THE NORM

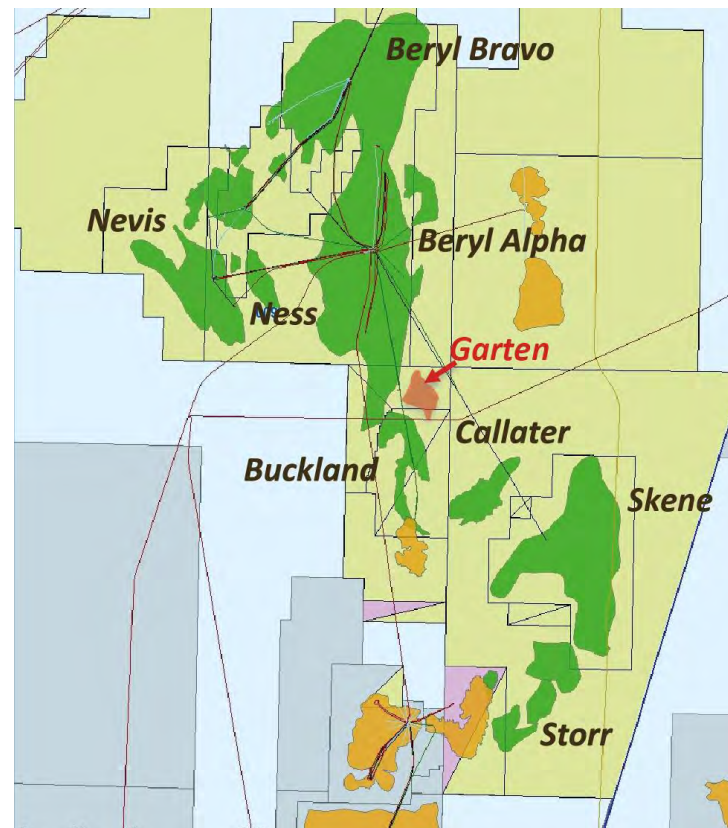
Identify critical path
Challenge history
Ask what can be done to accelerate

EARLY STAKEHOLDER ENGAGEMENT

Identify Stakeholders that can influence schedule
Explain Challenge and work together to deliver

FIT FOR PURPOSE DESIGN/ COLLABORATION

Utilise existing design
Don't optimise the unknown
Trust the Supply Chain



Fast track development from discovery to first production in less than twelve months

Projects Consented 2018



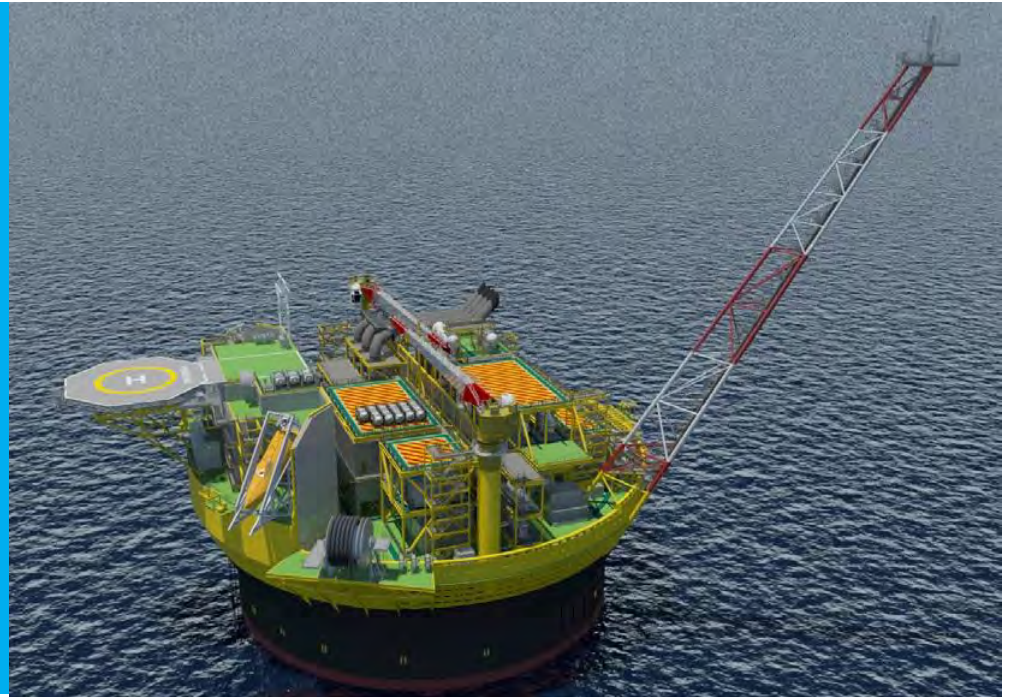
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Highly encouraging turnaround in investment outlook

Case Study: Shell's Penguins, Sevan Circular FPSO

- Deployment of “standardised” SEVAN Marine technology
- The Penguin FPSO will be the 12th circular Sevan and the 2nd of the SEVAN 400 design
- Verified lowest cost solution. Turret absence, compact design
- Less downtime with more favourable motions compared to ship-shaped FPSO's
- New Technology adopted
 - VR technology in design and engineering
 - Technologies embedded in EPC scope
 - 4D construction
 - Creating a digital twin



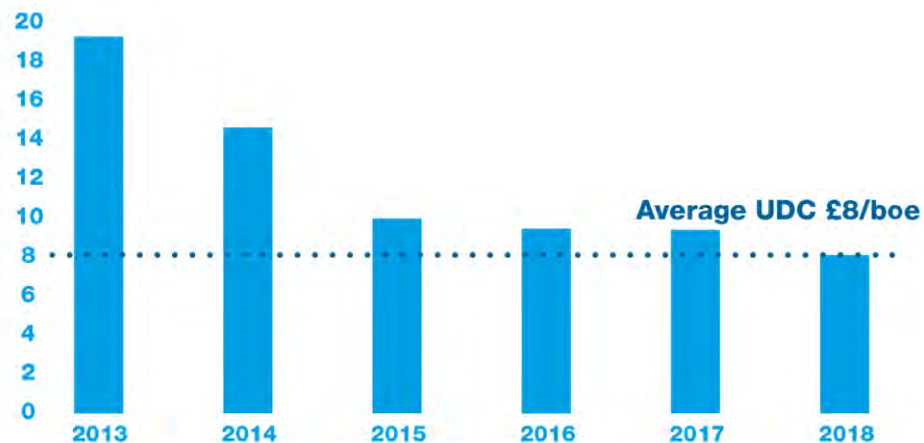
Project Metrics 2018



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There has been significant improvement in the value metrics for projects consented in 2018.

- Average UOC is £9/boe
- UOC of the 2018 consented projects is 26% lower than those consented in 2017
- Average Project Breakeven is £20/boe
- New projects using existing infrastructure will also reduce the opex of the producing asset, creating additional value and delaying the end of field life



For projects consented 2018

Average Unit Development Cost (UDC) is £8/boe.

Down from £19/boe in 2013

Project Activity Outlook

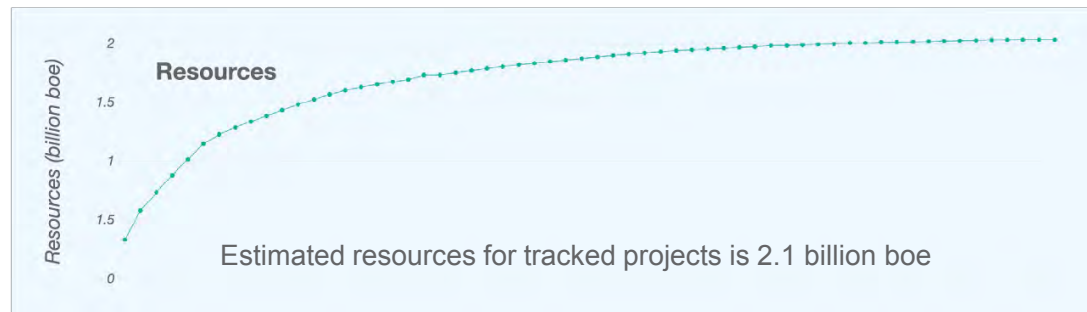
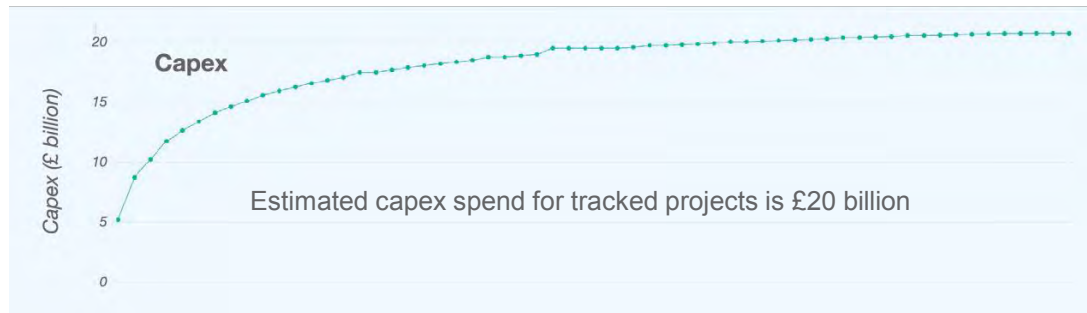


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The OGA is tracking over 60 Projects in Assessment and Authorisation Phase (Pre FID).

These projects should be consented over the next 3 years with new projects added as exploration and resource maturation opportunities arise.

- The OGA estimates consenting 20 - 30 FDPs / FDPAs per year
- Annual capex of £2 - £5 billion
- Resources in the range of 200 – 500 million boe per year
- These projects represent a subset of the full contingent resource inventory in the UKCS



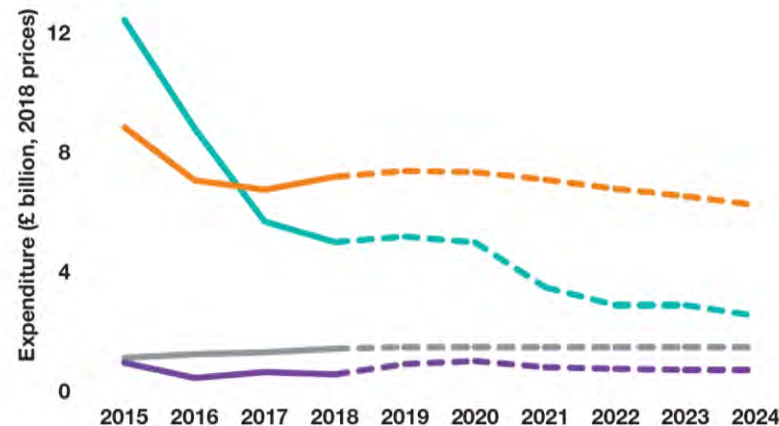
There is a healthy portfolio of projects being managed by industry towards consent

Project activity needs to increase

However annual projected capex spend is showing a decline from 2021.

We need to reverse this !

Expenditure (total by category)



Charts legend

- OPEX (£ billion, 2018 prices)
- CAPEX (£ billion, 2018 prices)
- Decommissioning Costs (£ billion, 2018 prices)
- Exploration & Appraisal Costs (£ billion, 2018 prices)

Project Size and Pace



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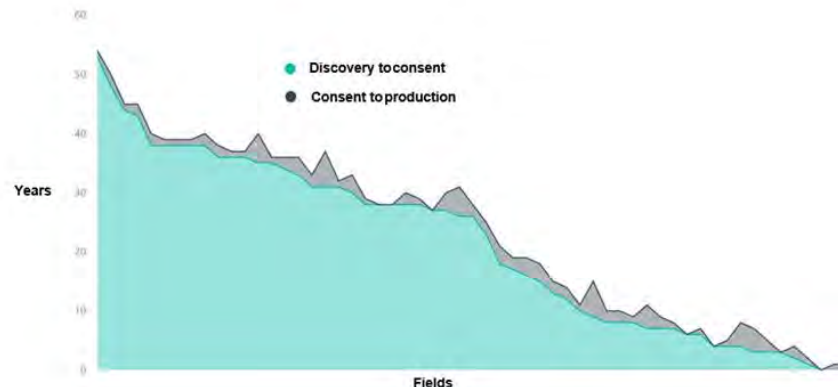
Small near field and in field projects using existing infrastructure are key to the future

- It is expected that all future projects will use or tie into existing infrastructure.
- It is estimated that over 75% of future projects will be subsea tie backs and infield projects
- The current project portfolio Pre-FID is showing an average capex spend per project of less than £200 million when West of Shetland projects are excluded
- A significant number of subsea developments using existing infrastructure are required to deliver the required volumes.
- We need to be delivering 20 - 30 subsea tie backs and near field developments a year to meet the vision

West of Shetland holds the greatest potential for large projects

- Future WOS Projects account for 50% of current potential resources and estimated capex.
- These technically challenging projects are vital.
- Collaborative work, technology and the supply chain are key to unlocking the full potential of this area.

Pace - Projects need to move quickly from discovery to FID



Projects being tracked by the OGA, the average time from Discovery to FID is 25 years.

The time line from discovery well to FID needs to be streamlined

Based on operators decommissioning plans, it is estimated that 90% of existing infrastructure will be gone by 2040.

The use of existing infrastructure is key to unlocking the marginal discoveries, but the window for use of this infrastructure is narrowing

Projects need to be moved quickly from Discovery to Final Investment Decision (FID)

Project Lessons Update



The OGA completed a lesson learned study in 2017 and issued a report, “Lessons Learned from UKCS Oil and Gas Projects 2011-2016.”

The lessons in the report were categorised under the five focus areas. Behaviours, Organisation, Project Management, Front End Loading, Execution.

Under these categories the main lessons from the OGAs 2017 report have been summarised in the following section of the report. Key updates have been added to show industry has taken on board the lesson since the report was published.

The OGA has updated the FDP Guidance (Requirements for the Planning and Consent of a UKCS Field Development) taking into account some of the key findings of the study.

Lessons focus areas



2011-2016 Findings

1. Some operators employ more staff to find problems with contractors; so contractors employ more people to counteract this “attention”.
2. Often notable difference between the “aspiration of the client” and realism of what can be done.
3. Better integration and alignment with client – with focus on “softer” areas.

Industry Adoption

1. The operators senior management, project teams and the supply chain understand and agree the project drivers. There is open and honest dialogue on challenges and the teams are working together to find solutions.
2. The use of the ECITB collaboration toolkit is common throughout the industry and is delivering benefits to the industry by reducing inefficiency and creating dynamic working teams aligned to shared goals.

The ECITB’s Project Collaboration Toolkit (PCT) was created to help the UK’s oil and gas industry improve its efficiency in a competitive global market by sharing skills and expertise to keep costs down. The toolkit offers advice and guidance to companies looking to work together more efficiently. The toolkit shares industry best practice and guides clients and contractors on joint working. The PCT is now used across the industry and is a check during the OGA’s Tier 1 meeting with Operators. It is now used across the industry on most projects and the teams are seeing the benefits where collaborative working has improved efficiency and kept costs down.



Project Lessons – Organisation



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2011-2016 Findings

1. There is a strong relationship between Project execution efficiency and the people employed to deliver it.
2. Delivery organisations are not always provided sufficient delegated authority to manage their Project effectively.
3. Time spent investing in aligning project team, partners, supply chain and regulators at the beginning is time well spent.
4. Continuity of Project teams
5. Involve the supply chain early, develop cooperation and strive to work as one team. Building a single Project-wide culture helps deliver successful projects.
6. There has been a trend of increasing owner's team costs over the last 10 years and an increasing reliance on temporary agency staff in both Operator and engineering contractor workforce.

Industry Adoption

1. Early engagement of the supply chain, and a focus on continuity and alignment of project teams. There has been a drive to reduce owner costs and spend time to create a “one” team culture at each stage of the project.
2. There is now a focus on the experience and project specific training for the project team and an understanding that it is the people that deliver a successful project supported by a robust process.

Project Lessons Update – Project Management



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2011-2016 Findings

1. Incomplete Front End Loading (FEL) at consent e.g. use probabilistic costs/schedules rather than deterministic.
2. Create a robust, resourced cascading Project schedule by competent planners. Apply strict Management of Change –for schedule as well as scope.
3. Project team is ultimately responsible for interface management so don't delegate it.
4. Whilst there has been an increase in processes, tools, project controls, supervision and engineering man-hours there is no obvious improvement in the ability to predict outcomes than in the past.

Industry Adoption

1. Operators have reviewed their project delivery process and procedures and have created streamlined process's aligned to efficient agile project delivery.
2. Operators are now using industry standards and supply chain led solutions, ensuring the project captures the best practices and optimal solutions for successful project delivery.

Project Lessons Update – Front End Loading



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2011-2016 Findings

1. Many “schedule” driven (not cost driven) Projects started with incomplete scope and unclear objectives/ priorities. A number of Projects clearly “limbo’d under the bar” and subsequently delivered late and over budget.
2. There is a high risk to achieving outcomes if key resources (e.g. rigs; DSVs, long leads etc.) are not tied down at consent (something exacerbated in a heated market).
3. If you choose new/unfamiliar contractors/vendors, build a new project team, have significant first of a kind elements then build in sufficient cost/schedule contingencies at Project Sanction.

Industry Adoption

1. For Final Investment Decision (FID) project teams have created risked, deterministic schedules which have been benchmarked.
2. Scopes are tied down at the end of FEED and risk registers highlight uncertainties to manage through detailed design
3. Some projects are delayed due to financing issues which could then force the project team to rush to recover the schedule driving poor behaviours.
4. Some FEED scopes and schedules may be streamlined to meet milestones dates.

Project Lessons Update – Execution



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2011-2016 Findings

1. Finish FEED before starting detailed design; finish detailed design before starting construction OR aggressively manage the cost/schedule/organisational risk; and include appropriate contingencies. An alternative view is that fast tracking can be effective if the risks and uncertainties are understood and accounted for in the estimates and managed accordingly.
2. Risk management must consider commercial/organisational risk in addition to technical.
3. Project team is ultimately responsible for interface management so don't delegate it. Scope growth from vendor packages and specifically weight control from FEED to detailed design is a recurring challenge (insufficient allowances included at consent).
4. Transition Management. Most projects underestimate offshore hook-up and commissioning effort. Fabrication is rarely complete when facilities are sent offshore.

Industry Adoption

1. Issues are being identified early in detailed Design and teams and the supply chain are working together to find effective solutions.
2. The teams that worked on the FEED are transitioning into detailed design and this ensures ownership and understanding on the scope.
3. Change Management is being instigated in a robust and thorough method leading to good decision making based on the correct information and impact.

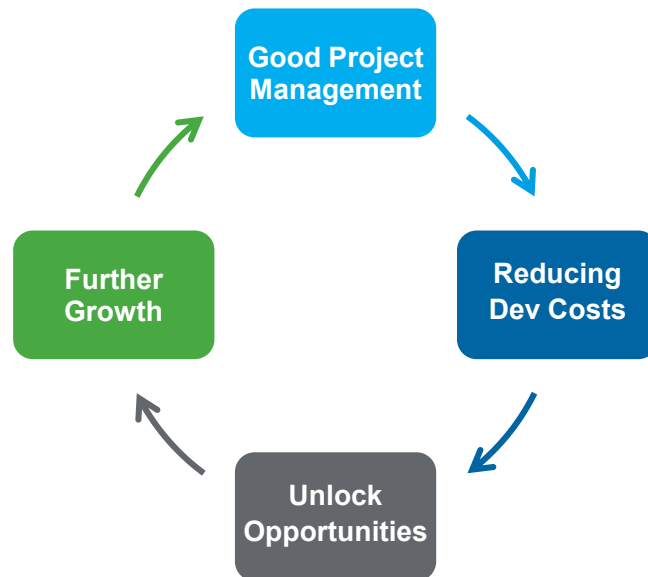
The OGA's Role



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To support the industry to deliver projects successfully the OGA will focus in the following areas:

1. Continued Stewardship utilising the SE5 Robust Project Delivery Stewardship Expectation
2. Update the FDP Guidance "Requirements for the Planning of and Consent of a UKCS Field Development" to better support MERUK.
3. Developing a UKCS projects insights data base to leverage knowledge and promote best practices
4. Develop a consistent approach to benchmarking UKCS projects and setting Industry targets
5. Support and engage with industry on Project Management initiatives and sharing best practice and opportunities for project collaboration with operators and the supply chain



If industry can demonstrate the capability to deliver projects successfully, on time and on budget, further investment and more projects will be approved

Robust Project Delivery



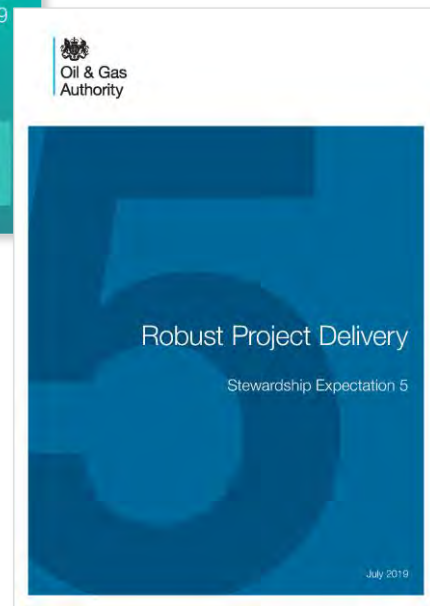
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The OGA expects that operators can efficiently manage a project portfolio and deliver projects to the schedule, cost and production performance

This expectation will support the OGAs engagement process and looks to help deliver a consistent approach to project delivery across the UKCS.

To support this Operators should:

1. Demonstrate how the project portfolio is managed
2. Demonstrate the use of an effective organization with Governance and Project Management systems supported by accountable and competent leadership to successfully deliver projects
3. Demonstrate sufficient front-end preparation and benchmarking has been completed prior to project sanction
4. Demonstrate a clear focus in maintaining value in the execution phase of the project



Field Development Process



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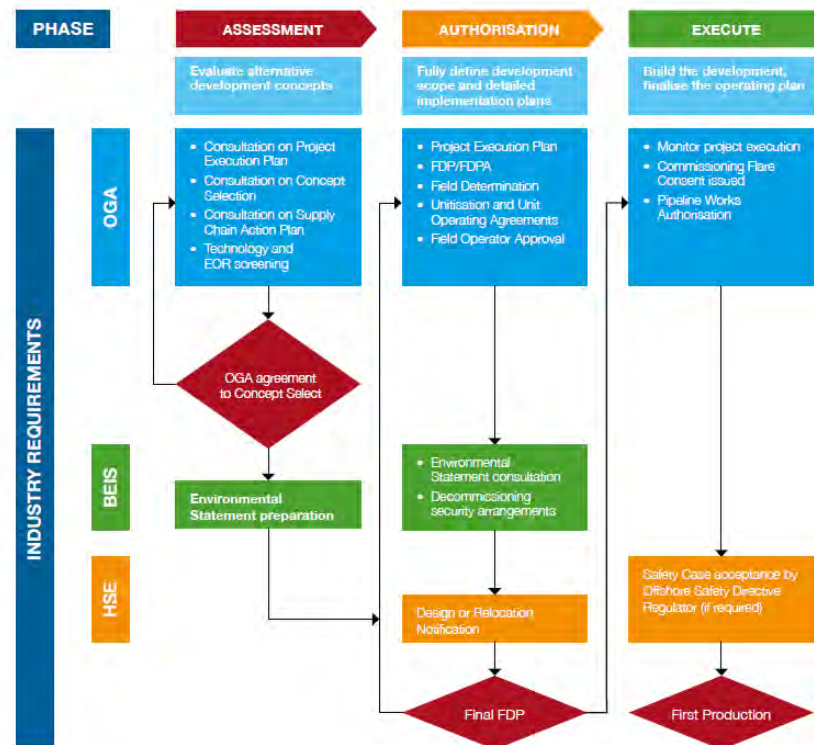
Requirements for the Planning of and Consent of a UKCS Field Development

The OGA updated the FDP Guidance to ensure the process was aligned with operators project delivery gate process.

A key focus is on earlier engagement with the OGA during the concept select stage. This ensures the OGA support the operators to meet the requirements of MERUK.

To ensure all projects deliver MERUK they need to have been tested rigorously during the Assessment and Authorisation phase (Pre-FID) and delivered predictably through the Execution phase.

Field Development Plan Roadmap



Projects Insights Database



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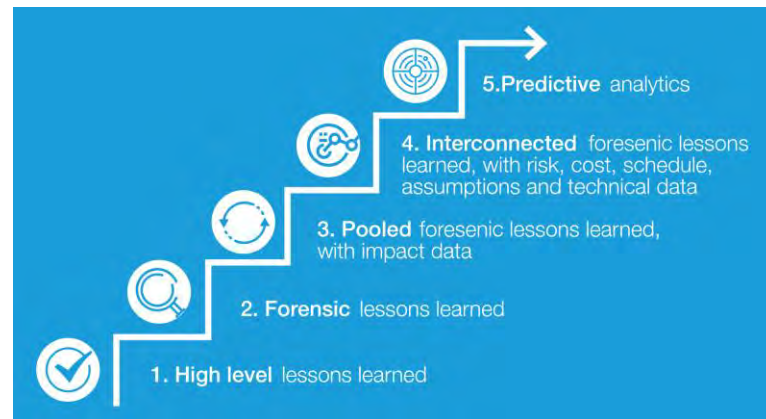
The OGA and the OGTC are working with industry to build a data trust and a UKCS projects database with machine learning capabilities.

The Vision is to transform how industry leverage project experience and data

- moving from a world where valuable data is archived leaving lists of lessons learned
- towards an environment where project managers are provided with real time insights that are highly relevant to their project and can identify potential problems and mitigate them in advance.

The OGA and OGTC will work with industry to :

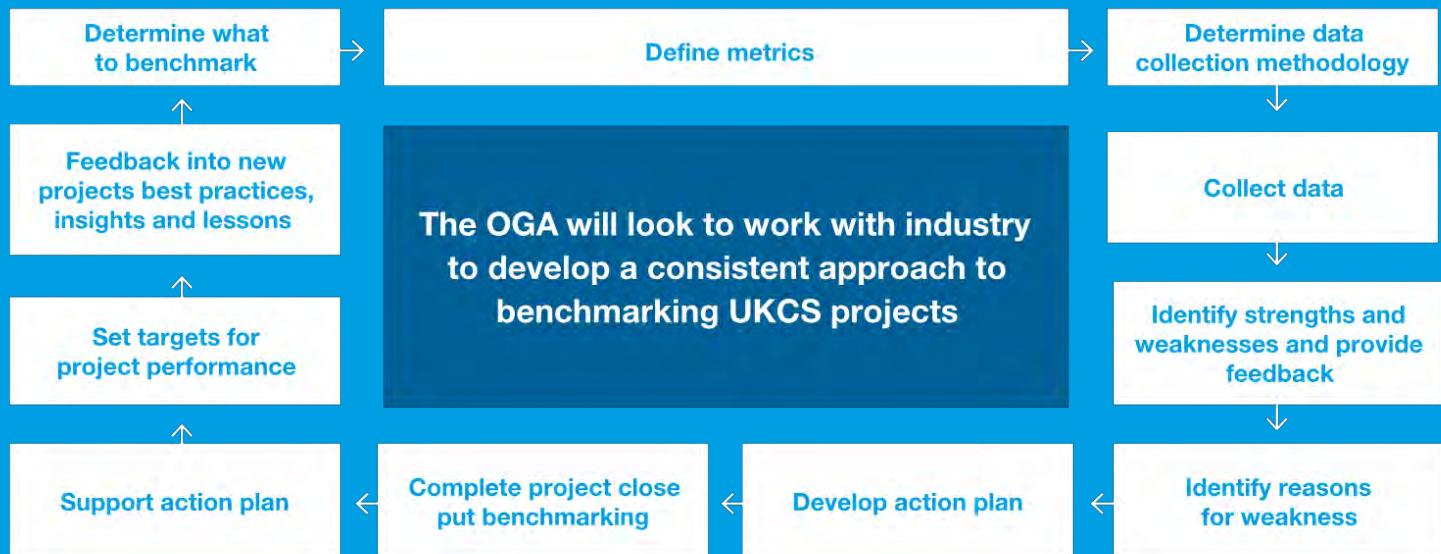
1. Create a data trust
2. Gather data to populate a graph data base
3. Enable users to use the graph data base to support projects to identify lessons, risks, issues, change, QA observations, and better define cost and schedule. Ultimately moving towards machine learning capabilities
4. Provide a secure and scalable foundation for AI to begin to identify early warnings and the predisposition of certain projects to variance.



Project Benchmarking



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All projects should be benchmarked ahead of final investment decision.

Benchmarking can provide insights into the robustness of the FEED work and key areas of focus as the project moves into the execution phase.

Across industry there is a varied approach to benchmarking, including a range of external providers. Some projects rely on internal independent benchmarking assessments and peer reviews. The OGA will look to work with industry to harness this data to support consistent project delivery.

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Thank you
Andrew Buchan
Senior Project Advisor

