Optus Playhouse, Stage 5, Queensland Cultural Centre, Brisbane: A Case Study

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Introduction

The Optus Playhouse was conceived as an intimate theatre for staging dramatic productions. It is Stage Five in the master-planned Queensland Cultural Centre. The complex includes the Queensland Art Gallery, Queensland Museum, State Library of Queensland, and the Queensland Performing Arts Centre, all of which were constructed in the 1970’s and 1980’s.

A significant issue in the delivery of the Optus Playhouse, a highly visible public building at South Bank, was value for money for the Government and the tax-paying public. The building was procured by a traditional lump sum contract. The process delivered a high quality theatre within budgetary and programme constraints.

The brief for the theatre was undertaken in 1990 but the decision to complete detailed documentation and construction was delayed for several years. The design and documentation stage was completed in September 1995 and a tender accepted in November 1995. The theatre opened in July 1998 with a production of The Marriage of Figaro by the Queensland Theatre Company.

Project background – overview

Size and scale

The Optus Playhouse is a new theatre building which is an integrated extension to an existing performing arts complex. The theatre incorporates a proscenium arch and an auditorium with seating for 850 patrons. The project includes associated back stage areas, rehearsal area, foyers and circulation spaces. Food and beverage facilities were added as a variation to the contract, at an additional cost of $2,700,000 during the construction phase. The overall project cost including fit-out was in the order of $61,600,000.

Multiple Stake Holders

The project, a public building, was characterised by the influence of multiple stakeholders:

- **Client.** The customer for the project was the Queensland Performing Arts Trust, an Arts Queensland statutory authority. They sought a high quality facility specifically for the production of drama, which also delivered an intimate sense of theatre through a close audience/stage relationship. Certainty of delivery and project flexibility were required.

- **The Principal** was the Department of Public Works. Their objective was to achieve the highest standard in terms of design, function and final finish within the program and budget constraints.

- **Project Services,** the commercial arm of Public Works, project managed the project from schematic design stage until completion.

- **The designers** were Robin Gibson Architects, experts in the complexities of theatre design. They had also designed and documented the previous stages of the Queensland Cultural Centre. (QCC)

- **The Contractor** was Graham Evans, now known as Abigroup Contractors Pty Ltd. Some key personnel had experience from two previous stages of QCC.

- **Sub-contractors.** Both specialist manufacturers and trade sub-contractors were required.

- **End users** were represented by various categories including theatre companies, performers, staff and theatre goers. Public interest groups generally had a positive influence on the project outcome.
• The general public may potentially have perceived the project as elitist.

Technical items
• The level of technology incorporated into the project reflects a state of the art theatre, requiring a combination of advanced and well-proven technology. Some redesign during the construction phase was required to enable installation of high-end communications and sound technology.
• The design called for a proscenium arch between the stage and the auditorium.
• The main wall material and finish is exposed sand-blasted white in-situ concrete.

Functional items
• All the functional needs of professional theatre, including acoustics, sightlines and accessibility were addressed and supported during the design and construction phases.
• A major food and beverage fitout was not included in original contract documents but was sought by the client and added during the construction phase.

Procurement model
Characteristics of traditional contracting system
The following characteristics form a generic description traditional lump sum contracting:
• Project control and co-ordination is retained by the Principal.
• Project development is carried out sequentially, therefore design and documentation is complete prior to calling of tenders. There is no potential for an early start.
• The winning tender is generally the lowest price for the specified work. Tenders are often won on the basis that variations and claims are necessary to ensure the profitability of the contract. It is not uncommon for the construction cost to increase 10% - 30%.
• The contractual risk is borne primarily by the Contractor. The Contractor warrants the quality of work will be to specifications, the completion time of specified work and the cost of specified work. The Principal warrants that the design meets the brief, documentation for construction reflects design, and the Bill of Quantities reflects the construction documentation.
• Greater potential for contract variations, extension of time claims and budget blow outs. The level of contractual claims can reflect the comprehensiveness of the contract documentation.
• Proponents are generally cast in an adversarial framework. Genuine teamwork is not necessarily required under the Traditional Lump Sum delivery system as each party has different responsibilities and different contractual positions. Turf protection and reliance on the contract are typical features of a fundamentally adversarial contractual model.

Motivation for using traditional contracting for Optus Playhouse
Historically, traditional Lump Sum contracting is used on smaller or less complex, or repetitive projects. It is sometimes used on larger more complex projects where scope and risk are well-defined. Various factors contributed to the
decision to develop a major arts infrastructure asset such as Stage 5 of the QCC using a traditional contracting system.

The selection of the traditional procurement system for this project was related to the fact that the new building was actually an extension to an existing, high-profile, public building which had an architectural “history” embodied within it. The Principal determined that it was essential to maintain the design integrity and aesthetic of the existing complex.

It was perceived by the Principal that strong design control was required for such a complex project. Therefore the approach to procurement was to engage the original architects to fully design and document the building and then to seek a contractor to construct the project on a lump sum basis.

Design and quality were highly weighted outcomes sought by both the Principal and the client for this project. Delivering on minimum cost was secondary in rank importance. Time for delivery was not an imperative at the time of project initiation.

The tenderers were selected on the basis of pre-qualification. Subsequently the lowest tender won the bid. The tendering process required considerable expenditure of effort and cost by several contractors.

**Management Methods and Techniques**

**Delivery team structure**

The delivery team structure was hierarchical. Project Services, the commercial arm of the Queensland Department of Public Works, project managed the design and documentation, and construction of the entire project. The brief for the project and the design was developed with the user group. However, the client group did not have the measure of control over design which they originally sought. Throughout the construction process, the project manager provided the single point of contact between the principal and the contractor. This was viewed as essential by the Principal and Contractor parties to the contract. However the clients, as end users, felt a degree of disenfranchisement with the process and felt they were kept at arm’s length from the project.

**Contractual interfaces**

Contractual interfaces operated within an intrinsically adversarial framework. An authoritarian approach to decision-making and conflict resolution was dictated by the contract, which was the AS2124 contract with some special conditions. However, despite the contractual framework the parties were willing to co-operate with each other and promoted open and frank communication. The Principal rated the overall level of communication between the parties as being “excellent” with the Contractor rating it slightly lower on the scale as “good”.

On the other hand, where the Contractor rated the style of conflict resolution as “good” the Principal rated it as “poor”. However it was reported that both sides were willing to consider the other’s position as well as their own. They respected each other’s views and worked together to resolve most issues which emerged.

The architects issued all site instructions but were not engaged in a contractual role.

**Project Team Relationships**

Relationships between the various parties involved in the delivery of this project were reported to be good for a project delivered by this method. The contractor’s view was that relationships were excellent. Both parties agreed that the
individuals involved in the project had a problem-solving attitude and their general approach was to separate any “issues” from the people involved.

Industrial relations

The large number of workers employed on site at a high profile government project had the potential to expose the project to disruption by industrial relations. However, the contractor’s management expertise ensured that this was not the case.

Information management

A paper-based project delivery system operated for the documentation of this project. The architectural office did not use computer-aided drafting systems. This meant that other consultants, using computer-aided design and drafting systems, were required to set up base drawings. The Contractor was frustrated by errors in the documentation and lack of dimensions and suggests that these shortcomings could have been avoided had the design office used CAD. An electronic tracking system was used in the administration and management of the contract.

Project Outputs

The resulting building is a high quality major arts asset. A survey of key members of the project team revealed that all perceive that the level of satisfaction with the final product by various stakeholders, including the client organisation, was above average. However, a client representative expressed a general level of dissatisfaction with the project procurement process itself and the entrenched positions it engenders.

In the years between the formulation of the brief and the construction of the building, the needs of the Client changed. These changes were related to the need to generate income from all available sources including corporate sponsorship, rather than solely relying on government budget allocations. This necessitated more extensive food and beverage facilities.

The requirement for these facilities were introduced late in the project as the original brief had been developed to meet the client needs that existed at that time. At the time the brief was developed it was considered that food and beverage would be supplied from the existing Performing Arts Centre.

Time

At the commencement of the project construction, time was not a major imperative for either the client or the Principal. However, when the QPAC (Queensland Performing Arts Centre) management set a date for the opening show to be staged in the new theatre in July 1998, the Department of Public Works sought an acceleration proposal from the contractor.

The original contract time was 84 weeks net with an anticipated delay allowance of 17 weeks making a total of 101 weeks. The final contract time was 139 weeks - an extension of 38 weeks longer than originally anticipated. Variations and design modifications caused construction delays.

Variations caused by changes to the specification of the final product during construction caused disruption to the program. It emerged at a late date in the construction phase that expanded bar and café facilities, including a full working kitchen, were required to be integrated into the project.

The contractor also noted that delays on site were caused by the time required to “sort out” errors in sub-standard documentation.

Extended periods of wet weather contributed to delays as well.
Cost

The project was tendered in an extraordinarily competitive market during a period prior to a large state government capital works program. The outcome was that bids were low and claims to the level of 7%-8% were expected.

The pre-tender estimate for construction works under the main contract was $41,000,000. The tender sum for the same work was $38,873,00. The final completion costs for that work, including contract variations and major scope changes during construction, was $49,000,000. Cost increases were directly related to variations and design modifications, and time lost as a result of these.

Variations included more extensive food and beverage facilities, a central plant upgrade, communications, lifts, and Contractor’s claims. The main difficulty with incorporating the commercial kitchen was accommodating services and exhaust within the framework of the building that was then under construction, particularly with the significant extent of completed exposed white concrete walls. Running and concealing of services was difficult because the shortest route could not always be taken.

The fit-out was constructed under a separate contract. Allowances were made in the project budget for variations and scope changes. The total project cost was $61,600,000 million.

Quality

High quality design was achieved by commissioning architects who were highly regarded for their quality design work. Project quality was achieved in accordance with the specifications for the project.

Issues highlighted by this case study

Selection of procurement system

The selection of the traditional procurement system for this complex project was not based on client (i.e. customer) needs but on the Principal’s requirements. In particular, the Principal’s decision to commission the original QCC architects for design and documentation may have been a key driver for the decision to pursue the lump sum procurement system. The project was to be completely documented prior to calling of tenders. At that stage the parties did not foresee the circumstances which would lead to a major variation.

Quality of documentation and impact on the project deliverables

In a recent study on design and documentation quality and its impact on the construction process (Tilley, McFallan and Tucker, 2000) it was found that reduced fee levels paid by government and industry clients to consultants is one of the direct reasons that sub-standard documentation occurs. Tilley et al (2000) found that reduced fee levels have detrimentally affected documentation completeness, certainty, co-ordination and final checking. This case study confirmed that inadequate documentation prepared by consultants translates into delays and cost increases in the construction phase.

The impact of inadequate fees on a project can be substantial and must point to a false economy in project procurement which seeks to make a one percent saving on consultants’ fees in the early phases of a project. This is demonstrably not cost-effective and can lead to significant overall project cost increases.
Conversely, if money is spent wisely in the design phase, valued adding occurs in the construction and subsequent operation and maintenance stage. Value for money can be achieved where fee levels are adequate to allow an appropriate degree of testing of options in the concept and design development stage to achieve overall cost-effectiveness.

**Comparison with previous studies**

The T40 Study (Ireland 1994) and Mohamed and Yates’ report (1995) on construction re-engineering identified key attributes which are needed to make the quantum change to a re-engineered process. The comparison between this case study and previous case studies is summarized in the following tables:

**T40 (Ireland 1994)**

<table>
<thead>
<tr>
<th>Success factors</th>
<th>Comment on applicability to QCC Playhouse process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreed common goals</td>
<td>Principal and Contractor agreed on the key project objectives. Client’s goals interpreted to designer and contractor by the project manager. Client felt disenfranchised from the process.</td>
</tr>
<tr>
<td>Simplified process</td>
<td>Contractor was at arm’s length from the client. Project Management services were supplied by a separate government department.</td>
</tr>
<tr>
<td>Re-engineered activities</td>
<td>Procurement method was by a Traditional Lump Sum contract. Each phase of project development carried out sequentially.</td>
</tr>
<tr>
<td>Workforce commitment</td>
<td>Parties to the contract were highly committed to project.</td>
</tr>
<tr>
<td>Partnering with local government</td>
<td>Extent of liaison with Brisbane City Council concerned co-ordination of services. Local authority approvals were not required.</td>
</tr>
<tr>
<td>Tendering on benchmarking</td>
<td>Lowest tender was the winner. Tenderers selected on the basis of pre-qualification however, tendering process required considerable expenditure of effort by several contractors.</td>
</tr>
</tbody>
</table>

**Table 1: Project success factors identified by T40 project applied to QCC Playhouse**

**Mohamed and Yates (1995)**

<table>
<thead>
<tr>
<th>Success factors</th>
<th>Comment on applicability to QCC Playhouse process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong commitment by the team to improving design and construction workflow</td>
<td>All project team members highly committed to project development, resolution and completion. Some issues were resolved collaboratively.</td>
</tr>
<tr>
<td>Effective communications between major project participants</td>
<td>Design was 100% documented prior to tenders being called. Communication between contractor and project manager excellent throughout the construction process.</td>
</tr>
<tr>
<td>Positive involvement of customer at early stages</td>
<td>Client was very involved with the design team. Very low client input to construction phase. Design team were heavily involved with the Construction team within the constraints of the form of contract adopted. Requirements were fully identified and implemented at planning stage as the requirements were fully documented and approved. (Note: in the early stages of this project the construction team was not yet in existence)</td>
</tr>
<tr>
<td>Quality assurance techniques</td>
<td>Some errors in documentation resulted in claims.</td>
</tr>
<tr>
<td>Encouragement of innovation</td>
<td>Client sought innovation. New theatre technology was incorporated in the design. Innovation was not supported by the delivery process.</td>
</tr>
<tr>
<td>Improved construction output</td>
<td>Project completed nine months later than the original time for completion due to significant additional works.</td>
</tr>
</tbody>
</table>

**Table 2: Project success factors identified by Mohamed and Yates applied to QCC Playhouse**

**Conclusion**

The project was complex both in terms of design requirements and in terms of the relationships between the multiple stakeholders. Though the proponents were required to operate within the adversarial framework of a traditional lump sum contract, they sought to work cooperatively wherever possible. Contractors particularly acknowledge that as well as expertise in terms of construction, and
construction techniques, personnel need relationship and communication skills in order to deliver results both for themselves and their customers.

Project participants posit that conflict and disputes are no longer a valid part of the construction industry landscape. Focus tends to be more and more on the right people for the job, regardless of the procurement process.

The information collected for this study focused only on the construction phase which is only one part of a wholistic process. The problems encountered during the construction stage may have been avoided if the process of procuring this building had been less disjointed. However, as a public building, the project was subject to political vissicitudes. In its exaggerated time frame, this case study has drawn attention to the fact that investigation of the process needs to include the phases prior to and following the design and construction phase to truly make a difference in the way construction projects are procured. A truly re-engineered process would include the earliest phase of commitment and project definition and not stop at Practical Completion but the implications of operation and maintenance would be taken into account as well.
Appendix A – Process Diagram

**Figure 1: Process Diagram, Optus Playhouse, Stage 5 Queensland Cultural Centre**

**References**

