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CONSTRUCTION CONTRACTING MODELS

Choosing the appropriate contracting model for each project's unique characteristics is the foundation of project success.

There are many contracting models available in the market, including but not limited to:

- alliancing
- incentivised target cost
- early contractor involvement
- managing contractor
- traditional lump sum design and construct
- construct only.

Factors to be considered when choosing the contracting model include, but are not limited to:

- Project size
- Brownfields or greenfields
- Engineering complexity
- Interfaces
- Third parties
- Industrial relations
- Productivities

- Social procurement
- Location (urban or remote)
- Workforce requirements
- Site conditions (access, contamination, utilities, geotech, artefacts)
- Depth of subcontracting market

Traditional lump sum D&C contracts require the contractor to settle on the price, program and construction method based on a limited concept design and limited site investigations, after a relatively short tender period. Having regard to the factors above, the contractor's offer must account for any changes or delays arising from factors including, but not limited to:

- Dealing with the ground conditions encountered on site
- Gaining all necessary third party approvals
- Completing the temporary works design
- Completing the permanent works design

- Overcoming any buildability issues encountered during construction
- Overcoming interface issues with other contractors and third parties

3 – 4 MONTHS APPROX			2 – 8 YEARS APPROX
TENDER			DELIVERY
CONCEPT DESIGN BASED ON LIMITED WORK & INVESTIGATIONS		ę	ISSUED FOR CONSTRUCTION DRAWINGS (IFCs)
Limited site investigations	 Contamination Utilities Geotech Cultural heritage 	AWA	
Partial construction method			(INCLUDING TEMP WORKS DESIGN)
Based on the above, contractor prepares:	 Price Program Construction method assessment Productivities 		APPROVALS

KEY QUESTIONS

Considering the project's characteristics, is it possible for a contractor to accurately price the work, including an appropriate provision for risk, at the end of a relatively short tender period, and deliver it for that price over 2-8 years?

- Is the concept design extensive enough to appropriately price the detailed scope?
- Is it possible to confidently price contingencies for risks including interfaces, third party approvals, industrial relations and productivities?
- Are the site investigations extensive enough to manage the inherent risk that actual conditions will differ (e.g. geotech, unknown services, cultural heritage, etc.).

Have the tender period and concept design been extensive enough to mitigate the drawbacks inherent in traditional lump sum D&C contracting? Drawbacks include¹ but are not limited to:

- Specific project responsibilities and risks are allocated to each participant and delayed or defective performance by one participant generally excuses the other participants from strict compliance with their obligations. This does not encourage working together to solve the problem as a best for project outcome.
- Adding contract variations can be complex on traditional lump sum D&C projects.
- D&C contractors will try to minimise costs, so they are financially motivated to do no more than is minimally required, even where doing more could enhance outcomes.

If an accurate lump sum price can be determined by the end of the tender period, a traditional lump sum D&C model may be appropriate. If an accurate lump sum price cannot be determined or a traditional lump sum D&C model is otherwise not appropriate, collaborative contracting models should be considered.



TYPES OF CONTRACTING MODELS AND THEIR BENEFITS

ALLIANCING

Alliance contracting is a procurement method whereby the client and its key service providers work as an integrated, collaborative team (the alliance) to deliver a project.

This includes incentives such as "painshare" and "gainshare" on costs and KPI incentive payments for non-cost benchmarks.

Benefits of alliances include:

- **Collaborative decision making:** All parties share the decision-making process and collaborate to achieve the best overall outcome.
- **Risk and reward sharing:** The risks and rewards associated with the project are collectively shared amongst all the alliance members, encouraging mutual support and responsibility ("painshare" and "gainshare").

INCENTIVISED TARGET COST (ITC)

ITC is a hybrid between alliancing and traditional lump sum D&C, where actual costs are reimbursed up to a target, with risk and reward sharing.

- Complete transparency (open-book).
- Extensive collaboration between contractor and client, and between contractor of this package and contractor of other dependent packages.
- Contract incentives include:
 - Cost incentive gain share/pain share mechanism where actual cost differs to the target cost.
 - Early completion payments applied if completion dates are paramount to the client (e.g. in order to facilitate another project).
 - KPI incentive payments for meeting stretch non-cost benchmarks (e.g. customer service).

MANAGING CONTRACTOR

In this model, the contractor's main role is project management – its design and construction obligations are subcontracted out, with those costs being reimbursed by the owner. The key differences between this model and traditional lump sum D&C are that the contractor is typically appointed earlier in the procurement process, the owner has far more control over the appointment of subcontractors and that the contractor takes a lower degree of risk on time and cost.

TRADITIONAL LUMP SUM D&C

In traditional lump sum D&C contracting, the contractor is engaged to design and build the project for a fixed sum, within a fixed period, subject to entitlements to extra time and/or cost for certain events that the parties agree upon at the time of contracting. The benefits of this model are:

- No blame culture: The alliancing model promotes a no-blame culture. All parties work together to solve problems without resorting to blame-shift.
- **Transparency:** All relevant project information is shared amongst the alliance members, including the contractor's costs on an open-book basis.
- **Collective responsibility:** All parties are collectively responsible for the end-to-end project outcome.
- **Relational contracting:** The model focuses on building strong, trust-based relationships between all parties.
- Flexible and adaptive: High flexibility to address project uncertainties and changes.
- **Complex interfaces:** Ability to deal with complex interfaces.
 - Liquidated damages and delay indemnity apply. This is to cover the client's costs tied to poor performance or delay (including knock on effects on other packages).

Benefits of ITC include:

- **Risk and reward sharing:** "Painshare" and "gainshare" mechanisms promote risk and reward sharing, encouraging mutual support and responsibility.
- **Transparency:** Provides absolute transparency for the client throughout the project life.
- **Collaboration:** Contract incentives drive collaborative behaviour between the client and contractor.
- Interfaces: Ability to deal with complex interfaces.

The benefits of this model are:

- **Early involvement:** the contractor is engaged from the beginning, providing expert support from an early stage.
- **Flexibility:** the owner and the contractor work together to determine the project scope.
- **Greater control:** the owner has more say in the selection of subcontractors.
- **Cost certainty:** The client will get a degree of cost certainty, subject to the contractor's entitlement to time and cost.
- Lower adminstrative burden on client: In this model the client can take more of a hands-off role and leave the contractor, in some circumstances, to manage the works.

3

EARLY CONTRACTOR INVOLVEMENT (ECI)

In this model, the owner selects a design-build contractor on a qualifications basis while the design development is in the early stages. The owner and the contractor work collaboratively during an ECI phase for approximately 6-18 months to advance the design and identify and approximately address project risks. When the design reaches a higher level of maturity (80% or higher) the owner and the contractor negotiate the cost of the work on an open-book basis, where the costs are reviewed and debated jointly.

Benefits of the ECI model include:

- Increased cost and schedule certainty
 - Contractor and owner work together to develop a design and program that satisfies the owner's functional requirements in a way that fits within its budget.
 - Transparent pricing: process, risks, markups and production rates are openly discussed and negotiated. Preferred subcontractor or vendor selection is made jointly with the owner, based on who provides best value for the project.
 - The owner retains an independent cost estimator to validate the contractor's estimates.

- A more informed understanding of project risks allows appropriate allocation and provision for those risks translating to better certainty of outcome for the project owner and reducing windfall gains and unsustainable losses.
- ECI allows a more productive use of the tendering period in a project delivery cycle.
 - Collaboration between bidders and the project owner earlier in the procurement process can unlock potential benefits and/or alternative delivery strategies which may not be explored until closer to or after contract award under a traditional model.
- Early works / early start opportunities
 - Advance utility relocations and geotechnical work can be performed during the ECI phase, reducing risks for the project.
 - Design can be prioritized for critical scopes for early construction start.
- Environmental / approvals / stakeholder support
 - Contractor and owner advance approvals jointly, reducing the risk of delays/changes during delivery.

CONSTRUCT ONLY

In construct only contracting, the contractor is engaged to build the project based on a design provided by the client. Similar to lump sum D&C contracting, the work is for a fixed sum, within a fixed period, subject to entitlements to extra time and/or cost for certain events that the parties agree upon at the time of contracting. The benefits of this model include:

- **Greater design influence:** As the owner will procure the design separately, it will have a greater opportunity to influence the design process and achieve a design that meets its specific needs.
- Easier to conduct competitive tender: Given all contractors would be pricing the same scope, it would be easier to conduct a competitive tender that properly compares "apples with apples".

WHEN TO USE EACH ONE

ALLIANCING



Tight program: The delivery program is such that there is insufficient time to undertake the requisite due diligence and risk analysis to support a fixed price contract.



Uncertain scope: The scope of work is uncertain at the time of award, for instance because of unknown site conditions.



Critical interfaces: There are a significant number of project interfaces, and the detailed requirements for those interfaces are not yet fully understood.



Non-standard deliverables: The project requirements are non-standard and difficult to confidently price before award.

Stakeholders: There are multiple stakeholders with significant (and continuing) input into the design process and/or execution of the project during the delivery phase.



End users: Where there are third parties who will become the end user of the infrastructure and need to be incentivised to coordinate and deliver the works efficiently (e.g. MTM on Level Crossing Removals).



Early start: If the project needs to begin before the design is fully completed, the design and construction phases can overlap.

INCENTIVISED TARGET COST



Uncertain scope: Some aspects of the detailed scope are uncertain at the time of award, for instance because of unknown site conditions.

Interfaces: There are complex interfaces, and the detailed requirements for those interfaces are not yet fully understood.

MANAGING CONTRACTOR



Uncertain scope: The scope of work is uncertain at the time of award, for instance because of unknown site conditions.

Complexity: Suitable for projects that require substantial design coordination during the frontend phase.

TRADITIONAL LUMP SUM D&C



Clearly defined scope: This method works well when the project is well-defined and the scope is clear from the outset.

Standard deliverables: The project requirements are standard and capable of being confidently priced before award.

EARLY CONTRACTOR INVOLVEMENT

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Time and cost certainty: Provides greater certainty of project duration and costs than a traditional lump sum D&C model.



Reduced contingencies for risk: Advancing the design to, or near to, completion before fixing costs avoids the contractor factoring in large contingencies for risks.



10

Non-standard deliverables: The project requirements are non-standard and difficult to confidently price before award.

Early start: If the project needs to begin before the design is fully completed, this model is suitable because the design and construction phases can overlap.



Control: When the owner desires greater control over subcontractor selection.

Early start: If the project needs to begin before 10 the design is fully completed, this model is suitable because the design and construction phases can overlap.



for the contractor to contend with, so it will be able to proceed with minimal interference from Visibility on potential changes: Possible

<u>ې ا</u> variation/delay events can be anticipated and those risks can be alleviated in a binary manner through the contractual change mechanisms.



Complexity: This method is useful when the project has unusual, complex, or unique requirements that can be managed by advancing the design before pricing.

Early start: If the project needs to begin before the design is fully completed, this model is suitable because the design and construction phases can overlap.

CONSTRUCT ONLY

Completed design: The owner has a fully defined LTL. design that does not need significant development by the contractor.



Design risk: The owner is better placed than the contractor to take the risk associated with design issues or is comfortable passing it to a third party. Ge !

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Competitive tender: The owner wants to run a competitive tender that compares "apples with apples".

MAKING THESE MODELS COMPATIBLE WITH PROJECT FINANCING

Collaborative models are generally regarded as being incompatible with project financed projects. This is because financiers require certainty regarding the project cost, so they require that the risk of cost overruns is allocated to the contractor. However, it is possible to make collaborative models compatible with a project financed project by taking steps such as having the client/equity investors provide binding commitments to provide additional funds in the event of scope changes, delays or cost overruns.

Financiers may also seek additional comfort that the delivery contract is robust, conduct more extensive due diligence and require tailored insurance policies.²

It is also possible to include a collaborative model within a public-private partnership (PPP). For instance, the North East Link Project in Victoria has successfully included ITC elements

in the PPP by using a target cost instead of the traditional fixed price for certain works.

In addition, the ECI model can be incorporated into a PPP. In this model, the developer team does not fix its costs and program until after a development phase that has advanced the design to a high level of maturity. It is only then that financial close is reached, with contractual off-ramps being available if the parties cannot arrive at a mutually agreeable price.

Such a PPP arrangement maintains the traditional PPP benefits, such as life-cycle asset maintenance, private financing support, and turn-key delivery with the added benefits from the ECI model, which have been proven to significantly de-risk the project for both the owner and the developer team.

CURRENT STATUS OF COLLABORATIVE CONTRACTING WORLDWIDE

In the UK, most complex, high value projects are delivered using collaborative models. The most popular model is the NEC4 Engineering and Construction Contract (ECC) Option C, which is an ITC contract with an activity schedule.

Under this contract, the contractor prices activities in the client's activity schedule based on actual cost plus a fee, resulting in a target price. The client makes interim payments on completion of each activity and differences from the target price are shared according to an agreed pain/gain share proportion. This directly incentivises both parties to look for cost savings throughout the works.

Collaborative contracting is even more prevalent in the US, where almost all high value projects are delivered using collaborative models, particularly two stage ECI (or Progressive Design and Build) and EPCM models.

In Australia, most complex, high value, civil infrastructure projects are delivered using alliances or ITC models. Health infrastructure projects tend to be delivered using an ECI model. Defence projects are generally delivered via managing contractor models.

2 Hayford, Owen, "Collaborative Contracting", pwc, March 2018, https://www.pwc.com.au/legal/assets/collaborative-contracting-mar18.pdf.

6