



Target Cost Contracting: Risk based estimating practice



**TARGET COST, RISK-BASED ESTIMATING
for
CAPITAL PROJECTS in AUSTRALIA
and
LESSONS FOR HONG KONG**

**John DAVIS BE(Civ.) MBA RPEQ
Infrastructure Transaction Network
(contracts adviser, Black & Veatch Hong Kong)**



1. AUS: a 25 year journey in contracting (not to NEC)
2. Perspectives: owner / contractor ... and the interface
3. The other risks
4. Challenges in the public sector, and Hong Kong



1. AUS: 25 year journey [1/5]



AUS – a 25 year journey to current practices.

**Subtitle: 25 years of trial / success / error / improvement
towards optimising target cost contracting**

Two dominant influences:

In the early 1990s:

- On the east coast, the Australian public sector moved heavily into BOOT (DBFO) contracts:
 - Toll roads, water treatment plants, major public buildings.
- On the west coast, the Australian O&G industry picked up on the new UK model of ‘Alliance contracting’:
 - Quickly adopted by Water Corporation (WA).



1. AUS: 25 year journey [2/5]



BOOT contracts influence:

- The integration of D/B with F & O:
 - Traditionally ‘siloed’ within public businesses.
 - Integration almost equally rare in the private sector
 - Driven by desires for, and a belief in competitive LCC optimisation

But, from the perspective of today’s ‘end game’:

- The introduction of the ‘Public Sector Comparator’ - and with it probabilistic estimating practices and management costs pricing.
- The *beginnings* of serious cost planning in project delivery (Pvt sector), including non-conventional approaches to risk mitigation
 - e.g. insuring completion risks, instead of probabilistic contingent risk pricing
 - global integrated businesses better at this, and better O&M cost databases
- Introduction of importance of asset classification (tax depreciation), asset LCC optimisation / operator sign-off.
- Serious valuation of ‘time’ under construction financing.



1. AUS: 25 year journey [3/5]



Project alliancing influence:

- Open book = opened eyes
 - Quality of estimating databases exposed to public sector; and DB practices;
 - Differential margin structures (risk reflective) LMSP, and competitive 'thin-document' subcontracting
- Rapid maturing of risk-based estimating: intrinsic and contingent risk, principle of “all risk must be priced”.

But, from the perspective of today's 'end game':

- Also learnt the difference in 'cultural bias' to profit improvement.
 - Contractor : MITWYDD, substitution, optimisation. Owner: Do everything, no substitution
- The difficulty of analysing 'Soft targets'
- Differences in definitions of “cost” e.g. Plant rates, Consulting SCM
- Integration of AM & operator in DB design processes – ‘in the tent’



1. AUS: 25 year journey [4/5]



Project alliancing change (1992/3 – 2001)

- Open book = opened eyes
 - Learned the difficulty of fully collaborative managing;
 - Learned that the absence of a ‘re-engineer’ challenge changed the dynamic
- Pricing change risk became important, particularly contingent risk (also, program risk pricing of ‘risk banks’) and portfolio risk recognition.

And, from the perspective of today’s ‘end game’:

- Rules to address ‘cultural bias’.
 - Rules for MITWYDD, substitution, optimisation.
- Benchmarking to challenge ‘Soft targets’
- Rules on definitions of “cost” e.g. Plant rates, Consulting SCM
- Integration of AM & operator in DB design processes – ‘in the tent’: started shift to defining assets throughout project and project cost management (linked to ‘rules’ on MITWYDD , substitution)
- Understanding of how competitive margin bidding can be gamed



1. AUS: 25 year journey [5/5]



The **big changes** (2001 - 2005)

- Absence of a ‘re-engineer’ challenge:
 - 2001, developed the ‘competitive alliance’ model (ITN, E&P, Water Corp)
 - Contractors started volunteering caps/lower ratios. *Now common!*
- The difficulty of fully collaborative managing;
 - 2003, Qld MRD introduced the ECI and then the dECI. Alliance selection process, partnering standard DB or B contract, with RAMP. NEC documents close to these models

Post 2005, the refinements (2005 - 2015) ‘Alliances’ >> ‘collaborative’

- Learned the effect of boom markets on pricing (and reversion).
 - All forms of owner’s estimates can become irrelevant
 - The issues with competitive pricing of margin vs cost became obvious.
- Standard form now dECI. VfM proof & overheads burden pure Alliancing.
- More rules on definitions of “cost invoicing” e.g. Cth ‘work done’; accrual on invoice for OBCRP; payment on lot-based milestones for other collaborative projects. Replacement staff (no payment). Late staff (KPIs).
- Program risk management (risk banks), program delivery efficiencies
 - A very different approach to estimating and sharing risk, and margin gain!



2. Perspectives: Owner : contractor [1/3]



Owner (historical)

- Focus on cost estimating as (just) a predictor, no exposure other than reputational

Historically, in AUS:

- missed program and portfolio risks,
- (depending on sector), highly inaccurate (sometimes deliberately so)
- rarely integrated with operations and AM
- Historically assumed standard form contracts in DBB, DB, DDB space with internal operations. Adversarial with 'safe space'
- Internal ops 'cost change budgeting' with no incentives to restructure

Contractor (historical)

- Estimating / construction planning and subcontractor/supplier cost management as lifeblood skills
- Estimating models driven by internal history and databases
- Contracting: react to signals from owners, driven by experience and need to survive
- Claims approach is about payoff ratios (value earned for cost invested)

Very different perspectives



2. New interface: target contracting [2/3]



Owner (TCC world)

- Now exposed to cost estimate as a real win/lose.
- Issue now is about comparative pricing: how to understand P.O.D?
- Need to define: program and portfolio risks, how much transferred?
- Collaborative contracts integrate with operations and AM
- New forms of contract. Less adversarial with little 'safe space'. Challenging!
- Internal ops and AM engaged in cost planning.

Contractor (TCC world)

- Estimating / construction planning and subcontractor/supplier cost management still lifeblood skills
- Estimating models driven by internal history and databases; but now have to be aligned to owner's baseline models
- Cost models have to match owner's rules
- Contracting: Signals from owners is to prove capability to deliver value: cost rarely the first basis of comparison
- Claims approach has to change – much more limited opportunities. TCC motivates in favour of optimising rather than claiming.

A very changed market risk position ...



2. The new interface: (d)TCC tendering [3/3]



Owner's need for an informed comparison: reduce errors, reduce uncertainty, encourage de-risking and optimising delivery

- **Baseline the cost plan against internal needs:**
 - Asset classification / depreciation differences, asset management needs,
 - Expectations of scope change (what costs need to be isolated for change control)
- **Baseline the rules on costs allocation:**
 - How are preliminaries and overheads to be distributed for asset valuation?
 - How are 'time – independent' overheads to be priced?
 - All general rules on pricing (e.g. plant rates, consultant rates)
- **Baseline the rules on risk pricing:**
 - Intrinsic risk pricing allocated to cost elements
 - Contingent risk pricing by exposure (locality, time, contract risk allocation)
- **Construction planning linked to productivity, benchmarks, managing risk exposure. Programme linked to cost plan.**

All tenderers and contractor have to adopt the same baseline principles



Some industries are plagued by estimating complications

- **Original ‘civil infrastructure’ vs. other industries:**
 - Concept of ‘on-site’ costs and ‘off-site overheads’ was well understood, reflected the industry, and was built into contracts.
 - Process / supplier industries have much different costing structures
- **Process / EPC contractors:**
 - Significant internal design and R&D teams. How valued to project?
 - Own OEM equipment: how can that be competitively priced?
 - Performance critical equipment (sub-guaranteed): how can that be competitively priced?
 - *Margin-shifting is easier than civil & building?*
- **Contractors with different rate databases:**
 - Different basis of benchmark
 - No histories on intrinsic risk
- **System complexity; in/out of the tent risks; major omissions (PI insurance). e.g AWDs, ANZAC major projects.**



4. Public sector AUS & Hong Kong [1/1]



Public sector (AUS)

- Have to get engaged! But at least have 20+ years of progressed experience
- Interactive processes for dTCC tenders well developed (more than 2 is difficult, more than 3 unworkable); ICAC and similar on-board
- Able to adopt risk-based assessment for complex projects (differential internal pricing on risk comparisons). Able to progressively amend documents.
- Leave post-award price optimisation to contractor: reflect DB and DBO efficiencies
- Rely on auditor to check report veracity where margin share
- Always susceptible to margin shifting.

Public sector (HKG)

- Have to get engaged! But used to Resident engineer model and disengagement?
- Rigid frameworks for evaluation
- Concerns re contractor ability to 'open the books' and not have price transfers.
- Equally susceptible to margin shifting?



Where next:

- Cost planning important as moved into customer focused and income exposed projects (retail, airport refurbishment). Changes for ECI process; but ECI can work very well with the optimisation challenge!
- Qld MRD are often moving away from RAMP towards to RAP with KPIs – recognising that not all deliverables of value can be priced. VfM proving models from alliances are adopted here.



6. TCC summary points

dTCC is the benchmark.
Set up an interactive process; prove and take best value

Principal's estimator / common baselines

Drive to reduce uncertainty, optimise risk allocation

Key themes: managing risk / cost management

1. Must establish up front: Principal's estimator / common baselines
2. Detailed pricing rules
3. Single client team; interactive processes (well established processes available)
4. Evaluate / change if required – including risk allocations in contract & specification terms
5. Single effort exercises in information gathering
6. Ready for engagement
7. If open-book reimbursable and/or margin-sharing, engage a cost auditor and runs separate accounts.
8. Delivery teams understand the risk allocations and motivations, and behaviours are aligned to that.

On risk-based estimating:

1. Details of multiple points of practice in this paper
2. Detailed reference guide on estimating practice, including intrinsic and contingent risk approach, in Australian Infrastructure guidelines.



Thank you for your time ...



**TARGET COST, RISK-BASED ESTIMATING
for
CAPITAL PROJECTS in AUSTRALIA
and
LESSONS FOR HONG KONG**

**John DAVIS BE(Civ.) MBA RPEQ
Infrastructure Transaction Network
(contracts adviser, Black & Veatch Hong Kong)**