Neville Bonner Building, 75 William Street: A Case Study

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Introduction

The Neville Bonner Building, a State Government office building at 75 William Street, Brisbane was completed in December 1998. The building concept design was the result of a selected architectural competition and the building project was delivered by Watpac Australia under a Managing Contractor procurement system. The Managing Contractor and consultants appointed by the Department of Public Works undertook design development and documentation. The procurement of the project took place during a period of political turmoil, where the change of government following a State election delayed commencement of construction.

The design brief called for a generic office building. The completed building received the National RAIA Building of the Year Award in 1999.

This case study presents general project information, discusses the procurement system adopted and identifies issues which may warrant further study if process improvement is to be achieved. These factors are compared to the findings of previous re-engineering studies by Ireland (1994) and Mohamed and Yates (1995) which identified key areas for change.

Project background

The building is located on a confined site between the South East Freeway on the edge of the Brisbane River, and William Street, which is lined by State Government office buildings. The views from the executive offices on the upper levels of these buildings are preserved by the Neville Bonner Building’s long low profile. The building form also addresses the urban form developed in Brisbane’s Central Business District with lower building heights maintained on this reach of the river.

The client organization carried out comprehensive pre-procurement site investigation. A power station was formerly located on the site which is in a heritage precinct near the Brisbane River. An Environmental Impact Assessment, an archaeological investigation, and site contamination remediation were carried out prior to commencement of the procurement process.

<table>
<thead>
<tr>
<th>Project name</th>
<th>Neville Bonner Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>75 William Street, Brisbane</td>
</tr>
<tr>
<td>Asset Type</td>
<td>Government Offices</td>
</tr>
<tr>
<td>Total project value</td>
<td>$56.8 million</td>
</tr>
<tr>
<td>Construction Value</td>
<td>Base building $38.0 million, Fitout $7.0 million</td>
</tr>
<tr>
<td>Contract Type</td>
<td>Managing Contractor</td>
</tr>
<tr>
<td>Size and Scale</td>
<td>Six storeys/ 18,600sq m useable floor area, 125 car parking spaces.</td>
</tr>
</tbody>
</table>

Table 1: Summary of project details

Technical items

The building envelope is basically two glass boxes shielded by a series of precast concrete panels.(C&CAA 8:2001) The design incorporated the innovative use of standardised components. The precast panels were produced from a single mould, modified to produce two basic types and over a dozen variations. The panels fixed to the long west-facing facades on the river side of the building are flat panels with a honed finish. They are angled to provide sun control, and cantilevered beyond the floor plates and are fixed with stainless steel angle brackets.
The east-facing panels are generally honed, part however is proud of the surface and is a smooth off-form finish that makes a subtle shift in visual complexity and colour tone. These panels are aligned with the edge of the floor plates and have projecting nibs that rest on the edge of the slab and are fixed with stainless steel dowels.

Computer modeling was used to determine the optimum angle of the precast panels to balance the need for sunshading with the requirement for views across the Brisbane River.

**Operation and maintenance**

The client organisation sought to achieve a high standard project across a number of criteria including a durable structure with a life span of at least fifty years. Benchmarks for environmental performance did not form part of the brief and no specific deliverables in terms of operating costs were indicated at briefing stage.

**Multiple Stake Holders**

This project involved many stakeholders whose roles are summarised as follows:

**Principal**
- The client for the project was the Queensland Department of Public Works and Housing Building Division’s Portfolio and Housing Unit.

**End User**
- The end user was an unspecified State Government Department. The ultimate end user changed during the construction phase as there was a change in government and portfolios were re-shuffled.

**Project Director & Principal’s Representative**
- The DPW Infrastructure and Major Projects Unit provided this role of on behalf of the client.

**Project Manager**
- Principal’s Representative under the contract and Project Management services were provided by Construction Project Analysis, Rawlinsons, who acted in a contractual position as Client’s Representative.

**Managing Contractor**
- The Managing Contractor was Watpac Australia Pty Ltd.

**Consultants**
- Architect. Davenport Campbell and Partners in association with Donovan Hill Architects, and Powell Dods and Thorpe Architects were appointed as architectural consultants for the project after winning a selected design competition. The design architects were later novated to the selected Managing Contractor.
- Structural Engineer. Weathered Howe was appointed by the client on the basis of pre-qualification and fee proposal.
- Building Services. Bassett Consulting Engineers.
- The Landscape Architect was Hassell Pty Ltd.

**Subcontractors**
- Precast concrete by Precast Concrete Pty Ltd. Concrete pigments by Concrete Colour Systems. (C&CAA 8:2001)
- Artists. Artworks were commissioned from three local artists for integration into the project. The project introduced many of the artist selection processes
and conditions that were subsequently embodied in the Queensland Government’s “Art Built-In” policy.

**Other stakeholders**
- **Unsuccessful tenderers.** The project procurement process involved a number of consultant and construction organisations in design and tendering work, who were not successful in their bids. The winning team of architects’ original sub-consultants were not those selected by the client for the design development and documentation stages of the project.
- **General public.** The building occupies a highly prominent position adjacent to the Riverside Expressway. The community did not exert a high level of influence on the project during the procurement stage. The completed building and artworks received some negative coverage in the local news media but the project was named the Building of the Year in the RAIA national awards in 1999.

**Procurement Model**

The Neville Bonner Building was procured by the Department of Public Works and Housing in a process involving an invited design competition, and a bid for construction under a two stage Managing Contractor arrangement. A prime reason for adopting this form of contract was that the client sought a firm contract price at each of the two tender stages.

**Discussion on the generic Managing Contractor form of procurement**

The Queensland Department of Public Works initially developed this procurement technique in the early 1980s. Non-traditional procurement methods emerged to manage the increasing complexity of construction and to satisfy clients’ needs for considerably improved performance from builders (Palmer 1996). Through continuous improvement over time, the Managing Contractor form of contract has proven to satisfy the essential demands of both clients and contractors. Clients seek project delivery on time and on budget; contractors seek to achieve reasonable reward for performance, and to be able to control their risk. The contract form supports a no claims/no disputes regime.

Under this form of contract, the selected organisation provides comprehensive project-related management services to the principal. This approach has the potential to accelerate the design and construction process, and theoretically reduces time and costs.

Clients favour this form of contract because they can minimise their design and construction management efforts, and they are able to transfer risk to the contractor. The Contractor is required to warrant that design development meets the client brief, and that construction documentation reflects the developed design. Also, the Contractor warrants the cost of the offered solution and the time of completion. However, the DIST & NatBACC Report into Procurement and Project Delivery (1998) found that some contractors view risk as being inconsistent with responsibility under this form of contract. For example, where contracting responsibilities include management of the design process, contractor’s risk is increased when the client continues to manage part of the design process.
Both parties undertake to “act in good faith”. Clients are not entitled to make changes to the scope of the project under the contract but there is the flexibility to make changes within the scope of the project.

During the first tender stage the Principal provides a target Guaranteed Construction Sum. If the GCS offered by the Managing Contractor at the completion of the Design Development stage is not within the target GCS, then the client has the option to seek alternative tenders.

Incentive drivers may include bonuses for design, early completion, public relations or outstanding quality, or bonus sharing between client and contractor for any savings achieved below the Guaranteed Construction Sum. However, the incentive for bonus sharing, if not linked to other drivers, may put the quality standards of the project at risk.

Unlike the Design and Construct procurement strategy, contractors have no financial equity in projects procured by the Managing Contractor system. As fees and preliminaries are fixed at an agreed sum, the contractor’s only opportunity to increase profitability may be to seek to achieve greater savings in the construction process. Thus there may be some risk of quality standards being lowered by the Managing Contractor in order to achieve savings.

However, overall the Managing Contractor system is a client-led attempt to ensure a high level response by contractors, to their needs. These needs include certainty of delivery, flexibility and value for money represented by quality of design and workmanship.

Project Delivery Process

Notable features of the process adopted for the Neville Bonner Building were that the client used a design competition to control the design concept, and project team participants were selected by the client.

Design Competition

The client initiated a selected design competition in order to investigate concept design options for the challenging site. This strategy gave the client the ability to exercise a degree of control over the building design on which the bid for documentation and construction of the project was based.

The process involved four architectural teams who each were obliged to engage a range of sub-consultants. The selection process involved each team producing a schematic design over an eight week period and culminated in a two-hour interview by the selection panel.

Design consultants were required to address a comprehensive Client Brief at the conceptual design competition stage. It is suggested that an extraordinary level of detail, including toilet locations, was required to be resolved at the concept stage, with each team of architects working closely with sub-consultants to produce a scheme. The architects were also required to prepare an assessment of project costs, and to submit their schedule of fees to undertake design and documentation services.

Each architectural team participating in the design competition was paid a nominal fee by the client. Anecdotal evidence suggests that this fee was below market levels for concept design fees and was sufficient only to cover consultants’ fees but not the co-ordinating design architects’ component. The cost of this method of tendering represents a high financial cost to the design professions.
The design competition was conducted about a year before construction actually commenced. The delay was mainly due to a change of government at a State election, however it is not confirmed whether it was the original intention of the client to procure the project by the Managing Contractor delivery method.

The winning design was a joint venture between three architectural firms, Davenport Campbell and Partners, Powell Dodds & Thorpe, and Donovan Hill. The architects were novated to Watpac Australia on the basis of the design fee negotiated at the competition stage. The sub-consultants used in the competition round did not necessarily go on to the procurement stage of the project, with the final consultant team being selected and appointed by the Department of Public Works and Housing.

**Selection Process for Managing Contractor**

Competitive tenders were called for lump sum fees for Managing Contractor services for design development, documentation and construction of the building. Tenderers were required to base their fees on the winning sketch design which, due to its nature, dictated the building envelope but offered limited construction information. At this stage the Principal provided a Target Guaranteed Construction Sum. A selected list of five contractors tendered on preliminaries and overheads as well as other non-price criteria. Site remediation and fit-out components of the project were tendered separately.

The best value proposal was assessed by the Tender Evaluation Committee using evaluation criteria which were weighted according to their relational significance. Non-price criteria on which contractor selection was based were the quality of the Watpac personnel, the company’s track record for delivering projects of a similar nature, their demonstrated understanding of objectives, and methodology. The fees and costs criterion was weighted 20% while the project team and company record were weighted 30% and 20% respectively.

**Contract characteristics**

- The client adopted a two stage contract which allowed them to remain involved in design development once the managing contractor had been appointed. The client sought this type of arrangement in order to obtain appropriate design quality with shared risk.
- The architects for the concept design were novated to Watpac and other consultants nominated by the Client were engaged by Watpac. Design development and negotiations to agree the Guaranteed Construction Sum commenced.
- Stage 1 performance criteria were achieved and approval to proceed to documentation and construction was granted with the sign-off of the management agreement.
- At the end of Stage 1, Contractors were required to submit a Guaranteed Construction Sum (GCS) for the full scope of the construction works including services and finishes.
- The contract included a mechanism which provided reward for budget performance in the form of savings sharing in a 70/30 ratio between the client and the contractor for achieving a project cost less than the GCS.
- Under this form of contract, preliminaries and overheads are reasonably fixed, as are the novated design fees. Therefore the only real avenue for
gaining savings are through efficiencies realised in the design and construction process. Examples of changes implemented by the project team in order to gain efficiencies or savings are outlined below.

- No variations were allowed under the contract, and no claims were made. A liquidated damages clause was included as penalty for non-conformance on time.
- Documentation was over fifty percent complete before construction commenced on site.

**Changes implemented by the Project Team in the design and construction process**

Under this procurement strategy, the role of the design manager is to monitor and make changes to the project design so as to achieve the desired outcomes of time, cost, quality and performance requirements of the client. The contractor, through the selection process, is deemed to possess a thorough understanding of buildability and have the capacity to work with design consultants to develop a good, cost-effective design through the utilisation of appropriate construction methods. Watpac Australia and the team of consultants achieved efficiencies during the construction process by applying Value Management principles in the design development process.

For example, in-situ upstand walls around the perimeter of floor slabs were replaced with pre-cast panels fixed between the columns. Time savings achieved by this initiative also led to cost efficiencies.

False computer floors were accommodated by the design of the floor slabs and the structural columns, to achieve a flat soffit. Instead of drop panels around the columns, slabs thickenings were integrated on the upper side of slabs and the required false floors integrated into this structural system. Compared to the system where drop panels are used, formwork was less complicated and easier to construct and therefore less expensive. Ductwork for mechanical services was also easier and quicker to install with a flat soffit.

**Project Team relationships**

Kok (in Chan, Ho and Tam 2001, p94) notes that mutual trust and respect between client and contractor is an important ingredient for project success in non-traditional forms of procurement. The survey conducted by the CIIA Task Force provided evidence of this relationship.

However, interorganisational teamwork among all project participants is also important. In this type of arrangement where consultants and contractors are “thrown together” it is essential to establish good working relationships reasonably quickly because getting required information in a timely manner is crucial for prompt decision making and project success. Project participants are willing to share important information if they cooperate and trust each other (Chan et al, 2001). Chan et al also point out that Managing Contractor procurement brings changes and challenges to those project participants who are used to operating within the traditional procurement system.

Unless specific attention is paid to team relationship building, the procurement system adopted for this project does not necessarily overcome the fragmentation of the project team which characterizes the construction industry as a whole. Rather than the parties being aligned toward project goals, the adversarial
attitudes toward other parties which exist in industry personnel through training and on-the-job experiences are reinforced. A “them and us” attitude prevails between contractors and designers.

Some evidence of this misalignment of roles and duties was gathered through qualitative data collection. Most respondents to the questionnaire assessed overall team dynamics as “above average” while some design consultants’ perception of project team dynamics was that they were “average”. This variation in responses may point to a lack of aligned project goals amongst project participants. Consultants’ reduced levels of satisfaction may also be attributable to the expectation that they bear the cost of documenting amendments and variations without recourse to negotiation or cost recovery. Tight profit margins and unrealistic deadlines which result reduce team cohesion and job satisfaction of the participants.

In general though, the questionnaire found that personnel involved on the project perceived a collaborative approach to project delivery and problem solving. Project leadership provided by the client generally adopted an equitable approach. Senior management from each of the main project team members were involved in the project and were accessible.

The Project Director, Mr Rex Bertling, from DPW Infrastructure and Major Projects Unit provided leadership within the overall project team. Respondents to the questionnaire agreed that the Project Director was very accessible and had a good feel for the overall project. There was acknowledgement of the over-arching role that his skilful decision-making had in the success of the project.

However when asked to comment on who played the most important leadership role on the project, some stakeholders nominated their own organization in partnership with the client. One respondent nominated all key members of the project team as performing a joint leadership role.

The majority of respondents to the survey considered that previous experience amongst project team members was very important to project success. Respondents also viewed continuity of team members throughout the project history as highly important to overall success.

**Project Outputs**

**Performance indicators – Time, Cost and Quality**

Questionnaire respondents rated the project as very successful overall. They all agreed that the clear identification of the client brief, design solution, client involvement, team relationships and team commitment all contributed reasonably to project success. Key objectives against which project success and failure were to be measured were identified clearly at the beginning of the project and reported on at regular intervals throughout the process.

The construction contract was delivered eight weeks ahead of time in a twenty month program. This high level of performance was assisted by the completion of early works prior to sign off of the management agreement. Respondents also commented that approval and review processes were kept to a minimum, thus reducing potential for delays.

The client for the Neville Bonner Building regarded the project as highly successful, and excellent value for money. The project was delivered below the Guaranteed Construction Sum target and subsequently the client and contractor shared a savings bonus of $1,000,000 in a 70/30 ratio, as per the contract. However,
the contractor indicated that their company achieved slightly less than initial expectations in terms of financial reward. Also, the contractor felt that allocation of risk was not consistent with remuneration. This finding reinforces the assertion of the DIST & NatBACC Report (1998) that some contractors view risk as being inconsistent with responsibility under this form of contract.

Lead consultants also reported that they achieved less financial reward than initial expectations due to the pressures which resulted from re-documentation.

**Process issues identified**

This case study points to the significant role the client plays in a successful project outcome. Two main areas where the construction procurement process could be improved were also identified: the competency of assessment personnel involved in design evaluation and the cost to industry, and consultants’ understanding of their role in non-traditional procurement systems.
Client role in project success

This case study confirmed the findings of previous researchers of the important role the client plays in project success (Chan et al, 2001). The Department of Public Works & Housing has an established capability to manage Managing Contractor projects. They carried out activities essential to project success at the outset of this project. Comprehensive pre-tender site investigations were performed; they developed a clear understanding of project scope and developed a clear client’s brief. They understand the requirement to limit the change of their requirements during construction and have an effective monitoring and approval mechanism for design changes that do occur within the scope of the contract.

Design evaluation

The selection of consultants and contractors and so on is a complex process and it requires skill and understanding on the part of the commissioning organisation. The client in this case had ample capacity to prequalify potential tenderers and subsequently make a selection using weighted evaluation criteria.

However, in the case of the architectural consultants, once pre-qualified, they are required to demonstrate their capacity through a design competition to select the best concept design for the site. The objective of a conceptual design is surely to achieve a well-designed product which exhibits an ultimate level of value to the client that is reasonably achievable given the specific project circumstances. As noted in the section the level of detail required at the concept stage seemed to be that usually expected at a more developed stage of design.

The skill of client personnel involved in assessing design solutions for a project such as a government office building should be such that the selection process for design consultants should take much less time, say four weeks for producing concept designs to a level which conveys the overall design strategy, instead of eight, and at least a full day interview conducted to ascertain consultant organisations’ understanding of project objectives, competency, capacity, innovations, personnel, and so on. Clients need to recognise their strengths and weaknesses in the area of evaluating concept designs. If skilled personnel are not available within the client organisation, appropriate independent agents should be appointed to the selection panel.

Moreover, design fees paid to tendering consultants should be at a sufficient level to allow consultants to produce a quality of design compatible with the client’s interest.

Perception of Consultant’s role – disparity between level of service and level of fees

Architects’ fees were agreed during the design competition stage when the client sought to strike an agreement that the consultants’ fees be within a range that represented industry standards. However, the competition phase was chronologically removed from the procurement phase by almost two years. Once the architects were novated to the Managing Contractor there was no opportunity to revise fees.

Various factors placed pressure on the Architects’ fee during the procurement of the Neville Bonner Building. It is likely that these fell generally into two categories: documentation of amendments to the design, and co-ordination of other consultants’ work. The co-ordination role was not included in the architects’ commission as this was the responsibility of the Managing Contractor.

In non-traditional procurement systems such as Managing Contractor the design management role requires far more input from contractors as against...
traditional hard-dollar contracting. The role requires leading the design team and coordinating services. The effectiveness of this role depends on a thorough understanding of the design process on the part of the contractor (who is not trained to be a designer) and strong communication skills.

Novated consultants felt they were not compensated for downstream design changes which were made without reference to themselves. One consultant architect’s view was that the form of contract excludes the party who is in the best position to know the full extent of holistic design and documentation, from participating in dealings between contractor and client.

As a result, consultants are put under extreme pressure for the fee being paid, to re-document and co-ordinate other consultants. Reluctance on the part of the consultant to re-document has been interpreted by contractor organisations as unwillingness to change, or failing to be proactive. The DIST&NatBacc Report into Procurement and Delivery Strategy 1998 noted that “design fees have been reduced to such small profit levels that out of sequence work and/or abortive work cannot be absorbed within ‘normal’ fee proposals hence quality of documentation suffers whenever the work is required.” This is not always the case, as professionalism demands a certain standard of work, which consultants will strive to achieve in the face of falling profit margins. The Report points out that “a healthy and competent building industry also requires a healthy and competent design industry”. The robustness of the construction industry will continue to suffer unless this direct link is recognised.

**Comparison with previous re-engineering studies**

Process improvement through re-engineering is independent of any particular procurement type.

Two previous studies on re-engineering the construction delivery process identified key areas for radical change to construction industry business processes to achieve dramatic improvements in contemporary measures of performance. Re-engineering is about creating and adding value in each and every activity within these processes and delivering the project to the level of customer expectation.

In the T40 Project, Ireland (1994) found that adoption of re-engineering concepts could address issues such as the integration of owner, designer, supplier, builder, procurement and production into one entity. Ireland also noted that opportunities exist for reducing non-productive time between the phases and for developing congruence of interest and motivation.

Mohamed and Yates’ (1995) findings mainly accorded with the T40 project and noted that a fundamental issue to be addressed is to meet the client’s expectations through resolving customer needs and business objectives. The findings of both studies reflect the importance of the human/communication factor to the success of re-engineering.

Table 2 summarises the issues which were identified by the Ireland and Mohamed and Yates as requisites to make the quantum change to a re-engineered process and comments on the applicability of these to this case study.
T40 (Ireland 1994)

<table>
<thead>
<tr>
<th>Success factors</th>
<th>Comment on applicability to Neville Bonner Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreed common goals</td>
<td>Client and contractor understood and supported each other’s objectives. Contractor and consultants in a less collaborative position.</td>
</tr>
<tr>
<td>Simplified process</td>
<td>Design, component manufacturing and assembly intended to be managed as an integrated whole</td>
</tr>
<tr>
<td>Re-engineered activities</td>
<td>Contractor’s construction methods and techniques achieved efficiencies and savings.</td>
</tr>
<tr>
<td>Workforce commitment</td>
<td>Skilled sub-contractor workforce</td>
</tr>
<tr>
<td>Partnering with local government</td>
<td>State Govt is own regulatory planning authority. Local govt co-ordination only in terms of site services.</td>
</tr>
<tr>
<td>Tendering on benchmarking</td>
<td>Tendering process required of considerable expenditure of effort by several contractors. Design process also costly in terms of the commitment by several teams of consultants.</td>
</tr>
</tbody>
</table>

Re-engineering (Mohamed and Yates 1995)

<table>
<thead>
<tr>
<th>Success factors</th>
<th>Comment on applicability to Neville Bonner Building, 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. The framework in which the participants worked together appears to have had some tensions.</td>
</tr>
<tr>
<td>Effective communications between major project participants</td>
<td>Communication between contractor and client excellent throughout the design and construct process.</td>
</tr>
<tr>
<td>Positive involvement of customer at early stages</td>
<td>Client engaged with design team.</td>
</tr>
<tr>
<td>Quality assurance techniques</td>
<td>Integral to suppliers’ businesses – applied through all phases. Value-adding attitude.</td>
</tr>
<tr>
<td>Encouragement of innovation</td>
<td>Client lay groundwork for innovation through design competition. Contractor delivered design solution with innovative methods.</td>
</tr>
<tr>
<td>Improved construction output</td>
<td>Project completed ahead of time.</td>
</tr>
</tbody>
</table>

Table 2: Comparison of this case study with previous studies

Conclusion

In general, the form of contract adopted for the delivery of the Neville Bonner building led to project success for the client. The contractor and consultants also reaped the various rewards of their involvement in a successful construction project. The expertise of personnel in client, project manager, design and construction teams was a major contributor to overall project success.

However, the findings of this case study reiterates the assertion of Chan et al (2001) that it is important for all project participants to understand and accept their roles and duties and the risk and legal liability they have to face in non-traditional project procurement. It is also important for project participants to gain a fair share of the financial return from their involvement in delivering the project contemporary performance indicators.

References


