A framework for early contractor involvement in infrastructure projects

The PIANC report “A framework for early contractor involvement in infrastructure projects” is available for PIANC members (215 EUR for non-members) on the PIANC website. At some 183 pages, it provides a detailed introduction into the understanding and the application of early contractor involvement (ECI) in waterborne transport infrastructure projects. It is the only comprehensive guidance document available on the subject of ECI in the construction industry. It offers a practical approach to all industry practitioners to assist in the application of ECI in the waterborne transport infrastructure sector.

The report also identifies the hallmarks of successful ECI process, which have been established over many years, such as dealing with good faith, transparency, equal treatment of all parties, fairness, clarity through clear rules of engagement, confidentiality and protection of intellectual property. The stated aim of the report is to further promote and support the use of ECI in the global construction sector. It provides guidance to industry practitioners, clients, consultants and contractors on how to successfully implement ECI for the betterment of the industry as a whole.

The PIANC report states that the definition of early contractor involvement is a strategy.
**Current events and challenges affecting the construction market**

- Social and economic factors
  - Russian invasion of Ukraine
  - COVID-19 pandemic
  - Climate change
  - Inequality
  - Population growth
  - Natural resource demands

- Impacts to the construction industry
  - Supply chain impacts
  - Material cost increases
  - Delays
  - Labour shortages
  - Impact to bottom line
  - Increase in claim activity

- Mitigation techniques
  - Effective risk management
  - Alternative project delivery
  - Contingency planning
  - Pre-purchasing materials
  - Constructability review
  - Wilingness to compromise

**CONTRACTS**


and lessons learned from previous ECI

to ensure success, clients and contractors greatly depending on the region and industry.

It is important to note that while the principles of early contractor involvement may vary universally, the specific practices and methods for implementing ECI can vary greatly depending on the region and industry. To ensure success, clients and contractors should take into account the best practices and lessons learned from previous ECI projects in their specific region and apply them to their current project, while also considering the unique local conditions and challenges.

- The business as usual model of procurement is usually driven on a transactional basis by the client seeking the lowest price from tenders for their project (e.g., using traditional tender processes or prequalified tenders to select the lowest-cost option). However, this approach may not necessarily lead to the most optimal outcomes. Instead, clients and contractors can tailor their approach to ECI by considering the unique local conditions and market conditions such as the availability of resources. By taking a localised approach to ECI, clients and contractors can tailor their project to the specific needs and constraints of their region, leading to a more efficient and successful outcome.

A shift to more collaborative contracting

The traditional procurement approach invaribly leads to cost and time overruns during project execution. The causes of these overruns have been studied extensively (Arcadis, 2022 Global Construction Disputes Report, Bent Flyvbjerg and Gardner, 2023).

A detailed study by Flyvbjerg and Gardner of some 16,000 major projects from large buildings to bridges, dams, power stations, rockets, railroads, information technology systems, and even the Olympic Games revealed a massive project management problem: Only 0.5% were completed on time and on budget, and produced the expected benefits in other words, 99.5% of large projects failed to deliver as promised.

The highlighted events and challenges mentioned in Figure 3 are being felt post-pandemic and construction industry parties are looking to alternatives to the business as usual approach for potential projects. The purpose being to optimise values in project planning and design prior to project execution.

As Jon Davies, CEO Australian Constructors Association stated in a social media post (LinkedIn, January 2023): “There is significant wastage of skilled resources through inefficient tender processes, but the bigger problem is the myopic focus on selecting the lowest price at the tender box to the detriment of all else. The practice of accepting the lowest bid at the tender box is a completely false economy and is the direct cause of the adversarial contracting environment with which we now find ourselves.”

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An ECI during preliminary soil investigations, i.e. preparation of scope, witnessing and assessment of scope of tests (in situ and in laboratory) can be very useful. The contractor needs to assure itself that the data collection has been prepared by a competent soil investigation contractor in accordance with accepted international standards. In this regard, as part of the ECI approach, the client should consider inviting potential tenderers to provide input to and witness the execution of the soil investigation.

Budgeting and open book pricing

Also another key aspect is the way that ECI encourages and demonstrates appropriate mechanisms used in the ECI process to encourage and demonstrate appropriate attention to ensure value for money for the client, these being:
- Open book arrangements in Phase 1;
- Selection of competent contractors and designers who have a proven successful track record;
- The use of an independent estimator to analyse and review target costs to validate the Phase 1 outputs;
- Rates based on benchmark projects provided by the contractor;
- A working environment that encourages innovative thinking;
- Integrated teams working together to achieve best value whole-of-life solutions;
- Competitive pricing of supplier and subcontract components.

A full understanding and allocation of project risks; and
- Provision for the client to terminate the contract agreement is not reached on the Phase 2 offer.

When considering a marine infrastructure project, the client would be advised to employ an independent dredging consultant and production estimator to analyse and review the input rates and target costs to validate the ECI contractor’s Phase 1 prices.

With respect to the actual costs of marine equipment, as these are capital intensive, the discussion of how the ECI contractor has arrived at their rates and prices is often a critical area of the tender. The testing of the ECI contractors rates and prices, and the basis of the valuation is on the premise of a reasonable price as would be derived under a competitive tender situation.

The intention of a two-phase ECI approach will normally be to maintain the competitive element in the preparation of the rates and prices, and that open book pricing forms the basis of the award as in the ECI approach. In this respect, the use of CIRIA seems to be subjective as it is not the contractor’s ‘cost’ but rather it is an assessment of the partial allowable and commercial price. It assists greatly however, in a reality check of the ECI contractors ‘core’ pricing.

While CIRIA deals with the dredging equipment pricing, it needs to be realised that marine infrastructure projects have become more complex and multiple disciplinary over the last decade. That complexity has led to other activities becoming just as important in the total pricing of a project. Marine infrastructure projects require design and engineering, procurement, environmental and sustainable solutions. These activities can benefit from the use of a specialised dredging consultant who can reality check pricing, review estimates, prepare tender–mile cost models and can also be involved in the execution stage of the project.

Claims from contractors can arise when there is uncertainty. A dedicated dredging consultant who is involved from the early stages of a project can seek to de-risk a project, avoid claims and mitigate risks through implementing ECI techniques such as open book pricing. In the event of a claim situation arising, full history and involvement in the early stages of a project can prove invaluable for good project management and dispute resolution.

Regulatory and permitting process

Clients are continually facing increasing technical complexities, increasing regulatory and environmental restrictions coupled with tremendous internal and external pressures to deliver projects on-time, within budget and with unchanged scopes. With marine infrastructure, the geotechnical assessment can reap dividends and a balanced risk-sharing approach can ultimately lead to lower project cost. 

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Early contractor involvement is especially important in offshore wind energy projects due to the complex and challenging nature of construction.

Construction risk assessment
There is no shortage of risks present on a marine infrastructure project. A construction risk assessment at an early stage of a project helps determine at-risk parties, create awareness around the risks, generate new solutions, assess current risk prevention measures in situ, ensure contract requirements are up to date and decide if additional controls need to be applied. Contractors are generally aware of most financial risks, environmental risks, safety risks, or productivity risks, as well as contract risks. However, this information is generally not fully exchanged as part of the normal procurement process. A construction risk assessment by an ECI contractor can help the client think "out of the box" and become aware of such potential risks and the possible mitigation actions or measures that can be applied.

Of the international forms of contracts available, only the NEC4 for ECI contract implements an Early Warning Register. This includes a description of the matter and the way in which the effects of the matter are to be avoided or reduced.

The NEC4 Early Warning Register is not for division of risk allocation but as a method to help promote risk management, after award of contract. As it only comes into existence at the award of contract it is helpful if an ECI contractor could have contributed to preparation of a pre-contract Early Warning Register to highlight to the client what potential risk matters the contractor perceives.

An Early Warning Register’s clear procedures also support effective risk management after contract award. Early warning identification at the NEC4 Early Warning Register are simple but effective risk management tools. Both encourage and require the ongoing assessment and management of risk throughout the period of the contract.

New frontiers: offshore wind
The past decade has seen exponential growth in the amount of offshore wind energy projects globally and with it came the creation of a new supply industry and specialised installation vessels to serve it. The expansion of the number of projects and such investments require extensive and careful planning throughout the entire supply chain. Early on in the development of this new market, offshore wind energy developers realised that they had to work hand-in-hand with the installation contractor to get to final investment decision (FID) and the realisation of a commercially viable project.

The sector continues to develop bigger wind turbines, with 15 MW turbines forecast to enter the market in the next decade. These larger and heavier wind turbines require stronger installation vessels and cranes. The existing installation vessels are unable to install the designed 15 MW turbines and as a result, new offshore installation vessels are being built and commissioned innovative concepts and designs are needed to develop next generation vessels able to lift over 15,000 tonnes.

The offshore environment poses unique technical and logistical challenges that require specialised knowledge and expertise. By involving contractors early, developers can leverage their expertise to mitigate these challenges and drive the balance of plant costs down.

The balance of plant (BOP) cost consists of offshore foundations, cabling and transformer platforms and is one of the most challenging areas in the offshore wind industry at the moment. In addition, it is linked to the development of support parts and fit for purpose installation and cabling vessels. Balance of plant can account for as much as 50% of the offshore wind farm cost and fit for purpose vessels are required. Emergency stop platforms are required for the contractor and its supply chain to produce cost savings.

Another advantage of early contractor involvement is that it allows for more innovation and creativity in the design and construction process. Contractors can bring new ideas and technologies to the table, which can lead to a more efficient offshore wind farm that is able to generate cheaper electricity without the need for government subsidies.
Early contractor involvement in offshore wind energy projects does not just generate cost savings but leads to better communication and collaboration, innovation and creativity, and positive relationships between all parties. It is a practice that is becoming increasingly popular and is seen as a key way to improve the supply chain risk as well as the construction process and mitigate the unique challenges that the offshore wind energy industry faces.

All these matters fit well with the application of alternative procurement techniques in the energy supply chain and indeed in the past ECI was instigated in various forms. Now with a predicted "hot" market for wind turbine manufacturers ramping up output exponentially for the years ahead there is limited availability of installation vessels. There is likely to be a world-wide installation vessel shortage, which is a risk to planned project execution and some project developments may become insufficient or not financially viable in a worst case scenario no installation asset at their disposal (H-Blix, 2022). Early contractor involvement and vessel scheduling is therefore seen as vital.

Vessels are being booked many years in advance. Coupled with reducing the BDP as much as possible, this means that offshore wind clients are increasingly turning to work with preferred contractors and using ECI to a far greater extent as well as seeking to develop more long-term relational and collaborative contracts.

Indeed the FIDIC (The International Federation of Consulting Engineers) contracts committee are in the process of drafting a special contract drafted specifically to serve the offshore wind energy market. It is unclear at this stage to what extent the FIDIC contract drafter will address the clear need for a collaborative ECI process.

Establishing trust and rapport with your ECI contractor

In 1848, urban Thibauw (a Dutch politician) said: ‘Trust comes on foot, but leaves on horseback.’ It is interesting to consider his words and how you succinctly describes the essence of trust and its vulnerability. Trust in business is not just important, it is essential.

To build trust takes time and it can be gone quickly, and perhaps forever if it is violated. Trust is essential for any kind of business relationship and the need for it in a construction project is no different. Perhaps it applies to a lesser extent for a one-off relationship than for a more collaborative relationship that ECI tends to offer.

In collaborative ECI relationships, you need to be able to rely on whom your chosen partner is saying and your partner must be able to rely on you. Trust in a collaborative relationship is always two ways: it is impossible for you to trust your partner while your partner does not trust you. Without this mutual vulnerability, trust is impossible to build on and can thwart a successful collaborative partnership.

Building trust takes time and requires constant positive reinforcement. Earlier in this article, open book pricing was touched upon that reinforces a willingness from the contractor to be open for critical inspection. However, from the client side it also involves accepting that the contractor should have the ability to make a reasonable margin on the project and having a balanced risk profile. ECI contractors have valid concerns about confidentiality of such critical inspection and can feel vulnerable with complete exposure of sensitive commercial pricing information.

The commercial challenge with a client taking an ECI contractor on board on a one-to-one basis is obvious: how to ensure competitive pricing? Although nothing will completely mitigate that challenge, building openness and freedom of communication between the partners at an early stage is vital. Generally the core means to reduce that risk concern is using competitive dialogue with more contractors in the Phase 1 stage. This leads to selecting the contractor with whom the client feels most comfortable.

Unlock ECI success: an ECI advisor matters

Clients who regularly undertake construction projects on a repetitive basis are likely to have built up relationships with consultants, contractors, and suppliers and will often turn to them first when embarking on a new project. These relationships may lose or formalise in specific ECI arrangements or framework agreements.

However, the majority of clients who are new to ECI and are considering applying it can benefit from the expertise of a consultant knowledgeable in ECI practices. What is important is that the ECI selection process is systematic.

The role of the ECI advisor can broadly cover the following:

- Evaluate the potential for enhancing the project’s value through ECI.
- Guide the selection and setup of the most effective ECI framework, such as the contract model, regulatory compliance, selection process, ECI organisation, scope and schedule.
- Assist in coaching, training, team-building and running workshops with parties, intended to facilitate communication and collaboration.
- Record and document the project team relationships, the commitments made by each party and their expectations in a multi-party ECI contract; and
- To provide a first point of call in the event of misunderstanding or disagreements between project team members.

The precise selection process chosen by an ECI advisor may vary according to circumstances, such as the level of experience and knowledge of the client, the nature of the project and the specialisation of the ECI contractors being sought. The strongest recommendation and takeaways to have is strongly encourage an ECI advisor that has in-depth experience and can build the best project partnering team for the client. It is wise to skimp on costs when building the ECI team. These costs represent a small part of the overall project expenditure, and will directly influence how the rest of the money is spent over the whole life of the project.
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It should be noted that lawyers and law firms may offer ECI consulting services, but a legal background alone may not be the most appropriate for ECI and collaborative contracting as legal training is largely based on an adversarial approach and contract enforcement. A real change in mindset is needed.

The key to making the ECI and collaborative contracting process work lies in the ECI advisor building and maintaining strong teams. A good team produces far more than the sum of the effort of its individual parts, poor teams produce far less, right from the outset. It is essential that team building and maintenance are in the minds of the ECI advisor who is charged with bringing the team together. Getting the team right will be at the forefront from the first steps in the ECI process.

Early contractor involvement comes in many shapes and sizes and, when applied properly and with joint commitment, it has consistently shown to result in more passive and productive relationships between the client or developer and contractor and their supply chain. By working together from the start, parties can develop a better understanding and trust for each other, which can lead to a more productive and collaborative relationship. With it comes vulnerability. Without acceptance of this trust is impossible to build and lack of trust can thwart a successful collaborative venture.

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Early contractor involvement in construction projects, whether onshore or offshore, brings many direct benefits, such as cost savings, better communication and collaboration, innovation and creativity, and positive relationships between all parties with a decreased risk of disputes and claims.

In marine infrastructure projects, ECI can achieve direct benefits during the project site investigation stage and when developing project budgets using open book pricing as well as when preparing constructability reviews and construction risk assessments. It has also been used effectively during the regulatory and permitting stage of a project.

Parties need to be open and mutual trust needs to be built in a collaborative relationship. Within it comes vulnerability. Without acceptance of this trust is impossible to build and lack of trust can thwart a successful collaborative partnership. ECI is becoming increasingly popular as an alternative procurement method and as a safe and reliable way to improve the construction process and mitigate the unique challenges of any project.

Summary

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TERRA ET AQUA