

UNCERTAINTY AVOIDANCE: PUBLIC SECTOR CLIENTS AND PROCUREMENT SELECTION

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STRUCTURED ABSTRACT

- **Purpose:** Choosing the appropriate procurement system for construction projects is a complex and challenging task for clients particularly when professional advice has not been sought. To assist with the decision making process, a range of procurement selection tools and techniques have been developed by both academic and industry bodies. Public sector clients in Western Australia (WA) remain uncertain about the pairing of procurement method to bespoke construction project and how this decision will ultimately impact upon project success. This paper examines ‘how and why’ a public sector agency selected particular procurement methods.
- **Methodology/Approach:** An analysis of two focus group workshops (with 18 senior project and policy managers involved with procurement selection) is reported upon
- **Findings:** The traditional lump sum (TLS) method is still the preferred procurement path even though alternative forms such as design and construct, public-private-partnerships could optimize the project outcome. Paradoxically, workshop participants agreed that alternative procurement forms should be considered, but an embedded culture of *uncertainty avoidance* invariably meant that TLS methods were selected. Senior managers felt that only a limited number of contractors have the resources and experience to deliver projects using the non-traditional methods considered.
- **Research limitations/implications:** The research identifies a need to develop a framework that public sector clients can use to select an appropriate procurement method. A procurement framework should be able to guide the decision-maker rather than provide a prescriptive solution. Learning from previous experiences with regard to procurement selection will further provide public sector clients with knowledge about how to best deliver their projects.

Keywords: Procurement, public sector, procurement selection, uncertainty avoidance.

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INTRODUCTION

There is consensus that there is one procurement method that is in some sense ‘better’ than all others for an individual project, but that no one procurement method is likely to be better than others for any project (Love *et al.*, 1998). Building upon this aforementioned view, Gordon (1994) suggested that selecting an appropriate procurement method could reduce construction project costs by an average of 5%. However, while an appropriate procurement system may enhance the probability of project success (Naoum, 1994; Luu *et al.*, 2005), some decision-makers may encounter difficulties in ascertaining the suitability of various procurement approaches (RICS, 2000). This is because it is virtually impossible for them to capture a diverse continuum of procurement options, client characteristics and needs, project characteristics and external conditions through their own experiences of prior projects (Kumaraswamy, and Dissanayaka, 2001). A plethora of techniques, such as *ELSIE* (Brandon *et al.*, 1988), *PASCON* (Moshini and Botros, 1990), and *Suitability Matrix* (CII, 2001) have been developed to assist decision-makers select the most appropriate procurement method for a given project. Consequently, the selection of a procurement method has become a complex and challenging task for clients (Mortledge *et al.*, 2006).

Since 2003 the State of Western Australia (WA) has experienced a sustained and unprecedented economic boom following the exploitation of natural resources such as oil, natural gas, nickel, and iron ore. In turn, migration within the State has increased exponentially and this has stimulated the need for housing and infrastructure development (e.g., new schools, hospitals and highways). The demand for new building stock in particular has placed increasing pressure on the public sector to ‘procure wisely’ for their facilities and to meet the immediate needs of an increasing population. Public clients are under increasing pressure to obtain value for money from the services they use and the projects they deliver. In order to achieve this objective government is required to examine an array of delivery modes that best suit their needs and those of the public. With this in mind, an *experienced* public client from WA has begun to examine in detail the process it uses to justify the way in which it selects the method to procure its projects so as to obtain better value for money. In this paper, the ‘how and why’ this public client selects a procurement method for delivering its building stock is examined.

PROCUREMENT SELECTION

Experienced clients can select a procurement approach that has previously worked well for them, or they deem to be suitable when considering their prioritised objectives and attitude to risk (Morledge *et al.*, 2006). Inexperienced clients, on the other hand, will need to seek professional advice to assist them through the process (Love *et al.*, 1998). Morledge *et al.* (2006) states that the selection of an appropriate procurement strategy has two components:

1. *Analysis* – assessing and establishing priorities for the project objectives and client attitude to risk.
2. *Choice* – considering possible options, evaluating them and selecting the most appropriate.

The efficient procurement of a building project through the choice of the most appropriate procurement strategy has long been recognised as a major determinant of project success (Bennett and Grice, 1990). Indeed, a failure to select an appropriate procurement approach is widely cited as being the primary cause of project dissatisfaction (Masterman, 1996). The selection of a procurement method is more than simply establishing a contractual relationship. It involves creating a unique set of social relationships whereby forms of power within a coalition of competing or cooperative interest groups are established (Liu, 1994). Differing goals and objectives and varying degrees of power within a project team are often the underlying conditions for triggering adversarial relations (Love *et al.*, 2004).

In an attempt to overcome the adversarial nature of construction and improve project outcomes, relationship contracting (such as alliances) have been used both private and public clients (Li *et al.*, 2000; Hampson *et al.*, 2001). In Australia the use of relationship-based contracting particularly partnering has had a “lengthy and somewhat chequered history, principally due a number of parties attempting to exploit the concept in a rather cynical way” (Morledge *et al.*, 2006). Partnering, for example, is often used as an ‘add on’ to pre-existing construction contract forms and the fundamental transactional nature of the contract remains the same (Howell *et al.*, 1996). In most cases the partnering agreement is separate from the legal contract and the partnering charter that is established is little more than an informal statement of intent to cooperate. While partnering in part fills a gap in current practice, it can be perceived as being a programmatic *Band-Aid* (Howell *et al.*, 1996) unless embedded within the procurement strategy. If public clients use partnering, then formal relational based contracts must be used and address issues such cost reimbursement, performance based fees and incentives.

PROCUREMENT ASSESSMENT CRITERIA

A ubiquitous issue within the construction industry relates to clients satisfaction and the means by which projects have been procured (Love *et al.*, 1998). Consequently, it is important to evaluate the clients' criteria, their perceived importance and then seek performance to match that criteria identified (RICS, 2000). Traditionally, most clients have required projects to be completed on time, within budget and to the highest quality albeit in recent years environmental (e.g. carbon footprint) and legislative requirements (e.g. health and safety) have risen to prominence. While the use of such criteria can be used as a guide to assist decision-makers with an initial understanding of the basic attributes of a particular procurement system, they *should not* be used as a basis for selecting the procurement method (Luu *et al.*, 2003a). This is because of the underlying complexity associated with matching client needs and priorities with a particular method (Kumaraswamy and Dissanayaka, 1998). The New South Wales (NSW) Department of Commerce (2006), for example, states that an appropriate procurement method for a project will depend on the characteristics of the project, the factors that impact its delivery and the desired risk allocation and as a result the appropriate selection will provide value for money, manage risk, and meet project objectives.

Determination of Selection Criteria

The National Economic Development Organisation identified nine criteria that clients could use to select their priorities for projects (NEDO, 1985). These are:

1. *Time*: is early completion required?
2. *Certainty of time*: is project completion of time important?
3. *Certainty of cost*: is a firm price needed before any commitment to construction given?
4. *Price competition*: is the selection of the construction team by price competition important?
5. *Flexibility*: are variations necessary after work has begun on-site?
6. *Complexity*: does the building need to be highly specialised, technologically advanced or highly serviced?
7. *Quality*: is high quality of the product, in terms of material and workmanship and design concept important?
8. *Responsibility*: is single point of responsibility the client's after the briefing stage or is direct responsibility to the client from the designers and cost consultants desired?
9. *Risk*: is the transfer of the risk of cost and time slippage from the client important?

Several studies, such as those identified in Love *et al.*, (1998), have used modified versions of the NEDO criteria in an attempt to develop a procurement selection framework. Luu *et al.* (2003) state that the use of a limited number of factors such as those identified by NEDO (1985) may give rise to the selection of a sub-optimal procurement system. Since the selection of procurement system is influenced by client characteristics (Moshini and Botros, 1990), project characteristics (Ambrose and Tucker, 2000), and the external environment (Alhamzi and McCaffer, 2000), procurement selection criteria representing the constraints imposed on the project should be considered before a decision is made.

< Insert Table 1. Variables affecting the client's decision for procurement systems >

Kumaraswamy and Dissanyaka (1998) and Luu *et al.* (2003) have identified the key criteria that should be considered by clients when selecting a procurement method. In Table 2 the criteria identified by Kumaraswamy and Dissanyaka (1998) and Luu *et al.* (2003) are listed along with those used by The New South Wales Department of Public Works (2005).

< Insert Table 2. Client priorities for procurement selection >

It can be seen the criteria identified are different in nature. The major challenge for clients when selecting a procurement method is identifying the criteria for the project, but the question is that if projects are different in nature and clients' needs are constantly changing due to internal and external demands, would the same criteria be applicable for all projects? The weighting for criteria will invariably change as would the criteria type.

TOOLS AND TECHNIQUES FOR PROCUREMENT SELECTION

The approaches developed for procurement selection range from simple (Franks, 1990) to highly complex (Luu *et al.*, 2005). It is important, however, that selection is undertaken logically, systematically and in a well-organized manner by the clients' principal adviser (Love, 1996). A summary of the development of procurement selection tools can be seen in Table 3.

< Insert Table 3. Procurement selection systems >

Each of the methods presented attempts to cross-reference project variables with existing procurement systems. As a result, Sidwell *et al.* (2001b:p.24) states that this "shoe-horns one-off projects and their particular parameters, priorities and external conditions into off-the-shelf delivery systems". Many of the procurement selection systems developed are deficient (e.g., NEDO, 1985; Skitmore and Marsden, 1988,

Moshini and Botros, 1990; Ambrose and Tucker, 2000; Cheung *et al.*, 2001) in that they:

- ignore an array of factors (e.g., market related);
- are limited in their options available for consideration (i.e. only a few procurement options are considered);
- are conditional and not widely applicable; and
- simply not user friendly (Alhazmi and McCaffer, 2000).

While all the developed selection systems identified in Table 1 have their merits they tend to be prescriptive and *not* recognise the complexity associated with the selection process. Often there are many stakeholders that need to be involved in the selection process and decisions are dependent upon the interaction of many variables that incorporate a high degree of subjectivity and intuitive judgement (Morledge *et al.* 2006). Many of the systems developed have not been tried and tested in practice over a period of time so as to determine if the method selected was able to produce a successful outcome for the client. There are, however, examples where systems have been developed and tested for one-off projects (e.g., Al-Tabtabi, 2002).

RESEARCH APPROACH

Considering the sheer number of criteria and procurement selection methods that public clients' are confronted with the challenge of selecting an 'appropriate' procurement method can be a daunting process. Consequently, an exploratory research approach using focus groups was adopted so as to gain an understanding about the nature of procurement method selection process with a State housing and public works agency and to highlight problems that may exist during this process (Creswell, 2003). The agency that was selected was primarily responsible for procuring and delivering public sector projects such as housing and public works. It also advised other agencies on procurement options and the selection of contracting organisations.

Focus Groups

The focus groups were used to elicit general experiences, opinions and viewpoints from the participants sampled. Unlike conducting multiple individual interviews, participants in the focus group can listen to and comment on each other's original responses, discussing their perceptions and ideas with each other in an often enjoyable and comfortable shared environment (Patton 2002). The feedback obtained from focus group interviews is also generally more specific, animated and meaningful than the feedback from individually completed interviews and questionnaires (Krueger and Casey, 2000; Patton 2002).

Focus group interviews were used to gather information relating to the views and opinions of the participants in a non-threatening environment. As a common method of selecting participants for focus groups, convenience sampling was used. Essentially, participants for the public works department were selected for their familiarity with the project procurement selection process of their organisation. All senior project and policy managers involved with procurement selection within the agency were invited to attend a focus group. A total 18 positive responses from a sample of 24 stated they would attend. Ideally focus groups should contain between 6 and 12 participants (Stewart and Shamdasani, 1990). In this study, two equal focus groups of nine comprising of senior project and policy managers who were involved in the procurement method selection process were used. While the focus group progressed, participants were given freedom to discuss issues, listen to fellow participants, provide reflective comment and arrive at a shared understanding of collective experiences regarding procurement use and selection. Whilst working with the group the facilitator appeared to be 'genuinely naïve' and avoided leading questions so as to allow corroboration to naturally occur. The questions presented to participants were ordered in terms of their relevance. The focus group discussion revolved around *five* questions, namely:

1. What project types/ factors do you consider in selecting a procurement method?
2. What procurement methods are you familiar with? For each what are their individual characteristics? What are their advantages/disadvantages? Which characteristics/advantages/disadvantages do you find most important in selecting a procurement method?
3. What is the most common procurement method used by your agency? Why?
4. What is the process followed for assisting government in selecting a procurement method. What is good about this process? What improvements could be made?
5. What forms of procurement method would you like to see more use of? Why?

The focus groups were held at the workplace of participants in an attempt to reduce the impact of the research being undertaken on their daily working routine. Each of the focus groups that were undertaken lasted one and half hours in duration. The focus groups were *not* tape recorded for reasons of confidentiality. Oppenheim (1992:p.71) states that if the respondents refuse to consent to tape recording, the focus groups can proceed with ultra-rapid note-taking.

Interestingly, research conducted by Roberts and Reneagzalia (1965) found that an interviewer could elicit the same responses from interviewees if interviews were recorded or not recorded. In this instance, notes were taken by *three* experienced researchers who were observing the focus group. The focus group was facilitated by someone independent of the research, but who had extensive knowledge of 'public sector procurement'. Three days after the focus groups had taken place each of the

participants were presented the notes that had been taken to check for accuracy, and reliability.

Thirty pages of notes were obtained from the interviews. The technique of content analysis was used to make analyse the data that was obtained. Content analysis is “a research technique for making replicable and valid inferences from data to their context” (Krippendorf, 1980:p.21). Inferences from the data extracted can only be drawn if the relationships with what the data means can be maintained between their institutional, societal or cultural contexts (Krippendorf, 1980).

Analysis

Content analysis was used to determine the underlying reasons as to ‘how and why’ the sampled public sector agency selected procurement methods for its projects. The data derived from the interviews was entered and analyzed using QSR NUD*IST (Non-numerical Unstructured Data with powerful processes of Indexing, Searching Theorising) software. Three main themes emerged and were used to analyse the data: *selection factors, procurement experience, and selection process.*

RESEARCH FINDINGS AND DISCUSSION

In examining these emerging factors it was observed that the responses received from participants inadvertently dovetail one another. At times issues are repeated but in a different context.

Procurement Selection Factors

The NSW Department of Commerce (2006) states that an appropriate procurement method for a project will depend on several project characteristics including the factors that impact upon its delivery and desired risk allocation. As a result, appropriate selection will provide value for money, manage risk and meet project objectives. The selection criteria that the *first* focus groups identified as being important criteria to be considered during the procurement selection process were: project value, project complexity, project type (standard/novelty), location (regional/local), stakeholder integration, political considerations, client needs, and industry culture. Surprisingly, political considerations and the prevailing industry culture were issues that participants wanted to discuss. It was perceived that the selection of a procurement method was often a *fait au complaint* for the agency. This is because of the requirement for *cost certainty* and the issues associated with probity and accountability, and thus deemed to be transparent features the traditional procurement process. It was stated by one participant that:

“factors such as project value, project complexity, and project type are a given. We know from our own personal experience that traditional

lump sum methods always work and give us cost certainty. When it's a complex project or it needs to be done quickly we may consider construction management. The biggest issue we have is that often it's decided from above because it's the flavor of the month"

It was perceived that often the agency were given a directive to use a particular form of procurement from the Treasury or Minister, for example, the use of a public private partnership (PPP) method. While a sound business case may have been made for the use of PPP, the reality was that the local market had limited experience with dealing such a method. With this in mind, one participant stated:

"The industry in WA is geared up for traditional lump sum contracting. It works and everybody knows what is expected of them. When we use PPPs then it probably costs more because of the risk and unfamiliarity with the method"

Contrastingly, the factors that were raised and discussed in second of the focus groups were client resources, project characteristics, ability to make changes and cost. Under the factor of client resources, it was stated by one participant that:

"Our knowledge, the experience we have with procuring building projects and the current market conditions influences the procurement strategy adopted. Our objectives are influenced by the nature and culture of the organization. In our case we have a preference for traditional procurement as it matches with our experience. We have limited resources to try new things; we do what is best for us considering resource constraints".

All participants agreed with this statement and were comfortable with recommending the use of TLS as it was deemed easier to manage the process of procurement with the resources already available within the agency. While participants espoused the need to consider current market conditions, they unwittingly eschewed non-traditional methods that were more likely to deliver facilities in a timelier manner and provide better value for money through *process* and *product* innovation. In general, such innovations occur with of the integration of design and construction process (a typical feature of non-traditional methods) and the input of the contractors to the design and planning of a project.

Under the theme of project characteristics, participants identified project size (i.e., monetary value), complexity, location and its uniqueness as key selection factors. It was suggested that larger and complex projects were generally more unique in nature. Consequently, an alternative form of procurement could be considered, but it was

reiterated that often the decision as to what form of procurement to use for unique projects was taken by the Minister or Treasury. It was observed that participants felt disempowered when this occurred because their agency was responsible was supposed to be responsible for the procurement of public works.

In terms of uniqueness participants made reference to two types of projects that influenced the procurement method selected: 'profile' (i.e. standard, such as schools, police stations) and 'non-profile' (i.e. novel, such as stadiums, hospitals). It was revealed that profile projects tended to be more repetitious and/or fit within the more traditional approaches of procurement. Non-profile projects on the other hand tended to be more unique and stimulate consideration of a range of possible appropriate procurement methods such as *construction management* or *PPP*.

The ability to make changes and the need for cost certainty were issues, which were identified by participants as needing consideration, but were deemed to be well ingrained within TLS method. One participant stated:

“Ideally the needs of the client and their stakeholders should be identified in the early stages of the project, though this is not always possible. Therefore, a procurement method may be selected because it has the flexibility to deal with changes during the project”.

The factors identified formed part of an *implied* process in determining a procurement strategy for each project procured by the client. The focus group participants could not identify a formal policy or technique used for procurement selection. Instead, the process of procurement method selection for the agency was based on intuition and experiences of those responsible for its selection. While no formal process was in place for project procurement selection, participants suggested that the benefits of the current way of doing things enabled:

- *value for money*; it provides time and cost predictability and therefore represents the lowest risk to meeting time and cost requirements;
- *better quality control*; it provides better design outcomes and therefore represents the lowest risk to meeting quality requirements;
- *familiarity*; it matches their culture, skill set, systems and processes;
- *industry familiarity*; they are aware that TLS will be predominately used;

Participants suggested that their organisation could improve the procurement method selection process by addressing:

- the need for a more comprehensive and sophisticated procurement selection process for high profile projects, such as arenas, stadiums and convention centres; and
- the need for a shared and ‘agreed’ general understanding of the definitions of all procurement systems.

Uncertainty Avoidance and Procurement Selection

It was observed from the discourse during the focus groups that the underlying culture (i.e. beliefs structured as a hierarchy of values) of the agency had an important influence in procurement selection process. Drawing from Hofstede’s (1991) five dimensions of national and organizational culture, it is suggested the observed culture of the agency appeared to reflect that of *uncertainty avoidance*.

Uncertainty is the extent to which the members of a culture feel threatened by uncertain or unknown situations (Hofstede, 1991:p.263). In overcoming the feeling of uncertainty people invariably create formal rules and believe in their correctness. They will avoid anything that does not go along with the rules and regulations that have been created.

In essence, cultures that have high levels of uncertainty avoidance prefer rules and structured circumstances, and emotions are displayed in the way that everything different is a threat to the *status quo*. Moreover, employees tend to remain longer with their present employer. Noteworthy, many of the participants working with the agency had been with their employer for a considerable period of time. It was observed that if the participants were confronted with a new project in the current economic climate they would shun any ambiguity and opt for TLS. Decision-makers who had extensive industry experience with a particular procurement method were more likely to select a method that had worked for them in the past, rather than take the perceived risk of choosing an unfamiliar method. This observation is in-line with Morledge *et al.* (2006) and the DISR and NatBACC (cited in APP 1998).

To prevent uncertainty within the agency, it is suggested that there is a need to establish ‘rules’ as to when a TLS is to be used, not simply because participants are comfortable with it, as it may be an inappropriate choice. On the one hand there needs to be strong uncertainty avoidance within the agency as there are strict regulations (e.g. probity issues) and a high demand for detail when creating a contract. This is to avoid any circumstances which could cause any kind of *uncertainty* during the procurement of a project. On the other hand, there is need for lower uncertainty avoidance during the early stages of a project as too many rules and formalities can stifle innovation and new ideas.

Procurement Experience

Procurement systems can be classified as: traditional (separated); design and construct (integrated); management (packaged); and collaborative (relational) each of the aforementioned systems has an array of methods associated with them (Love *et al.*, 1998). It was observed that participants had familiarity with various procurement systems but limited experience with using them. Table 4 identifies the procurement methods that were identified by participants' as having specific experience and knowledge. The advantages and disadvantages of procurement methods noted in Table 4 were identified by participants during both focus group sessions. Only *four* participants had direct project management experience with using design and construct methods (including package deals), one with novation, one with PPPs, and one with design, manage and construct.

< Table 4. Participants experiences with procurement methods used: Perceived advantages and disadvantages >

All participants stated that they felt design and construct methods of procurement were only suitable for simple projects such as State housing and schools. During the discussions in both focus groups about procurement familiarity it could be observed that several participants were only interested in discussing issues associated with TLS method. It was clearly evident to the *three* researchers observing the discussions that this was only because of participants' limited experience with non-traditional procurement systems. In fact, when dialogue began between two participants familiar with design and construct in the first focus group that was conducted, several other participants refused to listen to their experiences, with one stating:

"We always use traditional lump sum; it's been proven to work for us. I don't know why a design and construct was used for that project"

It was apparent that the caucus, with the exception of two participants in the first focus group, were only interested in discussing their experiences with TLS methods. Noteworthy, all participants stated their projects had been delivered successfully in terms of cost, quality and time. If they had not or a problematic issue had arisen it was deemed to be due to the prevailing market conditions, consultants or the contractor.

In an attempt to divert the dialogue away from focusing on TLS methods, the facilitator asked "*what do you know about other methods of procurement?*" At first the focus groups were both hesitant to embrace this question inasmuch as they were in their 'comfort zone'. It was also perceived that nobody wanted to be seen as challenging the groups' experiences. Despite the participants' limited experience with non-traditional methods, it was revealed that several participants had considerable knowledge of national and global procurement trends, and emerging methods that have been used in

the United Kingdom such as *Heathrow Terminal 5*. One participant from the second focus group and with more than twenty five years in the agency stated that:

“We should be looking at how we can effectively use different and more innovative procurement methods. For example, agencies over east (i.e. in States such as Queensland, New South Wales, and Victoria) are doing this, and we should do as well”.

This statement received a mixed response from some participants, especially from one who stated *“traditional lump sum has been tried and tested; it works so we should not change it if it’s not broken”*. Another participant stated:

“The market doesn’t have the experience to deal with other forms of procurement. Contractors don’t want to take the risk and are comfortable with traditional lump. They know where they stand with it.”

Western Australia is currently experiencing an unprecedented boom, growth in population and as a result a lack of skilled labour. There is an urgent demand for additional facilities such as housing, hospitals, schools and the maintenance of public works throughout the State. Public works projects are currently being delayed and as result the cost of undertaking them is continually increasing as long as they are being delayed, especially in remote areas of WA. There is a need to adopt non-traditional procurement methods so as to be delivery public works in a more effective manner in terms of cost, quality and time (Smith *et al.*, 2002).

Despite the need for improvement in the way in procurement methods are selected, it was suggested by participants that any improvement to the existing system could be destabilising as decision-makers were comfortable with the *status quo*. The continual use of TLS by the public sector may stifle technological innovation in WA, particularly the design and constructability of public sector buildings. Other States within Australia are actively pursuing alternative forms of procurement and this has put increasing pressure of the WA State Government to examine other forms of procurement. Particularly, procurement methods that participants suggested that they would like to see more use of were PPP’s, construction management, and design and construct in conjunction with an alliance agreement. Though, it was suggested that alliances would only be considered by participants for complex or large infrastructure projects. While WA has been slow to adopt alternative forms of procurement compared to other States such as Queensland (QLD), NSW and Victoria (VIC), it is essential they learn from their previous experiences with regard to the use of methods used and how they justified their selection.

Procurement Selection Process

Traditional lump sum (based on AS 2124 contract type) was the most commonly used to deliver projects. It was estimated that approximately 95% of projects delivered by the agency in the last ten years had been procured using this approach. Discussion within the focus group sessions left little doubt that not only was this method the most common but also the default option for the agency. Participants revealed that they would only contemplate an alternative procurement method when:

- circumstances were perceived to be ‘abnormal’, for instance to obtain something beyond their budgetary constraint; or
- a minister, the WA Department of Treasury or the like, suggested a system of procurement other than the default TLS. For instance, when treasury introduced a *new* PPP process; or
- in association with *non-standard* or *non-profile* projects where the procurement options would be discussed or negotiated with clients of the agency; sometimes using a recently launched ‘business case navigator’ as a referral tool.

Reasons for the popularity of TLS identified by participants included: policy; ability to deal effectively with risk (cost, time, quality); familiarity and acceptance within the local industry; satisfies public accountability; provides maximum client control over the project’s outcome; and provides cost certainty. Despite the intentions of participants in this study to consider a wide range of criterion *cost* still tends to be the overriding factor for procurement selection and as result traditional lump approaches are adopted. Rwelamila *et al.*, (2000) in their study of public sector procurement concur with this finding.

Rowlinson (1999a) has argued that the concept of cost certainty is a fallacy in the context of traditional approaches that are based upon full drawings and bills of quantities (BoQ). This approach should provide a public client with a firm, fixed price for construction but in practice very few projects are actually completed within the tendered price (Rowlinson, 1999a; Love, 2002). Complete drawings and BoQs are generally not available when a projects goes to tender. Rowlinson (1999a:p.49) therefore asks why do clients’ continue to use this method when it can be argued that it leads to: a lack of flexibility; a price to pay in terms of claims-conscious behaviour; the fallacy of cost certainty; and a release of control by the client organisation.

CONCLUSION

Academics and industry practitioners have historically developed a plethora of tools and techniques to determine an ideal procurement method for a specific project. Yet, no specific techniques have gained widespread acceptance, particularly by the public sector organisation involved in this research. While forms of ranking and weighting of

specific client priorities against the attributes of a particular procurement method are used by public sector agencies in NSW, QLD, and VIC, WA has used a more informal and intuitive approach based on the personal experience of the decision-maker. Because of an innate culture of *uncertainty avoidance*, TLS methods are the norm and default unless a specific request or directive is made by a Minister, the Department of Treasury or another agency is made. Moreover, it was perceived by those involved in the focus groups that the marketplace within WA does not have the management experience to effectively embrace alternative forms of procurement. The research identifies a need to develop a pragmatic framework that public sector clients in WA can use to select an appropriate procurement. A procurement framework should be able to guide the decision-maker rather than provide a prescriptive solution. Learning from previous experiences with regard to procurement selection will further provide public sector clients with knowledge about how to best deliver their projects.

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REFERENCES

- Al-Tabtabi, H.M (2002). Construction procurement selection strategy using analytical hierarchy process. *Journal of Construction Procurement*, **8**(2), pp.117-132.
- APP (1998). *Procurement and Project Delivery in the Building and Construction Industries* – Initial Report to the Department of Industry Science and Tourism and National Building and Construction Committee, APP, Australia
- Alhazmi, T., and McCaffer, R. (2000). Project procurement system selection model. *ASCE Journal of Construction Engineering and Management*, **126**(3), pp.176-184.
- Ambrose, M., and Tucker, S.N. (2000). Procurement system evaluation for the construction industry. *Journal of Construction Procurement*, **6**(2), pp.121-134.
- Brandon, P.S., Basden, A., Hamilton, I.W., and Stockley, J.E. (1988). *Application of Expert Systems to Quantity Surveying*. Royal Institution of Chartered Surveyors, London, UK
- Bennett, J., and Grice, A. (1990). Procurement systems for building. In *Quantity Surveying Techniques: New Directions*. BSP Publications, Oxford.
- Chan, A.P.C. (1995). Towards an expert system on project procurement. *Journal of Construction Procurement* **1**(2), pp.111-123.
- Chang, C.Y., and Ive, G. (2001). *Transaction –cost-based Procurement Route Selection Technique: A Conceptual Framework*. Bartlett School of Graduate Studies, University College London, London.
- Construction Industry Institute (2001). *Project Delivery and Contract Strategy*. Implementation Resource, 165-2, September, Project Delivery and Contract Strategy Research Team, The Construction Industry Institute (CII), Texas
- Creswell, J.W. (2003). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 2nd edn, Sage Publications, Thousand Oaks, US.
- Franks, J. (1990). *Building Procurement Systems*. Chartered Institute of Building, Englemere, Kings Ride, Ascot, UK
- Gordon, C.M. (1994). Choosing appropriate construction contracting method. *ASCE Journal of Construction, Engineering and Management*, **120**(1), pp.196-210.
- Griffith, A., Headley, J.D. (1997). Using a weighted score model as an aid to selecting procurement methods for small building works. *Construction Management and Economics*, **15**, pp.341-348.
- Hampson, K.D., Peters, R.J., Walker, D.H.T., Tucker, S.N., Ambrose, M., and Mohamed, S. (2001). *Case Study of the Action Peninsula Development*. Department of Industry, Science and Resources, Commonwealth of Australia.
- Hibberd, P., and Basden, A. (1996). The relationship between procurement and contractual arrangements. In *Proceedings of CIB W-92 Procurement Systems Symposium, North Meets South, Developing Ideas*, 14-17th January, Durban, South Africa, p.639-646.
- Hofstede, G. (1991). *Cultures and Organisations: Software of the Mind*. McGraw-Hill, London.

- Hofstede, G. (1994). *Cultures and Organizations - Intercultural Cooperation and its Importance for Survival*. McGraw-Hill, London.
- Howell, G., Miles, R., Fehling, C., and Ballard, G. (1996). Beyond partnering: toward a new approach to project management. *Proceedings of the Fourth International Conference on Lean Construction*, 25th-27th August. University of Birmingham, UK
- Kumaraswamy, M.M., and Dissanayaka, S.M. (1998). Linking procurement systems to project priorities. *Building Research and Information*, **26**(4), pp.223-238.
- Kumaraswamy, M.M., and Dissanayaka, S.M. (2001). Developing a decision support system for building project procurement. *Building and Environment*, **36**(3), pp.337-349.
- Krippendorff, K. (1980). *Content Analysis: An Introduction to its Methodology*. Sage, Newbury Park, London.
- Liu, A.M.M. (1994). From act to outcome – a cognitive model of construction procurement. In *Proceedings of the CIB W-92 Procurement Symposium*, Department of Surveying, The University of Hong Kong, 4th – 7th December, Hong Kong, pp.169-178.
- Li, H., Cheng, E.W.L., and Love, P.E.D. (2000). Partnering research in construction. *Engineering Construction and Architectural Management* **7**(1), pp.76-92.
- Love, P.E.D. (1996). Fast building: An Australian perspective. In *Proceedings of CIB W-92 Procurement Systems Symposium, North Meets South, Developing Ideas*, 14-17th January, Durban, South Africa, pp.329-343.
- Love, P.E.D., Skitmore, R.M., and Earl, G. (1998). Selecting an appropriate procurement method for a building project. *Construction Management and Economics*, **16**, pp.221-223.
- Love, P.E.D., Irani, Z., and Edwards, D.J. (2004). A rework reduction model for construction projects. *IEEE Transactions on Engineering Management* **51**(4), pp.426-440.
- Luu, D.T., Ng, S.T., and Chen, S.E. (2003a). Parameters governing the selection of procurement system – an empirical survey. *Engineering, Construction and Architectural Management*, **10**(3), pp.209-218.
- Luu, D.T., Ng, S.T., and Chen, S.E. (2003b). A case-based procurement advisory system for construction. *Advances in Software Engineering*, **34**, pp.429-438.
- Luu, D.T., Ng, S.T., and Chen, S.E. (2005). Formulating procurement selection criteria through case-based reasoning approach. *ASCE Journal of Computing in Civil Engineering*, **19**(3), pp.269-276.
- Masterman, J. (1992). *An Introduction to Building Procurement Systems*. E & F Spon
- Mortledge, R., Smith, A., Kashiwagi, D.T. (2006). *Building Procurement*. Blackwell, Oxford, UK.
- Moshini, R.A., and Botros, A.F. (1990). *PASCON an expert system to evaluate alternative project procurement processes*. In *Proceedings of CIB 90*

- Conference, Building Economics and Construction Management, Vol. 2, Sydney, pp.525-537.
- New South Wales Department of Commerce (2006). *Procurement Method Selection Guidelines*. July 2006, <http://www.commerce.nsw.gov.au/Home.htm>
- NEDO (1985). *Think About Building: A Successful Business Customer's Guide to Using the Construction Industry*. National Economic Development Agency, London.
- Noaum, S.G. (1994). Critical analysis of time and cost of management and traditional contracts. *ASCE Journal of Construction Engineering and Management*, **120**(4), pp.687-705.
- Oppenheim, A.N. (1992). *Questionnaire Design, Interviewing, and Attitude Measurement*. Pinter, Publishers, London.
- Patton, M.Q. (2002). *Qualitative Research & Evaluation Methods*. 3rd edn, Sage Publications, Thousand Oaks, US.
- Roberts, R.R., and Renzaglia, G.A. (1965). The influence of tape recording on counselling. *Journal of Counselling Psychology*, **12**(1), pp.10-16.
- Rowlinson, S. (1999). Selection criteria. In. S. Rowlinson, and P. McDermott, *Procurement Systems: A Guide to Best Practice in Construction*. E & F Spon, London, pp.276-299.
- RCIS (2000). *Surveyors' Construction Handbook*. Royal Institution of Chartered Surveyors Business Services Ltd, London, UK
- Sidwell, A.C., Kennedy, R., and Budiawan, D. (2001a). *Report on the Development and Validation of the Best Practice Decision Matrix*. Research Program C, Construction Project Delivery Strategies, Report 2001-003-C-03, Cooperative Research Centre for Construction, Queensland University of Technology, Brisbane, Australia
- Sidwell, A.C., Kennedy, R., and Budiawan, D. (2001b). *Literature Review Value Alignment Process for Project Delivery*. Research Program C, Construction Project Delivery Strategies, Report 2001-003-C-04, Cooperative Research Centre for Construction, Queensland University of Technology, Brisbane, Australia
- Smith, J., Mills, A., and Love, P.E.D. (2002). Barriers to the development of SMEs in the Australian construction industry, *Australian Journal of Construction Economics and Building*, **2**(2) pp.71-80.
- Skitmore, R.M., and Marsden, D.E. (1998). Which procurement system? Towards a universal procurement selection technique. *Construction Management and Economics*, **6**, pp.71-89.
- SRD Consulting (2000). Achieving Outstanding Performance. *Value Management Workshop, Relation Based Contracting* Queensland Department of Main Roads 24th-25th August, Quest on North Quay, Brisbane.
- Victorian State Government (2006). *Project Alliance Practitioners Guide*. Department of Treasury and Finance. (<http://www.dtf.vic.gov.au/projectalliancin>)

Table 1. Variables affecting the client's decision for procurement systems

Skitmore and Marsden (1988)	Bennett and Grice (1990)	Turner (1990)	Love <i>et al.</i> (1998)
1. Speed How important is early completion to the success of your project?	1. Time Is early completion required?	1. Speed How important is early completion to the success of your project?	1. Speed How important is early completion to the success of your project?
2. Certainty Do you require a firm price and/or a strict completion date for the project before you can commit yourself to proceed with construction?	2. Cost Is a firm price needed before any commitment to construction is formed?	2. Price certainty Do you need to have a firm price for the project construction before you can commit to proceed?	2. Certainty Does your organisation require a firm price and/or a strict completion date for the project before your organisation can commit to a building project?
3. Flexibility To what degree do you foresee the need to alter the project in any way once it has begun on site?	3. Flexibility Are variations necessary after work has begun on site?	3. Controllable variation Do you foresee the need to alter the project in any way once it has begun on site for example to update machinery layouts?	3. Flexibility During the course of a building project, to what extent does your organisation feel it necessary to later the project in any way once it has begun on site?
4. Quality level What level of quality, aesthetic appearance do you require in the design and workmanship?	4. Quality level Is high quality important?	4. Quality level What level of quality do you seek in the design and workmanship?	4. Quality What level of quality, aesthetic appearance do you require in the design and workmanship?
5. Complexity Does your building need to be highly specialised, technologically advanced or highly serviced?	5. Complexity Is the building highly specialised, technologically advanced or highly serviced?	5. Complexity Does your building (as distinct from what goes into it) need to be technically advanced or highly serviced?	5. Complexity Does your organisation require a technologically advanced or highly specialised building?
6. Price competition Is it important for you to choose your construction team by price competition, so increasing the likelihood of a low price?	6. Certainty Is completion on time important? Is completion with budget important?	6. Competition Do you need to choose your construction team by price competition?	6. Price Competition Is it important to select the construction team by price competition?
7. Risk avoidance and responsibility To what extent do you wish one single organisation to be responsible for the project or to transfer the risks of cost and time slippage?	7. Risk Is transfer of responsibility for the consequence of slippages important?	7. Risk avoidance Do you want to pay someone to take the risk of cost and time slippage from you?	7. Risk allocation Does your organisation want to limit the amount of speculative risk and design liability?

	<p>8. Division of responsibility Is single point responsibility wanted? Is direct professional responsibility wanted?</p>	<p>8. Management Can you manage separate consultancies and contractor, or do you want just one firm to be responsible after the briefing stage?</p>	<p>8. Responsibility To what extent do you wish one single organisation to be responsible for the project; or to transfer the risks of cost and time slippage?</p>
		<p>9. Accountability Do you want professional accountability to you from the designers and cost consultants?</p>	<p>9. Arbitration and disputes To what extent does your organisation wish to avoid disputes and arbitrations?</p>

Source: Chang and Ive, (2002:p.278)

Table 2. Client priorities for procurement selection

Kumaraswmay and Dissanyaka (1998)	Luu <i>et al.</i> (2003)	NSW Department of Public Works (2005)
Level of design competition	Client experience	Design development flexibility
Level of price competition	Client type	Extent of design input by the agency
Economy	Client's in-house technical capability	Flexibility of scope resolution
Value for money	Client's financial capacity	Ability to address complexity
Life cycle costs	Client's willingness to take risks	Ability to address uncertainty
Cost certainty	Client's willingness to be involved	Ability to address the extraordinary
Speed	Client's trust toward other parties	Cost/time with brief quality
Time certainty	Client's requirement for highly serviced or technically advance building	Flexibility with the design brief
Urgency to complete project	Client's requirement for aesthetic building	Flexibility with scope, agency, design and technology change
Urgency to commence construction	Client's requirement for on-time completion	Impact of design change
Importance of intermediate milestones	Client's requirement for within budget completion	Brief/design realisation risk/cost
Aesthetic value	Client's requirement for low maintenance cost	Package coord/interface risks
Durability	Client's requirement for low operational cost	Risk with design extra costs
Innovations	Client's requirement or value for money	Designer continuity
Quality assurance	Project size	Contractor design responsibility
Construction risks allocation	Project types	Optimising life cycle costs
Design risks allocation	Building construction type	Optimising maintenance and design and defects minimisation
Financial risk allocation	Project site location	Contractor maintenance responsibility
Other risk allocation	Unknown site risk factors	Completion timing certainty
Need for mid project design changes	Known factors likely to cause problems	Completion timing minimised
Need to be kept informed	Usage of pioneering	Min. time pre-contract

Kumaraswamy and Dissanyaka (1998)	Luu <i>et al.</i> (2003)	NSW Department of Public Works (2005)
	technology	
Need to be involved	Market's competitiveness	Flexibility with timing changes
Need to assign single point responsibility	Technology feasibility	Flexibility with cashflow control
Need to delegate decision-making	Regulatory feasibility	Early start to design
Desire for good communication	Materials availability	Staged design allowed
Health and safety concerns during construction	Experienced contractor availability	Early start to construction
Importance of planning	Labour productivity	Staging flexibility
Importance of controls	Inclement weather	Delay effect of one contract on others
Technology transfer/exchange	Natural disasters	Capital cost minimised
Technology innovations	Industrial actions	End cost versus budget certainty
Operational guarantees	Objection from local lobby groups	Value for money for special projects
Design life certainty	Objection from neighbour	Risk of contractual claims
Maintainability	Political constraints	Extent of management/effort for agency for general projects
Constructability	Cultural differences	Risk contingency in tender prices
Reduce environmental impacts		Minimising tender costs
Disputes (and claims) minimisation		Minimising tender process costs
		Quality certainty/outcomes/risk
		Quality of management
		Choice of contractors
		Availability of contractors
		Simplicity of contract
		Reliance of relationships
		Novation/relationship complexity

Table 3. Procurement selection systems

Author	Year	Description
NEDO	1985	Procurement path decision chart. Use of a rating system using client's priorities for nine criteria
Skitmore and Marsden	1988	Use of multi-attribute utility analysis based on NEDO with a rating system and weighting of client priorities
Brandon <i>et al.</i>	1988	ELSIE – A computer expert system based on project characteristics and client requirements. Subjective and contained a limited number of procurement options
Franks	1990	Simple rating system of criteria against a limited number of procurement options
Bennett and Grice	1990	Based on NEDO's and Skitmore and Marsden's model using MAUA. Enables client's to weight specific criteria multiplied by a set of utility ratings for various procurement options
Moshini and Botros	1990	PASCON-An expert system similar to ELSIE.
Lui	1994	Organisational behaviour-based model utilising an act-to-outcome process governed by organisational goals, which are subject to moderators and determine performance relationships
Chan <i>et al.</i>	1995	Utilises the Bennett and Grice model, but uses a different procurement category developed for the Australian construction industry
Griffith and Headley	1997	Use of weightings to assess criteria and procurement options for small building works. Simple and easy to use.
Kumaraswamy, and Dissanayaka	1998	Weighting of priorities and ranked using the rank agreement factor. The matched against various procurement options. This was developed into a computerised expert system.
Kumaraswamy, and Dissanayaka	2001	Not able to update system database.
Love <i>et al.</i>	1998	Based on Skitmore and Marsden's model, and tested widely throughout Australia.

Ambrose and Tucker	2000	MAUA based model that includes three dimensions. Complex to use.
Alhamzi and McCaffer	2000	Allows users to choose from a reduced number of prescribed strategies and alternative contract types. Use of weighting/ranking systems juxtaposed with AHP. Very complex system to arrive a procurement option.
Construction Industry Institute	2001	Project delivery selection workbook. Suitability matrix. Rates critical project goals by level of importance, scores each goal and ranks the most critical metrics. Limited options and prescribes optimum project delivery system
SRD Consulting	2000	Suitability matrices developed for Qld Dept of Main Roads. Scoring and rating to pre-determine optimum project delivery system
Cheung <i>et al.</i>	2001	Use of MAUT and analytical hierarchy process. NEDO criteria used. Utility factors corresponding to various procurement strategies established. To cater for individual project characteristics, the relative weightings of the selection criteria are assessed using AHP.
Chang and Ive	2001	Transaction-cost-based procurement selection technique. Use of MAUA and alignment with procurement route with attributes of the construction transaction. Client selects procurement option based on their particular project context rather than on generic solution based on preferences.
Luu <i>et al.</i>	2005	Case-based reasoning – capture and reuse of experiential knowledge from previous projects for procurement decision-making. Project characteristics, client characteristics and external environment taken into account.
New South Wales Department of Commerce	2006	Weighting of client priorities and procurement method to achieve the priorities. Simple to use but too many criteria

Adapted from Sidwell *et al.* (2001a)

Table 4. Participants experiences with procurement methods used: Perceived advantages and disadvantages

Method	Classification	Advantages	Disadvantages
Traditional lump sum	Separated	<ul style="list-style-type: none"> • Market price • Design certainty • Manageable risk for all parties • Known/fair risk allocation • Transparency • Well known, thoroughly tested • Simple process • Satisfies government FAAA requirements 	<ul style="list-style-type: none"> • Slow • Separates design and construction expertise • Does not capture cost saving opportunities, buildability • Bigger risk to builders, reluctance to tender • Inability to negotiate prices
Design & construct	Integrated	<ul style="list-style-type: none"> • Joins design and construction expertise – cost saving • Can be quicker • Flexibility to negotiate changes • Residential – potential greater market competition • Suits style of construction, e.g. agricultural sheds 	<ul style="list-style-type: none"> • More complex assessment • Loss of design integrity • Less certainty of recurrent costs • Greater supervision / administration • Legal complexity, e.g. PI for design • Greater requirement for client to produce comprehensive brief • Requires greater client contract expertise • Expectations may not be met • Less control of design • No WA experience for large projects e.g. hospitals
Novated (Design & construct)	Integrated	<ul style="list-style-type: none"> • Joins novated design and construction expertise – cost saving • Can be quicker • Flexibility to negotiate changes • Residential – potential greater market competition • Suits style of construction, e.g. agricultural sheds • Greater control of design than w/out novation • Lesser need for comprehensive brief 	<ul style="list-style-type: none"> • More complex assessment • Loss of design integrity • Less certainty of recurrent costs • Greater supervision / administration • Legal complexity • Requires greater client contract expertise • Increased builder risk - working with novated designer • Builders may be reluctant to tender
PPP	Relational	<ul style="list-style-type: none"> • Quicker start • Allows client to focus on core business • Client preference • Low capital upfront 	<ul style="list-style-type: none"> • Difficult to set a lifecycle cost benchmark against traditional arrangements • Limited market in WA • Requires comprehensive

		<ul style="list-style-type: none"> • Solves land availability 	<p>brief</p> <ul style="list-style-type: none"> • Requires knowledgeable client
<p>Traditional DBB, (Consultant design and goes out to tender)</p>	<p>Separated</p>	<ul style="list-style-type: none"> • Familiar methodology, • Cost certainty lump sum contract, • Low value disputes, • Suites contractors/industries resources to design (we see it works both ways – some prefer to leave the design and preparation to us, other would prefer to take care of the whole process) • I think the client prefers this method as it typically allows more input into the design of their project, • Low tender cost – typically cheaper to prepare the bid 	<ul style="list-style-type: none"> • Quality of documentation (i.e. would say it can but not always) • Sometime applied universally when it may not be the best way, • There is a perception that it stifles innovation by the contractors bidding on the project, • Requires skilful consultants, • requires pre-qualification of tenderers
<p>Design & construct (AS4300), (full design and construct by contractor)</p>	<p>Integrated</p>	<ul style="list-style-type: none"> • There is a perception that it can speed up the project (fast track). • Does have the potential to enhance innovation • Single line of accountability (in terms of fitness for purpose – provides something that works) • Potentially lower AGENCY administration costs. (I'm happy with contract establishment costs, but ...management may be higher) 	<ul style="list-style-type: none"> • I don't think it provides full lifecycle outcomes. • High demand on briefing being spot-on (principles of project requirements), • Cost of disputes can be high • Higher potential for disputes (you get to the end of the job and find some things don't work – the poor old client is sitting there at the end of the job wondering what went wrong?), • AGENCY requires significant resources to pour over the contract and design to ensure design compliance.
<p>Novated design & construct (Design team prepares schematic brief-goes to tend and contract engages the architect to work in partnership)</p>	<p>Integrated</p>	<ul style="list-style-type: none"> • You get to scrutinize the design more thoroughly at the beginning, • enhances build ability, • Potential to address life cycle issues missed in DC • reduces potential in variations • Low contract administration cost to AGENCY 	<ul style="list-style-type: none"> • Very messy disputes between designer and builder (the reason i say messy is because they are different between traditional methods and there is little documentation – higher ambiguity – the concept assumes everyone will get on famously – but in reality they don't) • The novation has the potential to change the

			<p>original requirements (from designer being part of the principals team then moving to the contractors team during contraction)</p> <ul style="list-style-type: none"> • The contractor is tempted to change the design during contraction to suite his needs/desires, • Potential addition cost for AGENCY is specialist contract compliance team needed to oversee the project.
Detailed design & construct	Integrated	<ul style="list-style-type: none"> • Client has more input into detail and lifecycle costing 	<ul style="list-style-type: none"> • Industry thought it was getting poorer documentation and this lead to higher bid prices (builder thought they could just send documents to sub/c to price, sub/c were concerned about lack of detail and placed higher margin on bid (30% higher over 7m project) – half way process and the industry was no familiar with the process)
PPP (with operational services) e.g. X Law Courts	Relational	<ul style="list-style-type: none"> • Gives long cost operational certainty, • Maximum construction and operational efficiency and innovation, • Should minimize lifecycle costs • Give potential access to private sector capital finance 	<ul style="list-style-type: none"> • Very high contractual establishment costs, • Higher total project cost (e.g. finance etc) • Lock you into a contract that could limit changes to service delivery modes and alternative down the track (ie X Hospital) • Higher dispute costs (start to finish)
PPP (with building and maintenance only) e.g., X Justice Complex	Relational	<ul style="list-style-type: none"> • As above (maintenance) • Speed to site – quicker mobilisation of project • Certainty of long term maintenance commitments 	<ul style="list-style-type: none"> • As above • Lack of AGENCY expertise to execute these projects as the are not used very often (including client agencies), • High risk of disparity between design and operational needs
Design and construct (via a select panel of builders) Package Deal	Integrated	<ul style="list-style-type: none"> • Speeds project delivery • Cheaper construction (because the builder is in control of design) 	<ul style="list-style-type: none"> • Requires good briefing • High cost of tendering (lot of work to tender but might not get the job) – this might discourage new entrants and builders who do not have a design capability