

# CONTROL BROWNFIELD PROJECT AMONG CHANGES, CONTRACTOR PERFORMANCE AND RE-WORKS

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**Abstract:** This article explores the unique challenges faced in brownfield project execution, where scope modifications, contractor performance, and rework often intersect to impact overall project delivery. It highlights, the complexity of changes in existing operational environments and their implications for project schedule, and safety, and the role of contractor performance monitoring and how proactive oversight contributes to mitigating risks associated with delayed deliverables and quality issues. The article concludes with recommended best practices and lessons learned, providing project professionals with actionable insights to enhance efficiency, reduce rework, and drive successful outcomes in brownfield environments by effective leadership. This article will add value to your readership, as it addresses real world project management challenges.

**Keywords:** brownfield project execution, contractor performance, brownfield environments.

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## 1. INTRODUCTION



Brownfield projects those that involve the enhancement, expansion, or modification of existing operational facilities are inherently **complex** (Visser et al., 2015; Mahmood, 2020). In contrast to greenfield projects, which are constructed on undeveloped land, brownfield projects must be planned and carried out within the limitations of ongoing operations. This situation introduces an additional part of risk and complexity, making the alignment between the project team and operations absolutely essential. Obtaining operational support and coordinating shutdowns are not merely procedural steps; they are fundamental pillars that dictate the success or failure of a project.

Building strong operational alignment and stakeholder engagement is not only key driving progress, it's also forming the foundation for effective risk management. Risk management encompasses various types that can be examined and emphasized within project management, particularly in the brownfield projects. One significant risk involves the awarding of contracts for brownfield projects, where selecting the appropriate procurement strategy, contractor, and contract structure is crucial to minimizing disputes and cost overruns, which are key focus areas of risk management. The contract must explicitly outline the scope of work. This includes, but is not limited to, responsibilities related to site mobilization and early works. Throughout the bidding stage of the project, numerous factors must be considered to minimize risk during the execution phase. This encompasses a transparent bidding process along with the requirement of performance guarantees or insurance. To guarantee that all parties remain aligned and accountable during the project, it is crucial to establish clear communication, well-defined deliverables, and legally robust agreements.

Numerous critical factors are involved in securing funding for brownfield construction projects. These include completing the requirements of the fund approval cycle such as completing and approving the project budget estimate, receiving high or very low bids, or new instructions to add or optimize scope of work. Such risks necessitate a thorough financial evaluation of the bidders and require contractors with substantial financial expertise and extensive experience in brownfield projects to mitigate potential financial risks. Furthermore, the company can establish cost and schedule contingencies. Effectively addressing these risks through due diligence, clear contracts, and proactive stakeholder engagement is vital to frees the scope and attracting bidders to ensuring the success of the project.



After several months to **planning** the brownfield project the engineering design phase was successfully finalized to upgrade fire water and oily water systems in four site locations. The Original Estimated Completion date for the project was set three years after the fund approval, and Mechanical Completion Certificate (MCC) was scheduled 2 Months before the project commissioning. It looks like as solid plan, yet, two Project Change Requests were submitted for this project; the first aimed to extend the project completion with 1 year due to delays in contract awarding. Conversely, the second change sought to extend project completion 1 year, due to termination of a contractor responsible for three sites at that time

due to contract breach in mobilization the key personnel, commenced the site early works and start project procurements. After 40% of one of project site, second contract termination was attributed to financial difficulties and the contractor's low performance, as they struggled to manage the complexities associated with this brownfield project. The project continues with new four contractors, each exhibiting different performance levels at their respective sites, alongside engineering challenges at each location. This situation highlights the significant changes inherent in such projects, which require a contractor with substantial experience in managing similar activities and possessing strong planning capabilities for executing construction activities while ensuring all necessary alignments with stakeholders.

This article aims to investigate the significance of project management and operations teams during the execution of brownfield projects. It will analyze how alterations in scope can threaten scheduled activities and postpone project milestones. Most crucially, it will offer practical advice and recommendations to enhance coordination, effectively manage scope changes, and obtain the necessary support and shutdowns from operations. By implementing these best practices, organizations can minimize conflicts, improve efficiency, and boost the chances of successful project completion in complex operation filed (Mahmood, 2020; Visser et al., 2015).

## 2. BROWNFIELD CONSTRUCTION PROJECT

Starting project construction activities with clear approved scope of work and drawing might be hits by force majeure, actual site condition and changes not reflected in the design package such as underground utility not captured by the approved design, operation modifications in the facility happened due to emergency nor changing in operation procedure not reflected in new design drawings. All that's will lead eventually to sever impact to the procurement cycle eating the designed float planned for vendors delays impacting the critical path and cause a scope creep leading the project team to change the project schedule. Not only that, construction contractor who was signing this contract without cashflow that can handle the hidden risks will be living in nightmare to cover the fixed expenses to operate the construction site offices and pay the salaries until he placed the first purchase requisition or achieve first 5% construction reducing his profit margin to a break even or to bankrupt if contractor didn't manage it very well.

*All above mentions will be the fuel of the projects constrain as it's defined by PMI "Time, cost, Quality, Benefits and Risk".*

## 3. PROJECT STAKEHOLDERS

Having such bad start will make things even worst with main stakeholder "operation" as they are powerful in giving you the work permit at site to start the work without having the interest about your issues with contractor schedule since it is not in their priority list.

This bad start will make them doubting about the design packages and they might add new requirements and restriction to allow you to processed with the site activity to control the normal daily operation. From this point, they will tack over project team role and they will control project schedule by adding approval process to processed with the work permit, all the problems will be resolved in there meeting room not in the construction facility meeting room from now on.

*Note: PMI Stakeholder assessment matrix simplify stakeholder analysis helps to manage and communicate with stakeholders in the most effective way to improve project outcomes.*

In order to have the control back to the site activities schedule, team will need to excessively engaging the operation team. Project engineer shall engage operation team in daily basis for every single issue at the site standing in front of it with them making them part of the solution, not just the approval process, giving them a sense of control and ownership over the project. After all, Operations holds the power on the ground. When they feel involved, they become more willing and even eager to support the project. They will stop acting as gatekeepers and start acting as partners proposing alternatives, finding solutions, and helping move things forward. The second step is show appreciation and respect for their input but also to maintain the integrity of engineering standards. The key is to take their suggestion forward and have it reviewed to ensure it meets all safety and technical engineering standard requirements. In parallel, informing project inspection team with what is about to come or change to take their expectation in order fulfil the Quality requirement before you start the implementation is a must.

This balance between collaboration and control results in stronger solutions, smoother execution, and a healthier project environment where every stakeholder feels respected and involved.

#### **4. CONTROL CHANGES**

Changes is natural in complex brownfield sites. For that, project team will face project change requests due to the actual site condition or due to the design deficiency that need to be handle as fast as the revised scope is engineered and accepted, considering the schedule impact of the procurement.

While project team working in the changing process, project team responsibility to maintain progress at site is still required. for that, engaging operation in this to come up with new plan to take new open front at site that can be started immediately is smart action which will required from project team to be fixable to change the contractor plan to avoid stand bay time.

Among processing the changes, project team shall verify and validate the change to avoid “Gold plating” by USING DIPLOMACY to reject the none scope changes not by saying no, it might shutdown all the excellent communication channel project team already have with operation. But to be very smart to accommodate the operation concerns and confirm your understanding, then, sharing with them your verification about the change if it’s required from scope and engineering perspective? And the impact of implementing this change. If operation still need the none scope change, immediately ask them to send it officially to project management team to route the change request to the change committee responsible about the none scope change request. The none scope of work new change request will resulted -if it’s accepted- to change in the project schedule, additional fund request and contract amendment, for that, it will be required focused force team to accomplish this task with minimum impact to the ongoing project site activities.

#### **5. PROJECT RISK MANAGEMENT**

Risk management is a cornerstone of successful project delivery, during the project engineering phase. Conducting a Project Risk Management session at this stage is essential to proactively identify, evaluate, and plan the action for each identified potential Risks before it escalates into costly delays as it will be more cost effective if we eliminate or mitigate the risks in the early stage of the project. We usually focusing in risk related to construction activities, execution constraints, Interfaces with operations, ensuring minimal disruption to ongoing facilities and the Interfaces with external stakeholders, such as government agencies. Each identified risk is assessed by evaluating its probability and impact, followed by developing mitigation strategies. However, to address the unique complexities of brownfield projects, it is critical to **expand** risk assessments during design stage - FEL-3- to capture potential commercial and market risks which will significantly affect project funding and schedules such as; Low number of contractor participation in biddings which will reduces competitive natural of the awarding process impacting price of the project. Also, High bid prices and Inflated bids may exceed budgets, delay funding approvals, and cause scope optimization. Moreover, participation of low performance contractors with inadequate capacity or poor track records can create delay in the project execution and increase quality issues during construction phase.

To mitigate these risks effectively, the project team must work in close coordination with the procurement department in early stage of the project as they are overseeing and controls all contracting processes. Establishing an early engagement with the market as well by verifying the list of bidders and the current work load, which is essential to understand contractor capacity, gauge contractors’ interest to the project, and set realistic expectations before the tendering stage. Leveraging procurement department’s structured prequalification process ensures that only technically capable, financially stable, and safety compliant contractors are invited to bid, reducing the likelihood of poor performance during execution. Maintaining a transparent and competitive tendering process by clear scope of work with list of project risks, and realistic timelines will helps prevent inflated bid prices and encourages healthy participation. Additionally, incorporating market intelligence and

cost benchmarking during FEL-3 enables the team to anticipate pricing trends and detect differences before funding approvals are finalized. Finally, contingency planning, developed jointly between the project team, project sponsor and procurement teams, ensures that alternative execution strategies are available to be implemented.

## **6. BRIDGING THE GAP BETWEEN TENDERING PROMISES AND SITE REALITIES**

One of the recurring challenges in project execution is discrepancy between a contractor's tendering submission and their actual performance on site. While many contractors submit an accepted technical proposal, these often fail to reflect their real capabilities, leading to project underperformance, financial strain, and in some cases, contract termination. To address this, we must enhance the post-technical evaluation process through site readiness assessments, resource verification, and historical performance reviews. However, this must be done with strategic balance. As part of the bigger objective to localize and grow the contractor base in Saudi Arabia, it is essential not to overly restrict participation. Encouraging more qualified local contractors enhances market competition, reduces reliance on a limited group of dominant firms, and supports sustainable bidding practices. The goal is to create a system that filters out underqualified contractors without discouraging market growth, ensuring quality execution while nurturing a healthy, competitive local contractor ecosystem.

## **7. CONTROL CONTRACTOR CASH FLOW**

While scope alignment and site readiness are key to project delivery, one critical risk often goes unnoticed until it's too late: contractor cash flow instability.

whether due to engineering hold points, site access issues, or late approvals can cause unplanned work stoppages. These pauses don't just affect project schedule they directly impact the contractor's ability to proceed with procurement and construction, which in turn affects their ability to submit and process invoices. Left unaddressed, this can lead to cash flow strain, missed payments to subcontractors and vendors leading to a risk of bankruptcy. For that, Project team shall provide the construction team with the site access in an early stage of project and provide them with the required safety orientation and access ID card before the planned date of site mobilization.

It also recommended to mandate the minimum required number of certified work permit receiver, safety advisors, quality personnel to be added as part of the key-personnel requirement in the contract to assure that the contractor will submit the list of names and required IDs request in the first week of contract awarding. Considering the fact that most of the site key personnel names provided in tendering package might not be assigned to your project. Which is always occurred!

After contract awarding, project team shall raise concerns about possible underground and verify the civil site location using GPR scans, utility surveys, and engage experienced operations staff to validate existing data before contractor full mobilization.

In parallel, include design contingency in early planning for areas with known risk especially if the site has a history of undocumented changes.

Moreover, Project team shall communicate engineering hold points clearly once it's appeared and don't leave contractor waiting. If certain packages are on hold, help them reorganize their resources to focus on clearable areas. And fast track procurement approvals where possible and plan for float during NMR submittals.

Recognize the contractor's exposure. If they're idle due to site changes, support fair documentation and negotiation of time and cost claims, within contract limits.

Work with administration team to allow partial billing or progressive invoicing tied to specific work packages related to the completed work and issued change order.

Monitor the invoice cycle closely. If there are delays from your side (e.g., inspection, documentation, or internal approvals), take ownership of clearing them quickly.

## **8. CONCLUSION: RESTORING CONTROL THROUGH LEADERSHIP AND ALIGNMENT**

After facing multiple setbacks including the termination of three contractors and significant operational obstacles the project is now firmly back on track. This recovery did not happen by chance. It was the result of deliberate effort, with on ground leadership present by Project Manager, Director and Downstream Project Management VP to have close coordination with operations to re-engage resources, and restore momentum.

What we've achieved so far is not just a return to progress, but a demonstration of how complex problems can be overcome when leadership is present, responsive, and solutions oriented. In Complex projects, schedule control and contractor

performance are only part of the equation. The true turning point came when leadership stepped forward not from a distance, but by showing up on site, engaging directly with operations, protecting contractors from risk, and making decisions before problems escalated. This proactive posture made the difference. Equally critical is redefining the role of the Project Engineer. It's no longer just about delivering the technical scope; it's about leading relationships, enabling collaboration, and pushing the project forward even when the path is unclear. The project engineer becomes a facilitator of alignment, not just an executor of plans.

From the operational side, the shift from a passive approval role to an active ownership mindset proved transformative. When operations take accountability, decisions come faster, barriers are removed earlier, and the whole system operates with shared purpose.

Successfully delivering complex brownfield projects like this one proves more than just technical capability it demonstrates economic value. It shows our ability in Aramco to optimize and extend the life of existing infrastructure, maximize asset returns, and support long term industrial sustainability. They are all contributions to the wider economic and operational health of the company assets.

The lessons learned from this experience have been carefully captured to strengthen future project planning, contractor evaluation, and cross functional collaboration in order to deliver safely and efficiently the capital projects with best practices.

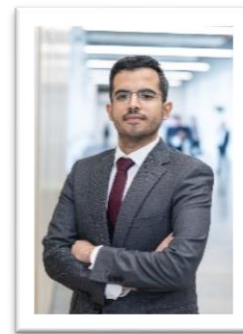
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