

Implications of Governance Obligations being Embedded within Construction Contractors' Tendering Procedures

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ABSTRACT

Construction contractors' (contractors) internal tendering procedures (ITP) face increasing governance obligations, either through corporate regulations, legislation and/or societal expectations. Increased governance can impact approval steps, and decisions made, to pursue a project from prospect identification, through tender preparation, submission and contract execution (the 'tender timeline'). The question arises as to whether inappropriate time is spent preparing for and gaining internal approvals, at the risk of constraining time spent developing well reviewed competitive tender solutions.

Drawing on semi-structured interviews with 27 high-profile major contractors and analysis of ITP documentation provided by 13 of them, this study considers the efficiency of various ITP governance models and identifies factors that influence the tender approval management levels. On average those 13 contractors utilise 4.2 approval gates; prepare approval documentation addressing 547 questions, 19 attachments; and face 12 review committees before securing 16 approvals over the tender timeline. The results provide an opportunity for clients, consultants, and researchers to gain a better understanding of major contractors' ITP governance obligations that need to be addressed, often within very short tender periods. Contractors can use these findings as a benchmarking opportunity for their ITP governance. Many of the principles raised also apply to engineering consultancies.

Keywords: Contractor; tendering; procedure; governance; obligation; tender; construction

1 INTRODUCTION

To remain in business construction contractors (contractors) must regularly select and win tenders, and then deliver their contracted projects for less than their costs. Corporate governance (CG) (based around, amongst other matters, director responsibilities and liabilities, setting of company risk appetites, and delegations of authority (DoA)) and quality assurance certification expectations have influenced the structure of contractors' internal tendering procedures (ITP). Legislative, stock market listing and societal expectations on all businesses (public and private) are steadily increasing (Financial Reporting Council 2016, Dept for Business, Energy and Industrial Strategy 2017, Australian Securities Exchange Corporate Governance Council (2019)). Although CG requirements continue to increase, it remains questionable as to whether they always lead to improved performance (Kay cited by Faherty 2015).

Within a larger program researching the efficiency and effectiveness of contractors' ITP this study investigates the implications of increased CG requirements on ITP obtained from some of the largest contractors operating in Australia. Twenty-seven of 31 purposely selected high-profile contractors

agreed to be interviewed about their ITPs, and 13 subsequently provided extracts of their ITP documentation for analysis. These contractors are a mixture of public and private companies, with 70% having annual turnovers of more than 100 AUD m (some exceeding 5 AUD b). In a sector dominated by very small contractors (Drew and Skitmore 1997), this research focuses on the industry's top end.

In this paper 'tendering' is defined as a contractor's work procurement process that applies from prospect identification to contract execution, overall called here the 'tender timeline'. The mechanics of developing estimate prices were excluded from this research, as were client to contractor tender procedures and head contractor to subcontractor procurement processes. Following a review of relevant extant literature (section 2), research methodology (section 3), and findings (section 4), the implications for contractors, engineering consultants and clients are discussed in section 5. This paper includes results from the 27 semi-structured contractor interviews.

2 LITERATURE REVIEW

Contractors' ITPs can involve complex reasoning processes (Egemen and Mohamed 2007) yet remain unstructured (Mochtar and Arditi 2001). Given their inherently confidential purpose, research into contractor ITPs remains, unsurprisingly, very limited. Only 29 papers out of 1800 reviewed by (Laryea 2013) dealt with contractors' tendering processes. Analysis of 27 journals published between 2010 and 2016 by Urquhart and Whyte (2018a) found the most common tendering research topics related to 'bid/no-bid' factors (e.g. Shokri-Ghasabeh and Chileshe 2016), addressed a specific regional issue (e.g. Jarkas, Mubarak, and Kadri. 2014), and 'mark-up' decision models (e.g. Ballesteros-Pérez et al. 2012, Asgari et al. 2016). There is little contractor take-up of such models (Asgari et al. 2016) because they are too complex or too simplified to be useful (Ballesteros-Pérez et al. 2012). An increased understanding of contractors' approaches to tendering may enable more practical models to be developed. However, as few researchers gain direct access to contractors' ITP documentation, there remains an identified need for qualitative research into the CG implications on contractors' ITP (Urquhart and Whyte 2018a).

Empirically and experientially based literature suggests a typical contractor undertakes staged approaches to preparing tenders with various reviews held over the tender timeline, including launch meeting, mid-term review, and possibly two final reviews with senior management Brook (2011), Greenhalgh (2013), Laryea (2013). However, Urquhart, Whyte, and Lloyd 2017's investigation into major contractors found more complex approaches apply with multiple bid/no-bid decisions, interim reviews with sign-offs by supporting departments (e.g. legal, commercial, finance, and risk) before several final reviews are held with line management. From these findings Urquhart, Whyte and Lloyd (2017) produced a representative whole of tender timeline flowchart showing the review 'steps' or 'gates' larger contractors undertake. While Urquhart and Whyte (2018c) identified increased ITP governance may involve iterative decision/approval steps through progressive layers of line management, they did not explain the reasons behind such iterations nor the workload involved. More demanding ITPs, written to meet increasing CG requirements, take more time. For major contractors, 10% to over 15% of a tender period can be spent preparing for, and participating in, tender reviews (Urquhart, Whyte, and Lloyd 2017), considerably more than a smaller contractor's, 6-9% imposition (Laryea 2013).

Larger contractors' ITPs are driven by risk identification, mitigation and internal reporting requirements rather than determining a winning 'mark-up' value, even to the extent of avoidance of winning a potentially loss-making project above securing a tender win (Urquhart, Whyte, and Lloyd. 2017). Tender review steps include reviews of contractual terms (Laryea and Hughes 2009) and risk reviews (Laryea and Hughes 2008). From those reviews, contractors price in the risk though, to remain competitive, many seek to mitigate their risk exposure by re-considering the contractual mechanisms and terms (Laryea and Hughes 2011) they face, i.e. appropriate qualifications. A contractor's exposure to a project cost overrun only diminishes if it is contractually protected from the risk (Love et al. 2015).

The Australian Contractors Association (ACA) has promoted more efficient tender processes to clients (Blake Dawson 2011, Ashurst 2014). However, ACA does not appear to have provided their members with guidance on improved ITPs and associated governance – perhaps due to concerns around the Australian Competition and Consumer Act 2010 (CoA 2010) or lack of empirical

information. Of the 25 contractors (Urquhart and Whyte 2018b) interviewed, 72% were either in the process of amending their ITP or had done so over the last 3 years, often to address increasing CG obligations. However, only a quarter of those contractors felt the changes resulted in improved tender win-rates. Even fewer thought the changes produced better project outcomes. Time limitations due to company policies, such as increased ITP demands, can hinder value management (Whyte and Cammarano 2012). Despite increasing their CG, major contractors operating in Australia have incurred an average loss of 16% while working on infrastructure mega-projects (those over 500 AUD m) since 2000 (Ryan and Duffield 2017). Unsatisfactory results from ITP methods are not easily attributable to a poor methodology or incompetence of the user (Checkland 2000).

Appropriate tender selection, i.e. bid/no-bid decision, is a more common ITP focus than lessons learned (Urquhart and Whyte 2018b). Both smaller (Shokri-Ghasabeh and Chileshe 2014) and larger (Urquhart and Whyte 2018b) contractors recognised the need for, and value of, lessons learned but few mandate lessons capture and their formal review on subsequent tenders, as requirements within ITP governance. While companies may undertake lessons learned activities, there is often a failure to instigate a policy requiring review of such lessons as part of new project planning (Crosby 2017). Improved approaches to dealing with lessons learned should be a CG focus ahead of more bureaucratic multi-layered tender review processes (Urquhart and Whyte 2018c).

Instead of more research into tender decision models, Urquhart and Whyte (2018a) identified that contractors operating in Australia sought research into ITP efficiency and where they should spend resources (time and cost), particularly in relation to review processes. These contractors also wanted information to convince clients in the merits of using standard contracts instead of the increasing Australian trend of using bespoke (Whyte 2015), or at least heavily amended standard, contracts – an issue between head contractors and subcontractors, as well as clients and head contractors. There is a growing view these contracts are not as cost-effective as first thought (Sharkey et al. 2014).

3 RESEARCH METHODOLOGY

3.1 Construction Contractor Participants

Thirty-one high-profiled contractors were purposefully selected to be interviewed about their ITPs. Of those, 27 (87%) subsequently agreed. Purposeful selection was facilitated by the lead author's broad industry contacts within major contractors operating in Australia. Interviewee demographics are listed in Table 1. In this paper, a Tier 1 contractor is defined as a contractor with over 1 AUD b annual turnover. This definition aligns with (Ryan and Duffield 2017) but not necessarily (Loosemore and Reid 2019), albeit nine of the interviewees are ACA members. Contractors with under 100 AUD m turnover are defined as Tier 3 (only one had less than 30 AUD m turnover). The Australian Bureau of Statistics (ABS) defines large businesses as employing 200 or more people, which accounts for 0.1% of all construction businesses (ABS 2013). With 17 (66%) of interviewed contractors employing more than 200 people, and six (22%) delivering over 200 AUD m average project sizes, this research is focussed on the top end of the contractor market. Thirteen contractors also operate overseas, and/or have overseas parent ownership. Most (67%) secured 80% to 100% of their work, eight (30%) 60-80%, and one (3%) secured 20-40% of its annual turnover, through competitive tendering.

Interview requests were made directly to individuals with known line management responsibility for, and/or daily involvement with, the selected contractor's tendering activities. Several managers subsequently nominated an alternative individual to be interviewed. All participants had more than 10 years construction industry experience: 7 (26%) had 10-20 years; 13 (48%) had 21-30 years; and 7 (26%) had over 30 years. Three (11%) participants held chief executive officer or managing director roles; 13 (48%) (executive) general or operational manager style roles; one (4%) was general counsel; and, the balance, 10 (37%), held bid, estimating or pre-contracts manager roles. Interviews occurred between November 2016 and February 2019. The extended period was due to participant access and availability constraints. In keeping with the fluid nature of the Australian construction market, several contractors (unnumbered to avoid possible identification) have since been acquired by other parties, and eight (30%) participant individuals have since changed employers. These changes continue one process by which contractors develop their ITP, namely experiential basis from previous employment. Demographics in Table 1 are based on the time of the relevant interview.

	Participants in semi-structured interviews (total 27)		Participants providing ITP extracts (total 13)	
	Number	%	Number	%
Public ownership (including subsidiaries)	15	56%	8	62%
Private ownership	12	44%	5	38%
Tier 1 (turnover >1 AUD b to 10 AUD + b)	7	26%	5	38%
Tier 2 (turnover 100 AUD m to 1 AUD b)	12	44%	5	38%
Tier 3 (turnover <100 AUD m)	8	30%	3	24%
Size (>1000 employees)	8	30%	6	46%
Size (200 to 1000 employees)	9	33%	4	31%
Size (<200 employees)	10	37%	3	23%

Table 1. Demographics of interviewed contractors and those providing ITP extracts

3.2 Semi-structured Interview Format

Semi-structured interviews, of 1.5 to 2.5 hour duration, consisted of three parts:

- Part 1 related to contractor and interviewee demographics (see Table 1).
- Part 2 consisting primarily of 1-7 Likert opinion rating and ‘check-list’ style questions (Leedy and Ormrod 2013), including prospect selection (bid/no-bid) and margin decision processes; factors determining management levels where such decisions are ‘signed-off’; how ITPs were developed; and workload involved in complying with same. While responses provided quantitative data, the questions encouraged further discussions about processes and an opportunity for triangulation (Love, Holt, and Li 2002) of Part 3 responses.
- Part 3’s wider questions focused on ITP steps undertaken within a prospect tender timeline; contractual terms in the context of company risk appetites and corporate approval processes; and how contractors obtained feedback about submitted tenders and any subsequent projects.

Handwritten notes were made during any discussion while participants completed Part 1 and 2 survey questions. Twenty (74%) participants then permitted the Part 3 open discussion to be audio recorded. Only handwritten notes were possible for the other seven (26%). All notes were typed and returned to the contractor to review and correct as required (Fellow and Liu 2008), before the data was analysed.

3.3 Internal Tender Procedure Documentation

Interviewed contractors were invited to submit (redacted) extracts of their ITP documentation, on a strictly confidential basis. Of the 19 (70%) who indicated they would provide extracts, 13 (68%), or 48% of all participants, subsequently provided documentation exemplars. Extracts received ranged from 103 pages of procedures, forms and flowcharts to a single page flowchart. Demographics of contractors providing extracts are included in Table 1. While these demographics are similar to the interviewee splits it does not imply the extracts are representative of all 27 contractors. To gain an appreciation of each contractor’s ITP focus, a qualitative, with limited quantitative, word theme frequency analysis (Leedy and Ormrod 2013) was undertaken using NVivo 12. Analysis included grouping like wording themes aggregated on a weighted percentage use basis.

3.4 Tender Stage(s) Approval Governance Workload Analysis

Using content analysis (Krippendorff 2013), ITP documentation from the 13 contractors was mapped out and analysed by stepping through each procedure, questionnaire, form, or flowchart and recording what that tender team’s likely tender approval/governance workload may involve. The results were then aggregated for each approval point (gate) on a prospect tender timeline. Analysis considered the

- number of tender gates (some contractors used ‘stage’) a prospect must be navigated through;
- questions to be addressed, within any supplied forms, to facilitate prospect pursuit decisions;

- number of internal tender forms (either provided or referenced in supplied documents) to be completed for management approval of a prospect pursuit. Other non-supplied forms may indicate additional, and hence unaccounted for in this study, questions apply;
- documents to be prepared and attached to tender review pack(s) for management approval;
- review committees that provide feedback on, and/or review of, specific prospect issues (including commercial, contractual, financial, legal, human and industrial relations, environment health and safety (EH&S) departments);
- corporate approvals required at each tender development gate, from initial prospect identification to contract execution; and
- references to other company documentation that might further increase such requirements.

Content analysis was primarily a qualitative assessment of a contractor tender team's internal tender approval process workload and effort required at each step in the tender timeline. As received ITP extracts varied significantly in quantum, scope and quality (amount of redaction) it was not possible to make definitive quantitative comparisons between contractors. However, the data was sufficient to gauge the level of internal approval activities some major contractors undertake during tender periods and enable triangulation with semi-structured interview responses. A separate content analysis focused on effort/actions ITPs required in relation to proposed contractual terms. The aim being to determine how bespoke and heavily amended standard form contracts may contribute to the longer tender review times reported in Urquhart, Whyte, and Lloyd (2017).

Most of the research findings discussion below focuses on content analyses of the 13 contractors' ITP documentation and comparisons with findings from the 27 contractor interviews.

4 RESEARCH FINDINGS

4.1 Themes within Received ITP Documentation

Sixty ITP documents were received from the 13 contractors, totalling 397 pages of information. In all, 17 different procedures (181 pages), 40 forms (211 pages) and 16 flowcharts were received and analysed. Documents ranged from 103 pages of procedures, forms and flowcharts provided by a public Tier 1 contractor down to a single page tender process flowchart from a public Tier 2.

Aggregated word theme frequency analysis, using NVivo 12, enabled the identification of priorities and approaches in the different ITPs. Words with common meanings, such as 'tender' and 'bid', and those identifying the tender target, namely 'project', 'prospect' and 'opportunity' (used by a public Tier 3), were further aggregated for comparisons. Results are essentially qualitative, given the high variation in received ITP documentation quantum and type. The 20 most common word themes were determined, with the top 10 (including aggregate percentage) provided in Table 2, listed by all contractors; ownership structure (public or private); and, turnover (Tier 1, Tier 2 and Tier 3) groups. The contractors in each group are denoted in square brackets. Theme analysis did not include how words were used (neither meaning nor position) within a document. Hence, while 'risk' is a common top 10 theme it does not mean an effective focus on a prospect's risks applies.

Tier 1 extracts differed from the common 'tender', 'prospect' and 'management' as the top three themes with a higher propensity to use 'approvals' and 'requirements'. It appears that Tier 1s may place a greater focus on governance-related matters, however, their lower use of 'review', compared to other groups, may be because of their more specific governance word usage. 'Gate' aggregates the various approval points used along the tender timeline (see section 4.2). 'Contract' and/or 'commercial' was a high focus for all contractors, except Tier 3s. During the interviews, various Tier 3s indicated they have less power to negotiate with clients on contractual terms and hence just accepted them. By their own admission, several smaller contractors do not have adequate 'inhouse' expertise to address such matters and occasionally sought external legal assistance. This problem is compounded by clients' choices of contract types. Ten of the 17 contractors mentioning contract types stated they commonly encounter bespoke contracts or heavily amended Australian Standard contracts on tenders, with a further four contractors implying similar through their statements. 'Client' featured higher for Tier 3s and may relate to meeting client needs, as the forms and questions provided by the larger contractors focused on various client-related issues, especially their capacity to pay and past payment history.

Rank	All [13]	Public [8]	Private [5]	Tier 1 [5]	Tier 2 [5]	Tier 3 [3]
1	Tender (42%)	Tender (28%)	Tender (13%)	Approvals (10%)	Tender (22%)	Tender (9%)
2	Prospect (22%)	Prospect (14%)	Management (9%)	Tender (9%)	Review (8%)	Prospect (8%)
3	Management (19%)	Approvals (11%)	Prospect (8%)	Requirements (8%)	Estimating (8%)	Management (7%)
4	Review (16%)	Requirements (10%)	Review (6%)	Prospect (6%)	Prospect (8%)	Review (4%)
5	Approvals (16%)	Review (10%)	Risk (5%)	Contract (6%)	Forms (7%)	Risk (3%)
6	Estimating (14%)	Management (10%)	Approvals (5%)	Risk (5%)	Management (7%)	Process (2%)
7	Requirements (13%)	Estimating (9%)	Estimating (4%)	Management (5%)	Gate (4%)	Requirements (1%)
8	Risk (12%)	Gate (9%)	Contract (3%)	Costs (4%)	Approvals (4%)	Client (1%)
9	Contract (10%)	Contract (7%)	Requirements (2%)	Operations (4%)	Commercial (3%)	Documents (1%)
10	Costs (9%)	Risk (7%)	Costs (2%)	Gate (4%)	Risk (3%)	Costs (1%)

Note: aggregated frequencies from individual counts shown in parentheses.

Table 2. Top 10 ITP aggregated word theme frequency usage by contractor groups

Word themes that did not appear at a high frequency are of interest:

- Only four contractors (three Tier 1 s and a Tier 3) referred to ‘governance’. Those four and four others (two Tier 2 and two Tier 3) referred to DoA, a common governance component.
- ‘lessons (learned)’ only appeared in four contractors’ ITP documents (a Tier 2 required the estimating manager to review previous tenders and projects; a Tier 3 only required feedback from clients; while two Tier 1 s required lessons learned to be captured across the prospect pursuit to project completion timeline with specific lessons capture forms and procedures applying). This supports (Urquhart and Whyte 2018b) interview findings that specific lessons learned focus is generally not a formal ITP governance requirement.
- One Tier 2’s ITP extract referred to an ‘engineer’ and a further four (three Tier 1 s and a Tier 3) referred to ‘engineering’. This may indicate a lack of specific focus to engineering judgement. Is the value of engineering judgement been sacrificed to the requirements of CG?

4.2 Internal Tender Approval Processes and Effort

While content analysis was undertaken on each individual ITP, for reasons of space and confidentiality, only results aggregated by contractor group are provided in Table 3. Across the analysed ITPs, contractors navigate through an average 4.2 gates during a typical tender pursuit, with Tier 2 s encountering the most (average 4.8), and Tier 3 s the least (average 2.3). In comparison, 18 of the 27 interviewed contractors referred to ‘stage’ or ‘gates’ plus a further three indicating similar, giving an average 2.9 gates. If bid/no-bid and submit tender steps are considered gates the average is 3.6 – still less than those providing ITP extracts. Three common gates applying (definitions below are a consolidation of different contractors’ terminology) are:

- ‘Approval to Pursue’ (ATP) – approval to commence pursuing/positioning for a prospect prior to a client releasing tender documentation, may include budget expenditure;
- ‘Approval to Bid’ (ATB) – approval to spend money pricing a prospect once a client has released a Request for Proposal (RFP) or other form of tender invitation; and
- ‘Approval to Submit’ (ATS) – approval to submit a binding tender to the client.

To varying degrees, contractors also applied additional gates (seven of those 18 use four, another seven contractors use five, while one public Tier 1 applies six gates):

- ‘Approval to Express Interest’ (ATE) – approval to apply for inclusion on a client’s tender list, assuming the client uses an Expression of Interest (EOI) stage;

- ‘Approval to Resubmit’ (ATR) – approval for post-tender negotiation adjustments; and
- ‘Approval to Contract’ (ATC) – permission to execute a contract in accordance with client’s and contractor’s execution requirements.

Use of an ATC gate varied between contractors, with 12 (67%) of 18 referring to gates mentioning its use, while only six (46%) of the 13 ITPs evidenced such. This may be because separate contract execution procedures apply and were not included in the ITP extracts. Except for one un-nominated case, all five-gate ITPs included the ATC gate, while two of the four-gate systems did not.

	All [13]	Public [8]	Private [5]	Tier 1 [5]	Tier 2 [5]	Tier 3 [3]
Number of ITP documents analysed						
Documents:	4.6 (60)	6.5	1.6	4.6	6.2	2.0
Procedures:	1.3 (17)	1.5	1.0	0.8	1.8	1.3
Forms:	3.1 (40)	4.8	0.4	3.4	4.2	0.7
Flowchart:	1.2 (16)	1.1	1.4	0.8	1.4	1.7
Pages:	30.5 (397)	39.0	17.0	31.8	32.0	26.0
Action/submission requirements within the ITP documents						
Number of gates:	4.2	4.5	3.6	4.6	4.8	2.3
Reference documents	8.8 (115)	12.9	2.4	15.8	6.4	1.3
Tender forms	8.1 (105)	8.9	6.8	13.0	5.0	5.0
Questions	547 (7121)	788	164	811	442	286
Attachments	19.5 (254)	23.6	13.0	27.2	17.6	10.0
Review committees	12.8 (167)	14.1	10.8	17.0	10.2	10.3
Approvals	16.9 (220)	21.5	9.6	23.4	15.8	8.0
Normalised rates per ITP document received						
Forms / document	4.1	2.7	6.3	6.7	1.1	4.5
Questions / document	82.4	92.0	66.9	92.1	76.6	75.7
Attachments / document	8.5	7.2	10.4	12.6	4.0	9.0
Contractual terms review related requirements						
Reference documents	3.2 (41)	4.6	0.8	4.8	2.8	1.0
Tender forms	4.5 (58)	5.6	2.6	6.4	3.4	3.0
Questions	241 (3138)	372	32	527	95	9.3
Attachments	6.4 (83)	7.5	4.6	6.6	7.2	4.7
Review committees	6.2 (81)	6.8	5.4	8.4	6.0	3.0
Approvals	14.1 (183)	18.0	7.8	20.2	12.2	7.0
Normalised rates per ITP document received						
Contract forms / document	1.7	1.2	2.3	2.3	0.6	2.5
Contract questions / document	29.2	36.7	17.2	59.4	14.8	2.8
Contract attachments / document	3.1	2.6	3.8	3.5	1.8	4.4

Note: Total items assessed shown in parentheses.

Table 3. Average tender approval workload effort by contractor grouping.

Average figures for different document components in Table 3 indicate that over the 4.2 gates (shown bold) in a prospect tender timeline, contractors’ CG obligations require them to address eight internal reference documents/policies; respond to an average 547 questions (shown bold); complete eight forms (which may contain additional questions not included in the ITP extracts); prepare 19 further supporting documents (attachments); face over 12 review committees; and obtain 17 corporate approvals involving wet (ink) and/or dry (electronic) signatures. If a question, or similar, had to be answered or re-checked at each gate it was counted again (i.e. the same question reviewed at five gates was counted as five questions). Although the number of questions seems very high actual numbers may be higher as many ITP documents referred to additional (unprovided) forms. In addition to aggregate numbers, Table 3 includes a ‘rate per ITP document received’ for forms,

questions and attachments, to normalise figures within the wide variation of extract quantities. For individual action requirements, standard deviations varied too widely (often similar to average values) to enable quantitative conclusions to be drawn, so are not included. The largely qualitative data still provides an indication of the extent and variability in contractor approaches and imposed workloads.

Some contractors face considerable internal approval documentation demands (recognising the ITP extracts varied significantly in quantity). The most demanding requirements for the different groups are summarised in Table 4. In each turnover group the most demanding are the public companies. The most demanding Tier 1's processes can mean its tender team faces up to 3101 questions (shown bold), plus other forms and attachments, that they may need to complete, or at least re-review, over their five gates in a tender timeline. This compares against the most demanding Tiers 2's 1225 questions (also over five gates) and a Tier 3's 840 questions (over three gates). In comparison, the most demanding private contractor's requirements were a Tier 2 with potentially 605 questions.

	Average requirements of all 13 contractors		Most demanding requirements – individual contractor							
	overall	contract	Tier 1		Tier 2		Tier 3		Private (Tier 2)	
			overall	contract	overall	contract	overall	contract	overall	contract
Gates	4.2	4.2	5	5	5	5	5	5	3	3
Reference documents	8.8	3.2 (36%)	11	10 (91%)	4	2 (50%)	3	3 (100%)	11	4 (36%)
Forms	8.1	4.5 (56%)	23	17 (74%)	13	9 (69%)	2	2 (100%)	4	2 (50%)
Questions	547.8	241 (44%)	3101	2400 (77%)	1225	286 (23%)	840	26 (3%)	605	76 (13%)
Attachments	19.5	6.4 (33%)	13	5 (38%)	19	12 (63%)	4	1 (25%)	14	4 (29%)
Review committees	12.8	6.2 (48%)	13	12 (92%)	6	5 (83%)	16	0 (0%)	14	12 (86%)
Approvals	16.9	14.1 (83%)	47	42 (89%)	21	12 (57%)	13	13 (100%)	11	11 (100%)

Note: Contract-related matters as a percentage of all items shown in parentheses.

Table 4. Comparison of overall ITP demands with contract-specific demands for all contractors and the most demanding individual contractor in each grouping

Why are these figures so high? Content analyses indicate one reason is the amount of information that is (re)generated, then (re)assessed and included in documentation (re)submitted each gate approval. Ten of the 13 contractors utilise extensive client relationship management (CRM) systems. Seven (54%) use a well-marketed CRM and the other three use their own, or unnamed, system. ITP extracts indicate such CRMs require considerable data to be (re)assessed and (re)included at each gate. While not debating the merit, or need, for all the collected data here, it highlights the ability for a computer system to require more answers than perhaps are needed. It may mean a failure to appreciate the time taken to compile and review such information and its real value, especially during a competitive short tender period. Some contractors operated their CRM separately from the forms, attachments, review committees, and ultimately levels of management involved in corporate gate sign-offs, potentially further increasing workloads, while others integrated the two processes.

Another reason relates to the impact of a prospect's proposed contractual conditions. Additional content analysis assessed actions which appeared to relate to contractual terms approval matters. Some interpretation was required, as not all ITP extracts were clear in this respect. The average requirements, for each group, are included in Table 3. Contractual terms issues are a significant component of most contractors' approval processes – an average 241 questions (44%) (shown bold) to be answered over the average 4.2 gates. This was especially the case for Tier 1s with the most demanding example being 2400 questions (77%) potentially having to be addressed (see Table 4) and Tier 2's 286 questions (23%). The lesser focus (only 26 questions or 3%) for Tier 3 reflects the ITP theme findings in Table 1 and supports interview statements that Tier 3s accept proposed contractual terms and/or have limited ability to assess their full impact.

When form, question and attachment numbers are normalised on a 'per ITP document received' basis

Tier 1 s still stand out as having the most demanding ITP governance requirements. Contract review ITP documents were comprehensive and complex in the questions to be addressed. In most cases forms required detailing numerous contractual terms (beyond key issues) and other risk elements within a proposed contract. For example, several contractors' contract risk review forms required summaries of proposed contract terms; relevant clauses; whether they conform to company risk policy; and, proposed mitigation strategies to bring risks to within corporate guidelines. Responses were required over 70 different contractual terms items, e.g. fitness for purpose and other design risks; extension of time (and costs) provisions; liability and indemnity obligations, and limits; payment process; and, rights on various forms of termination. Industry's propensity to use bespoke and/or heavily amended standard contracts (client to head contractor, and head contractor to subcontractor) mean significant work is required to complete these review forms. Multi-gate approval structures within the ITP examples can mean contract review questions/forms are reviewed/updated at each of the 4+ gates in a tender timeline. This highlights the impact contract type selection may have on the time contractors spend preparing tender approval documentation.

Interviewed contractors, and particularly the Tier 1 s, were aware their ITP could involve significant duplication, though they may not have known the possible extent. Part 2 interview survey questions included 1-7 Likert perception ratings (where '1' represents strongly disagree, '4' neutral and '7' strongly agree) on user-friendliness, management appreciation of involved workload, and levels of duplication. Results from 25 interviews were included in (Urquhart and Whyte 2018c). Responses from the 13 contractors who provided ITP extracts are given in Table 5. For reasons of space, the questions have been paraphrased, though full questions are in (Urquhart and Whyte 2018c). The perception responses indicate Tier 1 s felt their ITP were less user-friendly and involved significant duplication of effort compared to the other groupings. These views are reflective of the results in Table 3's questions per document and Table 4's most demanding document requirements.

Paraphrased question	All [13]	Public [8]	Private [5]	Tier 1 [5]	Tier 2 [5]	Tier 3 [3]
2.7.1: Company's tender procedures and associated forms are user friendly and easily grasped by people using them.	5.15 (1.41)	5.50 (1.41)	4.60 (1.34)	4.40 (1.14)	5.60 (1.52)	5.67 (1.53)
2.7.2: Senior management has a good appreciation of the work the to comply with the procedures and forms.	5.54 (0.97)	5.75 (1.04)	5.20 (0.84)	5.40 (1.14)	5.40 (1.14)	6.00 (0.00)
2.7.3: Personnel directly involved in tender preparation made a significant contribution to procedure development.	4.62 (1.19)	4.38 (1.19)	5.00 (1.22)	4.20 (0.84)	4.20 (1.30)	6.00 (0.00)
2.7.4: The various tender review stages/steps lead to significant duplication of work.	3.54 (1.81)	3.88 (1.89)	3.00 (1.73)	5.00 (1.22)	3.20 (1.64)	1.67 (0.58)

Note: Standard deviations in parentheses. See (Urquhart and Whyte 2018c) for full question wording.

Table 5. Average ITP perceptions from the contractors providing ITP extracts.

4.3 Factors Influencing the Levels of Management Review

The 27 contractors were asked a series of 'check-list' style questions (Leedy and Ormrod 2013). These included nominating the stages along a tender timeline when formal applications to pursue a prospect are made, together with factors influencing the management level making/approving such decision(s) to pursue a prospect, and any subsequent margin. Results are aggregated by contractor groups (number and percentage) in Table 6.

Results indicate formal applications to pursue a prospect can occur several times during the tender timeline, consistent with content analysis findings of the 13 ITP extracts. A higher propensity (57%) Tier 1 s re-made bid/no-bid decisions at the ATS gate – presumably because the right business opportunity may no longer exist. Smaller Tier contractors were less likely to take such action, often stating that once they had given a client an undertaking to tender they would not withdraw. While 63% of interviewees indicated they undertook a formal pursuit approval at EOI stage (ATE), this does not align with content analysis findings where 10 (77%) of the 13 ITP extracts indicate such approaches were not required, unless significant prospect information had changed. The difference in responses may indicate what occurs in practice may not always align with ITPs, or that updated

knowledge at the EOI stage often leads to a need to re-seek prior ATP application in any event. Many contractors may be negotiating more approval gates than they think they are.

	All [27]	Public [15]	Private [12]	Tier 1 [7]	Tier 2 [12]	Tier 3 [8]
1. At what stage(s) in the prospect to tender submission timeline would you undertake a formal (documented) decision to pursue the prospect (select all that apply)?						
a) Identification of Prospect	12 (44%)	7 (47%)	5 (42%)	5 (71%)	6 (50%)	1 (13%)
b) Client's call for Expression of Interest	17 (63%)	11 (73%)	6 (50%)	5 (71%)	9 (75%)	3 (38%)
c) Client's call for Tenders	17 (63%)	8 (53%)	9 (75%)	3 (43%)	8 (67%)	6 (75%)
d) Review of scope of work included with the Tender	11 (41%)	5 (33%)	6 (50%)	2 (29%)	5 (42%)	4 (50%)
e) Review of contact conditions included with the Tender	9 (33%)	5 (33%)	4 (33%)	3 (43%)	4 (33%)	2 (25%)
f) Prior to submitting Tender	8 (30%)	7 (47%)	1 (8%)	4 (57%)	2 (17%)	2 (25%)
g) Other (specify)**	4 (15%)	1 (7%)	3 (25%)	2 (29%)	1 (8%)	1 (13%)
2. What determines the level of company management that makes the decision to pursue the prospect (select all that apply)?						
a) All decisions made at the same level	8 (30%)	1 (7%)	7 (58%)	1 (14%)	4 (33%)	3 (38%)
b) Alignment with CG objectives	16 (59%)	10 (67%)	6 (50%)	4 (57%)	5 (42%)	7 (88%)
c) Client	13 (48%)	7 (47%)	6 (50%)	3 (43%)	7 (58%)	3 (38%)
d) Contract value	20 (74%)	13 (87%)	7 (58%)	6 (86%)	10 (83%)	4 (50%)
e) Contract annual turnover	6 (22%)	4 (27%)	2 (17%)	3 (43%)	1 (8%)	2 (25%)
f) Contract conditions	13 (48%)	7 (47%)	6 (50%)	5 (71%)	6 (50%)	2 (25%)
g) Tender Budget	9 (33%)	6 (40%)	3 (25%)	5 (71%)	3 (25%)	1 (13%)
h) Design partners	8 (30%)	5 (33%)	3 (25%)	3 (43%)	4 (33%)	1 (13%)
i) Joint venture partners	15 (56%)	9 (60%)	6 (50%)	5 (71%)	8 (67%)	2 (25%)
j) Other (specify)	3 (11%)	1 (7%)	3 (25%)	1 (14%)	2 (17%)	1 (13%)
3. Do you have to go back to the same approval level to re-confirm approval for each progressive stage in the prospect pursuit?						
YES	14 (52%)*	8 (53%)	6 (50%)*	6 (86%)	5 (42%)	3 (38%)*
NO	14 (52%)*	7 (47%)	7 (58%)*	1 (14%)	7 (58%)	6 (75%)*
4. What determines the level of company management that makes the decision on the margin to add to the tender (select all that would apply)?						
a) All decisions made at the same level	4 (15%)	0 (0%)	4 (33%)	0 (0%)	2 (17%)	2 (25%)
b) Alignment with CG objectives	16 (59%)	12 (80%)	4 (33%)	5 (71%)	6 (50%)	5 (63%)
c) Client	7 (26%)	3 (20%)	4 (33%)	2 (29%)	4 (33%)	1 (13%)
d) Contract value	16 (59%)	10 (67%)	6 (50%)	5 (71%)	8 (67%)	3 (38%)
e) Contract annual turnover	6 (22%)	5 (33%)	1 (8%)	3 (43%)	2 (17%)	1 (13%)
f) Contract conditions	10 (37%)	6 (40%)	4 (33%)	4 (57%)	4 (33%)	2 (25%)
g) Tender Budget	3 (11%)	2 (13%)	1 (8%)	1 (14%)	2 (17%)	0 (0%)
h) Design partners	2 (7%)	1 (7%)	1 (8%)	1 (14%)	1 (8%)	0 (0%)
i) Joint venture partners	15 (56%)	8 (53%)	7 (58%)	5 (71%)	8 (67%)	2 (25%)
j) Other (specify)**	4 (15%)	2 (13%)	2 (17%)	1 (14%)	2 (17%)	1 (13%)

* Denotes a private Tier 3 advised that either "Yes" or "No" could apply depending on the prospect.

** 'Other' included capital expenditure, location of project, and risk profile (undefined in response).

Table 6. Factors affecting management level decisions on tenders for various contractor groups.

Decision processes around joint venture tendering are special cases and involve additional tender review processes. As joint venture requirements were not included in ITP documentation content analyses, these approval matters are excluded from further discussion here.

Perhaps not surprisingly, private contractors had the highest occurrence where all decisions were made at the same level of management, presumably the owner or equivalent. While ‘contract value’ was an expected key determiner of management approval level, consistent with reviewed ITP extracts, Tier 1 s placed a higher importance on ‘contract annual turnover’ than the other contractors. This recognises the risk of a project’s turnover being equivalent to the business unit’s but a project is unlikely to receive more management support and control than the business unit - a possible reason behind mega-project failures (Ryan and Duffield 2017). Tier 1 s were commonly the highest percentage responses (see bold figures in Table 6) on individual factors influencing the level of decision-making. Furthermore, all subsequent gate decisions had to be elevated to the same management level (86% of cases), which further contributes to approval workloads. Alignment with CG objectives was the biggest influencer on the management level that decided on margin, especially for public and Tier 1 contractors where DoA are quite regimented (reflected in ITP documentation).

For nearly half the contractors (over 70% of Tier 1 s), contract conditions impact the level of management approval, and this may be re-applied at four to six gates. With repeated applications comes potentially hundreds of questions and multiple attachments. This highlights how the use of bespoke and heavily amended standard contracts contribute to the levels of management involved in a tender process. Even projects for repeat clients, with their often-repeated bespoke contracts, go through the same internal review process for each new tender, as the terms are (re)considered in the context of the specific prospect scope of work and associated risks. Interviewees and ITP extracts provided information on specific contractual terms more likely to cause an elevation of a tender approval through management. Discussion on these specific terms is beyond the scope of this paper.

ITP content analyses, and the interview data, indicate various supporting ‘side’ departments, i.e. not in line management, contribute to the tender review processes. Such departments may include Commercial, Legal, Accounting and Finance, Operations (construction project personnel), and EH&S. These contributions bring additional individuals who must ‘sign-off’ before a tender progresses to the next step in the prospect tender timeline. These people may not be as invested in the pursuit process (Urquhart and Whyte 2018c). This better understanding of the ITP processes helps explain (Urquhart, Whyte, and Lloyd 2017) findings that contractors were spending 10-15%+ of their tender periods in review-related matters – considerably more than the smaller contractors’ 6-9% the time identified by (Laryea 2013).

5 IMPLICATIONS FOR CONTRACTORS, ENGINEERS AND CLIENTS

When considering lessons from above, recall that these indications of tender approval documentation workload are for a contractor’s internal approval purposes only. In addition, the tender team must prepare responses to a client’s tender submission requirements. Contractor mandated qualification lists, albeit edited for commercial sensitivities, may form part of a tender submission to a client and then used in subsequent post-tender negotiations, despite most clients requiring conforming tenders to be submitted.

5.1 Implications for Construction Contractors

The potential volume of forms, questions and attachments a contractor may need to prepare in order to obtain corporate approval to submit a tender can be considerable in workload. Interviewed Tier 1 s felt complying with their ITP involved significant duplication of effort and that their senior management had limited appreciation of the workload involved, see Table 5. However, they may be unaware of just how much work they have created for themselves. Contractors who participated in this research were not provided with feedback on the results of the analysis of their ITP extracts. As a minimum recommendation, contractors should go back through their ITP and analyse the number of forms, questions and attachments they must address, especially if such requirements are repeated several times during a tender timeframe. From that data, they should determine whether their ITP still meet their best interests, i.e. value in the magnitude of work their ITPs have created. Data from this paper provide a benchmarking opportunity.

More time spent gaining internal approvals means less a tender team can spend considering innovations, cost-effective solutions, competitive pricing and checking the tender itself. The assumed additional benefits of increased tender governance, especially if it is the wrong type, may not be providing real benefit to a contractor’s tender or business position. These multi-gate tender approval

processes, designed to increase CG, run the risk of becoming overly bureaucratic (Cooper, 2014). Given limited tender periods often apply, tender teams may overlook some ITP steps as they seek production efficiency (Love, Edwards, and Smith 2016). Contractors should consider not just the content of gate approval documents but what a gate is intended to achieve. Some ITPs analysed did not include an ATC gate – hence contractors may execute contracts with terms that (inadvertently) deviate from the agreed ATS gate position. Even with these CG gate precautions success is not guaranteed. As one Tier 1 said, despite having all these governance controls they still occasionally win ‘a dog of project’ (Urquhart, Whyte, and Lloyd 2017) and the industry’s financial performance on mega-projects remains unsatisfactory (Ryan and Duffield 2017). Nor do elaborate controls guarantee business protection. Two (7%) of the participant contractors have since gone into administration, meaning a failure rate approx. three times the industry average (Australian Bureau of Statistics 2013; Australian Securities and Investments Commission 2019).

Computer based CRM provides opportunities for collecting considerable client and prospect data. However, contractors should ask themselves: how much of that data is really needed; when should it be collected (is a ‘tender win’ the time for most questions to be addressed once); is that data meaningfully analysed to provide lessons learned for future tenders and projects; as well as producing data for other departments, like Finance and Accounting? Although many contractors acknowledge the need to consider lessons learned on future tenders few formally include such requirements in their ITP (Crosby 2017, Urquhart and Whyte 2018b). Four (31%) of the analysed ITP extracts mentioned lessons learned, though only two had formal lessons learned detailed as a specific ITP requirement. Organisational learning must be captured, retained, and re-applied when needed (Argote 2011). Improved lessons learned capture and application into future tenders should be a key ITP governance focus. During interviews various contractors identified that their increased ITP had improved their project winning rate (Urquhart and Whyte 2018b) as it forced them to be more selective in what they pursued. If you knew you may have to answer more than 2000 questions over a tender timeline you certainly would want to be sure it was worth your effort pursuing a prospect.

5.2 Implications for Engineering Consultants

While this research focuses on contractors, similar lessons are applicable to engineering consultants as they also tender for work and thus will have some form of work winning procedure. Engineering consultants should back-analyse their procedures to understand the included CG workload. Is engineering judgement being adequately applied to work procurement, consistent with expectations during design, or has it been somewhat overshadowed in the pursuit of completing governance-based paperwork? When advising clients on possible project procurement methods, engineers must have a greater understanding of the tender steps a contractor undertakes during, what are often short, tender periods. If tender periods are too short contractors may struggle to focus sufficiently on the tender itself while pursuing their internal approvals. However, if tender periods are too long, in addition to potential delays to the client’s project, concerns arise about the costs of tendering.

5.3 Implications for Clients

Apart from providing a unique insight into, and increased understanding of, high-profiled contractors’ ITP, this research indicates that major contractors operating in Australia spend significant tender period time (15% not uncommon) preparing for, and obtaining, internal approvals to pursue and submit a tender. Such approval pursuit actions may be repeated up to five times during a prospect’s tender timeline and take considerably longer than clients appreciate. Depending on the individual contractor and work component (forms, questions or attachments), 30% to 50% of that effort may be related to a prospect’s proposed contractual terms. Hence, clients should re-assess the merits of, and value obtained by the, increasingly common use of bespoke and/or heavily amended standard contracts (Sharkey et al. 2014, Whyte 2015). Fourteen of 17 contractors interviewed made reference to standard contracts becoming less common. It can be argued here that clients should ask themselves, when releasing their next project to tender: if a contractor’s best minds are not focused on our tender and innovative cost-effective and reliably priced solutions, but rather spending significant tender period time in the pursuit internal approvals on bespoke contractual terms and similar matters, is that in our best interests or society’s overall.

6 CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

Tendering is a significant internal cost that affects a contractor's corporate overheads. Following interviews with 27 high-profile purpose selected contractors, and subsequent analysis of ITP documentation provided by 13 of them, a clearer picture of the internal approval workload is provided. Many interviewed contractors (Urquhart and Whyte 2018c) said it was individuals who made the difference in tender, and subsequent project, success and not the increased ITP requirements. Corporate governance includes risk management, a process heavily influenced by the human factor (Smith, Merna, and Jobling 2006). This research finds the effort (time and money) spent addressing internal review obligations can be considerable if multiple questions, forms and attachments have to be prepared and (re)evaluated through an average 4.2 approval gates over a tender timeframe. Interviewed Tier 1s were more likely to state that complying with their ITP involved considerable duplication of effort and felt their senior management had limited appreciation of the workload involved. However, those ITP seem to remain in place. Highlighting these approval workloads should encourage contractors to (re)analyse their ITP documentation to determine the volume of internal work generated and question its value. The data from this paper provide a rare benchmarking opportunity for contractors to evaluate their ITP demands against possible competitors.

Proposed contractual terms are a major contributor to a contractor's possible internal tender approval documentation workload (30-50% in some cases) and are more likely to cause an elevation of a tender approval through line management. Future planned research will investigate the individual contractual terms that can contribute to management elevation issues when proposed contracts are misaligned with contractors' corporate risk appetites.

This unprecedented access to the inner workings of contractors' ITPs gives a better insight into the steps that are being followed. This qualitative insight into ITPs may facilitate different approaches to tender decision modelling research. It can be argued that governance controls over the wrong issues may not be serving a contractor's best interests, particularly when the key issue of lessons learned retention and (re)application on future tenders remains a commonly overlooked governance requirement.

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