




OFFICE OF  
THE VICTORIAN  
GOVERNMENT  
ARCHITECT

# Government as Smart Client

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5.0 Procurement of Buildings & Infrastructure



'Good Design is not just about the aesthetic improvement of our environment, it is as much about the improved quality of life, equality of opportunity and economic growth'.

The Value of Good Design, Commission for Architecture and the Built Environment (CABE).



**Cover**

Project: Parliament House Member's Annexe  
Architects: Peter Elliott Architecture + Urban Design  
Landscape Architect: Taylor Cullity Lethlean  
Photographer: John Gollings

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# Foreword

An important legacy for any government can be seen in the quality and design of the public projects they deliver. Well-designed buildings, infrastructure and public places work well and feel good, promoting community pride, identity and adding a valuable long-term asset to their locale. Over the life of a building, evidence shows us that bad design will cost money; whether in maintenance, running costs, poor user experience, lost opportunity, refit or even replacement. In contrast, good design, purposefully and carefully undertaken by skilled practitioners, ends up costing less. Good design continues to grow in value and worth for its client and community of users.

Good design does not just happen; it needs processes that support a quality outcome and it needs to be protected throughout all stages of delivery of a project. The process of procurement of a well-designed building includes starting with a good brief, a design vision that defines performance/outcomes-based principles and the appointment of a skilled, capable, design team.

From there, management of the construction of a building through to completion involves not just progressing a selected contractual method, but realising the project vision from idea, through delivery, to operation. The method by which a building project is procured can have significant impact on the quality of the final building. While it is possible to achieve a good design outcome with all procurement methods, some make it seriously challenging unless their potential threats to design quality are understood and well managed.

This document describes the various methods used in Victoria for the procurement of buildings. Each procurement method is overlaid with recommended strategies to assist in getting to a good design outcome. These strategies can assist Government to be a smart, informed client and deliver projects that leave a design legacy.



Jill Garner AM  
Victorian Government Architect



# Executive summary

The Victorian State Government is the largest procurer of design services in the state, having an enormous impact on the construction industry and on Victoria's standing as a state with which to do business.<sup>1</sup> The government's legacy from this role is the quality of buildings and public realm it delivers together with Victoria's reputation for innovation and liveability. It is important, therefore, that government and its agencies are informed appropriately to enable them to deliver and support well-designed outcomes for all Victorian projects.

The Office of Victorian Government Architect (OVGA) considers that there is substantial opportunity to improve design outcomes by improving design procurement practices that impact on design quality. The procurement of a quality project relies upon the engagement of a quality design team. It involves not just the contractual method used, but also the implementation of a built project from idea to delivery and on to operation. It is important to distinguish between the procurement of buildings and infrastructure and the procurement of design services.

## **Key Steps for Improving Procurement of Design Services that impact on Design Quality**

1. Develop the Vision Statement for the project at its inception, including the high level design outcomes to be achieved;
2. Appoint a Design Champion to help guide the project and procurement of design services;
3. Appoint a Client Team and Project Managers who understand that good design is fundamental to achieving high-quality buildings and infrastructure;
4. Create a quality design team brief that clearly articulates the design ambitions;
5. Ensure a realistic project budget based on initial design testing and benchmarking as part of any business case;
6. Encourage the use of Expressions of Interest (EOI) and Requests for Proposal (RFP) to procure design teams;
7. When using Competitions to procure design teams, ensure a two-stage submission is used for larger projects, a reasonable budget that reflects the brief and pay bidders for work in stage two;
8. In assessing bids for architectural services, separate the design fees from the assessment criteria and utilise Quality Based Selection. When the preferred design team is identified, evaluate their design fees to determine the value for money each bid represents;
9. Engage the design team early;
10. When using Reference Designs ensure that they are developed to set a qualitative benchmark, integrate the design ambition and establish a commitment to design excellence; and
11. Ensure design teams value the whole-of-life impact and the social, cultural, economic and environmental performance of a development.

### Key Steps for Improving the Procurement of Buildings and Infrastructure that impact on Design Quality

1. Design quality needs to be prioritised and embedded early in a project – regardless of the procurement method. If the risks to design quality are understood all procurement methods can be effective;
2. When selecting the preferred procurement methodology for a project, ensure design quality is considered as part of the procurement analysis and included as part of the selection criteria;
3. Ensure there is a clear, well-articulated vision for the project that includes expectations in relation to design and architectural quality;
4. Allow adequate time and resources in earlier stages of the project to develop a clear design intent and project design brief. This should explain the design outcome to be achieved and form an important part of the tender documents to help protect the design quality;
5. Seek design advice from a Design Champion, Design Quality Team (DQT) or the OVGA to assist with quality management in the Expression of Interest (EOI), contract and project brief;
6. Involve stakeholders, facility managers and users in the design process;
7. Consult the design team for advice in the appointment and selection of the head contractor;
8. Provide a realistic contingency for design and construction to ensure design quality can be delivered;
9. Ensure provision for independent design advice (DQT) or design review at key project milestones; and
10. Undertake Post Occupancy Evaluation to capture key lessons and to inform future projects.





All current procurement methods have the capacity to enable good design outcomes. However, with improvements to both the client culture and the procurement processes, higher standards can be achieved to the benefit of all those who use public buildings, infrastructure and places.

Victoria's future reputation for good design and the quality of its built environment relies upon recognising the value that design adds over the lifetime of the building. Well-designed buildings have a direct impact on the standard of public services provided and the quality of life of those who use them.<sup>2</sup> If we accept that the quality of architecture affects the quality of lives – and considerable evidence now demonstrates that this is the case – then it makes sense and is responsible to put in place steps that enable such quality to be achieved.<sup>3</sup>

Through discussions with government agencies and industry participants, it was identified that to support good design in public projects further initiatives should be pursued. The following list highlights the key recommendations that will support effective procurement and strategies to enable good design.

#### Key Recommendations from 'Government as Smart Client'

1. Ensure that the importance of design quality as a project selection criterion is established from the outset of the selection process through the documentation, in the weighting given to design and design capability in the bid evaluation criteria, and finally in the development of contractual documentation and sign-off procedures;
2. Allow enough design time for projects of real quality and innovation to emerge with realistic budgets that consider whole-of-life costs;
3. Develop flexible but consistent procurement processes for engaging architects and other designers to protect design quality;
4. The OVGA will help identify and support the role of Design Champions within Departments and Agencies;
5. The OVGA, in association with the Department of Treasury and Finance (DTF), support best practice in the establishment of consistent and fair Government contracts to protect design quality;
6. When appropriate utilise the OVGA's expertise to assist the Gateway process of a project to ensure design quality. Eg. Review of Briefs and EOIs, Selection Panels, Design Review, Internal Peer Review, Design Quality Teams; and
7. Establish a mechanism for OVGA design advice at a project's inception.

These guidelines provide practical steps to ensure that government, as a 'smart client', delivers excellence in the procurement of design, buildings and infrastructure. The guidelines are not mandatory and do not represent a new layer of process; rather they integrate essential design quality measures within the existing planning and delivery framework of government. They aim to influence design quality for public buildings to ensure an enduring legacy for future generations of Victorians.

#### PAGE 5

Project: Melbourne Convention and Exhibition Centre

Architect: NH Architecture

Landscape Architects: Aspect Studios

Photographer: Peter Bennetts

#### PAGE 7

Project: South Melbourne Life Saving Club

Architect: JCB

Photographer: John Gollings



# 5.0 Procurement of Buildings & Infrastructure

Procurement is derived from two Latin words: pro and curare. It means to manage or to care for something.

Within the Department of Treasury and Finance, procurement is understood as the process of engaging a supplier to deliver capital asset investments, including buildings, civil infrastructure and information and communications infrastructure. Procurement commences when Government makes a decision to invest in responding to an identified objective. It includes the process of seeking market solutions to deliver the investment, and concludes with contracting the successful proponent to undertake the required scope of works.

In the context of these guidelines building procurement means the management of and stewardship for the construction of a building or infrastructure. Procurement involves not just the contractual method but also the execution of a built project from idea to delivery and onto operation and audit. The success of a construction project is fundamentally effected by the meshing of the client's needs and objectives with the appropriate procurement method.

The OVGA is committed to procurement that:

- » delivers the best value to the Government, community, stakeholders and users;
- » delivers a better designed built environment and provides an enduring legacy;
- » supports conservation and innovation;
- » balances social, environmental, economic and cultural issues; and
- » provides a clear and collaborative design and delivery process.

The OVGA has identified strengths and weaknesses in the most widely used procurement processes. Depending on the procurement method chosen, it may either impede or enhance achieving the best design outcomes. Different procurement methods create different balances in the critical relationship between quality, cost and time.

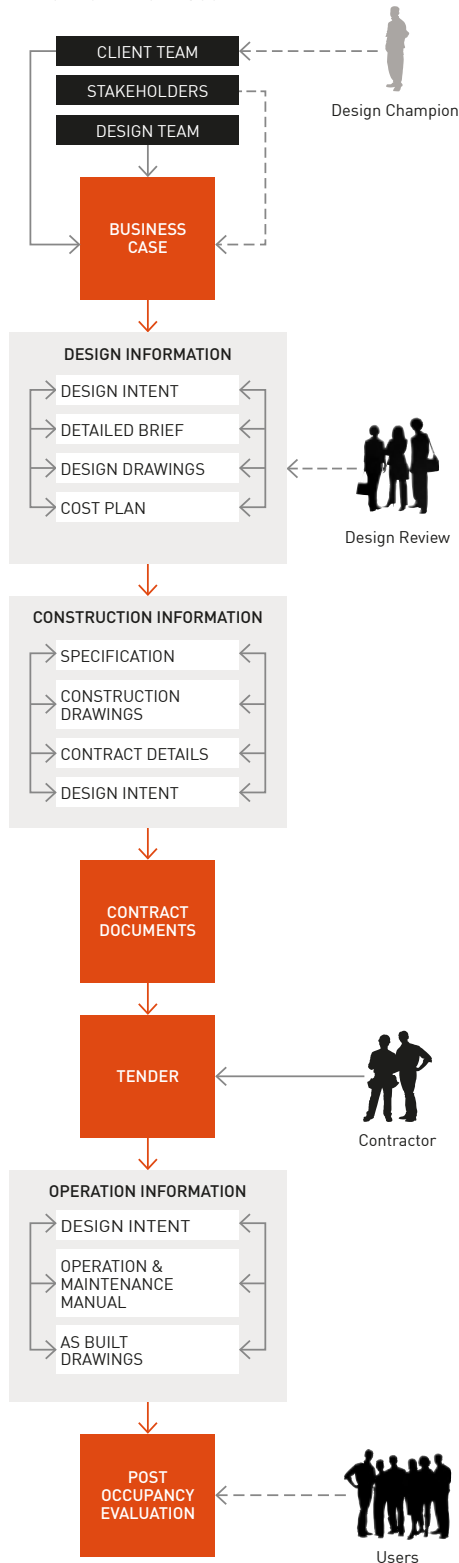
The following outlines the various procurement methods in common use and their potential impact on design. It suggests strategies to improve and enable good design outcomes.

A key difference between various procurement methods is whether they involve 'direct' procurement of design or 'indirect' procurement of design. Direct procurement of design ensures that the client has direct control of the design process whereas the indirect procurement method sees the responsibility for design delivery fall within the head contractor's jurisdiction. The selection of an appropriate procurement method is a critical part of the ambition to achieve high quality design, and to the ultimate success of the project.

'The 'procurement of buildings' is the act or process of bringing about or bringing into existence buildings.'

Standen, D. Construction Industry Terminology, RAIA Practice Division, 1993.

DIRECT BUILDING PROCUREMENT



## 5.1 Direct Procurement of Design

The 'Direct Procurement' process is where the client selects the architectural and related consultancy services independently of procurement of the building. Direct Procurement allows the client to conduct their own selection process for the design team and to engage the successful applicants directly (examples of building procurement methods where this occurs include Traditional Lump Sum, Construction Management and Management Contracting).

### DIRECT ENGAGEMENT OF THE DESIGN TEAM

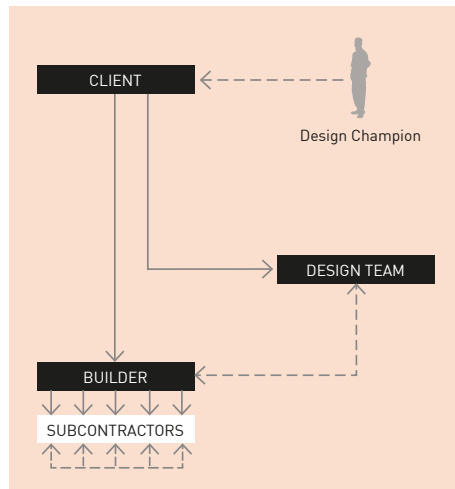
Strengths	Risks
<ul style="list-style-type: none"> <li>&gt; Established system and well understood in the industry.</li> <li>&gt; The selection process for the design team can include a 'design approach' or 'competition process' that encourages innovative design and enables the client to select on the basis of design ability and a match to their needs. Depending on the selection process chosen, it allows for testing of the capacity of the design team to work well with the client.</li> <li>&gt; High level of interaction between the client and the design team maximises results for the client - the design team is primarily concerned to satisfy the client.</li> <li>&gt; The client gets the design and scope it wants and can totally control the process.</li> <li>&gt; High quality outcome likely.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; The client retains the risks of time and cost.</li> <li>&gt; Changes in detail will open a discussion about a variation and potential cost increases and delay during construction.</li> <li>&gt; The overall delivery process is slower because it relies on a completed design and full documentation before tendering to builders.</li> <li>&gt; Less opportunity for the builder to innovate.</li> </ul>

**WHEN APPROPRIATE:**

- » When close control over the design is necessary and there is a need to maximise innovation on behalf of the client.
- » When the client knows what they want and there is little or no likelihood of changes.
- » When the optimum design can be completed without involving the builder or the operator.
- » When the Client is able to manage effectively the design process and the interfaces between the design and construction.
- » When the Client's design/specifications can be thoroughly documented and effectively communicated.
- » When there is sufficient time available to complete appropriately the detailed design prior to construction award.
- » When the Client is capable of understanding the challenges associated with infrastructure design and delivery and effectively manages the design team to generate a design that meet the requirements of the Project Definition for the lowest outturn cost.



TRADITIONAL CONSTRUCT ONLY



—— Contractual relationship  
----- Working relationship

The following forms of building and infrastructure procurement all work with the direct procurement process.

### 5.1.1 Traditional Construct Only

Traditional building procurement is based upon full Lump Sum Contracts. Under these commonly used forms of contract the architect is engaged directly by the client to undertake all stages of the design process and assist in administering the client's separate contract with the builder.

The client engages the builder independently of the architect to build the works as described in the contract documentation, including specifications prepared by the architect. The client tenders these documents to a field of competitive bidders, which normally comprise a building contractor with a number of subcontractors. The selected bid documents (drawings, specification and tendered price) then form the basis of the lump sum contract between the client and the contractor i.e. the successful bidder.

Construct only Contracts are considered appropriate when:

- » The scope of work is well defined and client-instigated changes, resulting in variations to the contract price, are limited;
- » High quality design is critical from the outset of the project. As a result, the project is fully designed and thoroughly documented before tenders are called and quality management relies upon the architect and client; and
- » The client is requiring, through the period of building construction, expert advice independent of the builder.

**TRADITIONAL CONSTRUCT ONLY - IMPACT ON DESIGN**

Strengths	Risks
<ul style="list-style-type: none"> <li>&gt; Enables client to control scope, design and vision.</li> <li>&gt; Allows adequate time to consult a range of stakeholders to develop design fully.</li> <li>&gt; Opportunity for clear design intent from the outset of the project with detailed documents outlining overall design intent.</li> <li>&gt; Responsibility for the subcontractor performance, time and cost remains with builder.</li> <li>&gt; Completion of full documentation prior to tendering the works should reduce risk of additional claims by builder.</li> <li>&gt; Established process clearly understood by designers, contractors and client.</li> <li>&gt; If there is high quality design and documentation and a good builder, a high quality built outcome is likely.</li> <li>&gt; High level of interaction between an informed client and the design team maximises design innovation - the design team is primarily concerned to satisfy the client.</li> <li>&gt; Tender and tender evaluation costs are relatively low as only construction work is tendered.</li> <li>&gt; If interfaces between design and construction are managed effectively then construction delays are kept low as full documentation defines scope of contract.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Removes the opportunity for collaboration with the contractor during design phase. As a result, the selected builder has no prior knowledge of the design intent. The tender therefore needs to cover everything on the drawings and specification. Items that are missing from, or not clearly defined on the documents, then become the basis of claims for extras and possible disputes.</li> <li>&gt; Potential lack of consideration of whole-of-life cost.</li> <li>&gt; Relies on a completed design that is thoroughly documented and effectively communicated before tendering to builders and work commencing on site.</li> <li>&gt; Client must outlay almost all the consultant fee costs before proceeding with the construction phase.</li> <li>&gt; Industry is engaged only at the final stage of the design process. There may be insufficient consideration of constructability issues during the design development.</li> <li>&gt; There is minimal opportunity for innovation by the contractor. Consultants undertake all design work.</li> <li>&gt; A reduced scope of architectural services and/or fees leads to documentation that is not of a sufficiently high quality for a client to be confident about maintaining the tendered cost.</li> </ul>

**ACTION TO BENEFIT GOOD DESIGN**

- » **A clear design intent and brief explaining the design philosophy as part of the tender documents will help protect the design quality.**
- » **A well-defined scope of work and comprehensive documentation to reduce variations to the contract price.**
- » **Careful selection of the design team to ensure requisite design expertise in addition to capacity and experience.**
- » **Establish appropriate contingencies. and clear and rigorous documentation;**
- » **Engage design advice from the architect to assist with the design quality management in brief and contract development.**
- » **The client understands the impartial role of the architect and their expert advice, independent of the builder.**
- » **Ensure provision for independent design advice at key project milestones. This may include advice from a Design Quality Team or design review at the end of Concept Design or design development.**
- » **The Client is capable and understands the challenges associated with infrastructure design and delivery and effectively manages the design team to generate a design that meets the requirements of the Project Definition.**

## CASE STUDY

### Research Primary School, Research

#### PROJECT BACKGROUND

Research Primary School was completed in 2020, by Kennedy Nolan Architects, with a project value of \$5.7m. The scope consisted of the refurbishment of a classroom block for a new Administration and Art Centre; and a new building containing Learning Areas and amenities. Extensive landscape works were designed to resolve access and stormwater issues and the protection of significant trees. The school's declining enrolments, poor street address and need for refurbishment, informed a brief to deliver a new entrance and create a civic presence in the community.

#### KEY INITIATIVES ADOPTED TO PROTECT THE DESIGN QUALITY

- » A design and landscape led strategy, with Simon Ellis Landscape Architect, established legible and DDA compliant paths into, and around, the campus – a challenging task on steeply sloping ground.
- » Rather than relying on fencing, the building was sited to form defined external areas – a contained playing and learning space with direct access to teaching spaces and most critically a central quadrangle with a broad verandah to give the school something it had never had – a Centre.
- » Using design to stitch the school together physically and psychologically, creating an urban identity, wayfinding and a sense of address, to deliver a unified campus.
- » Elevating the relationship between built form and the landscape, with permeable edges providing easy and direct access to an active play area to the north and the south verandah facing a new quadrangle gathering space. The building parts were pulled apart, with connections provided by generous boardwalks. This arrangement positively re-balanced the relationship between built form and landscape whilst providing protection and comfort.
- » The building was clad in durable, fire-resistant timber – a material which resonates with the bush aesthetic of the area, is comfortably non-institutional, low maintenance and sustainable.
- » The interior balances a muted background palette drawn from eucalypts, which are ubiquitous in Research, tempered by intense and energising colours.
- » Large trees were preserved, compliant DDA paths were established in sweeping arcs which incorporate extensive planting and rock placement.

Project: Research Primary School  
Architects: Kennedy Nolan  
Landscape Architect: Simon Ellis  
Photography: Emily Bartlett





## CASE STUDY

Research Primary School, Research

### CONSTRAINTS

- » Dilapidated facilities and challenging site conditions that impacted meeting the required entitlement building areas.
- » Difficulty in defining the scope of landscape work and site work upgrade required.
- » Within a limited budget, there was a requirement for universal access across all site facilities that previously had very limited access and the complexities of dealing with infrastructure that had been constructed in the 1950s, 60s and 80s, of which there was little to no information.
- » A disproportionate perception of risk across the site impacting design outcomes for students, staff and the community.
- » Limited budget, tight design parameters and challenging administrative process.
- » Poor understanding of the appropriateness of timber cladding for the building, despite its sustainability and proven durability.
- » The need for a design champion for the project and an understanding that risk can be managed through good design.

### WHAT WORKED WELL

- » **Selection of architects through an Expression of Interest (EOI) from three bidders and interview process.**
- » **Aspirational brief from the architect supporting best practice in education and sustainability.**
- » **Allowing the architect to select the sub-consultants, based on previous experience and no Project Manager.**
- » **A strong design concept that was integrated with the landscape, so that regardless of value management and design restrictions, it was successful on an urban scale.**
- » **Comprehensive documentation to minimise variations to the contract price and appropriate design and project contingencies.**
- » **The architect established a good working relationship with the school, builder, landscape architect and consultants to deliver on time and on budget.**
- » **The architect advocating that the school could rely entirely on electricity and did not need natural gas.**
- » **A design team, builder (Newpol) and School Principal who followed the project through to completion.**
- » **Connecting with the community of Research and reflecting the specific qualities of the local environment.**
- » **Greater quality control on material selection and avoiding substitution – which is an issue with other forms of procurement such as Design and Construct.**
- » **The Principal identified that “the school felt right for the Research kids and presented an architecture which reflected the values and aesthetics of the people who lived there”.**



## 5.1.2 Early Contractor Involvement (ECI)

Early Contractor Involvement (ECI) is a procurement method that is used on large scale infrastructure projects where the design of the project is not fully developed, and the client requires specialist knowledge from the contractor. ECI requires an Expression of Interest (EOI) phase that can be either open or select, with contractors invited to submit an EOI. The EOI is evaluated on capability, experience, financial capacity, and personnel rather than cost. The selection process is typically conducted as a desktop evaluation, resulting in a shortlist to be invited to submit a Proposal through a Request for Proposal (RFP) process.

The RFP phase is shortlisted to ideally no more than three tenderers. This phase is more interactive than the EOI phase with each tenderer submitting a proposal to take part in the ECI phase and evaluated on their schedule of rates and program. Following appointment of the successful tenderer, the contractor is paid a lump sum fee to collaborate with the client and its consultant team to develop, refine and finalise the scope, design, and construction method for the project. The contractor will also help the client determine the preliminaries, profit and overheads. At the time of entering into the ECI contract, the actual cost of construction is unknown as the design is yet to be finalised and has not been priced.

ECI can save time by overlapping the design and documentation phases of the program with early construction activities. This process allows a client to have the benefit of the unique buildability expertise offered by the contractor market, while also giving the selected tenderer(s) an opportunity to develop an intimate understanding of the project and the distinctiveness of the site prior to finalising their proposed price to construct the works. The next phase may lead to a design and construct process, however a client is not bound to engage the ECI contractor and can competitively tender the works to another contractor.

ECI is considered appropriate when:

- » A contractor can add value through being involved the early phases of design.
- » There is a need to fast track a project, potentially with early works packages.
- » The project is complex and there is a need to alleviate uncertainty and manage risks.
- » The design and documentation phase of the program can be overlapped with early construction activities.
- » There are known, or potential, cost issues that need collaboration or value management from a contractor.
- » There are discrete parts of the work that need to be performed, and long lead items ordered, before all elements of the design have been finalised.



**ECI – IMPACT ON DESIGN**

Strengths	Risks
<ul style="list-style-type: none"> <li>&gt; Allows for collaborative input into the design, buildability, resolution of latent conditions and the opportunity to advise on risks that could arise during the construction phase.</li> <li>&gt; The contractor can help in the preparation of cost schedules, including guidance to assist the architect with further refinement of the design.</li> <li>&gt; The contractor can refine and detail their price for the works during the process, in consultation with the client and architect.</li> <li>&gt; The client is not contractually obligated to engage the contractor to build the works and can still procure the project as a competitive tender.</li> <li>&gt; The client can use ECI to resolve a specific construction challenge, for example latent conditions, ground works, existing structures or crane location; without having to continue their services beyond this targeted scope.</li> <li>&gt; The traditional relationship between the client and the architect can be maintained.</li> <li>&gt; Design ambiguities can be identified at an early stage and long lead items ordered before all elements of the design have been finalised.</li> <li>&gt; Potential to ensure the budget is maintained through creating transparency in pricing for trades and subcontractors.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Coordination between design packages can be challenging, and documentation disjointed if there are changes late in the process.</li> <li>&gt; Contract documentation may be prepared in a series of trade packages which fragments the design process. This can result in insufficient attention being given to design integration (such as building services) or design decisions being locked in too early.</li> <li>&gt; Between the design phase and the construction phase, a client may choose to novate the design team to the construction contractor once they have been appointed, potentially before design decisions are largely agreed.</li> <li>&gt; Changes resulting from later design information may not be able to be coordinated with earlier work or completed packages.</li> <li>&gt; Contractor advice may preference construction approaches that provide a competitive advantage to the ECI contractor over other contractors, if the project went to tender.</li> <li>&gt; Innovative design solutions can be lost in the process of having to think non-sequentially and to respond to the fast-tracked construction pressures.</li> <li>&gt; The reduced time available can create unintended inefficiencies, including over-sized risers, ducts, plant rooms and service spaces, due to inadequate information being available at an early design stage, and the need to ensure that elements designed later, will fit.</li> <li>&gt; The client has less certainty about the final cost of the project because trade or sub-contractor pricing will not have been obtained.</li> <li>&gt; There is no industry recognised ECI standard contract, apart from AS4916 construction management conditions of contract which may or may not be suitable for the project.</li> </ul>

**ACTION TO BENEFIT GOOD DESIGN**

- » **The client must clearly define the project brief and set clear design priorities.**
- » **Accept that due to time pressures the brief must incorporate a significant degree of flexibility.**
- » **A design contingency is provided to resolve unforeseen issues during the design process.**
- » **Identify design items that are likely to require a long lead time early in the program and ensure to allow for local procurement policies.**
- » **Select a highly capable contractor, project manager and design team to mitigate the risks associated with a fast-track process.**

## CASE STUDY

Allianz Stadium, Moore Park, Sydney, COX Architecture + Schlaich Bergermann Partners

### PROJECT BACKGROUND

In October 2018 plans for the new stadium to replace the original Sydney Football Stadium were released by Infrastructure NSW. The project was planned as two stages: Stage One / Demolition and Stage Two / Construction.

In December 2018 Lendlease were appointed to build the 42,500 seat stadium, commencing with an ECI contract. Construction was scheduled to commence in 2019 with an early 2022 completion date. In July 2019, Lendlease's contract for construction was cancelled by the government, with John Holland and Multiplex shortlisted to bid for the contract. In December 2019 John Holland was awarded the \$735 million construction contract. The stadium was completed and opened on 28 August 2022. The total construction cost of the stadium was A\$828 million.

Demolition of the previous stadium began on 8 March 2019. Opposition from local interest groups saw them attempt to prevent, or slow, demolition via legal action before the 2019 New South Wales state election. After a short court-ordered delay, just prior to the election, the existing Government was returned, and demolition of the old stadium continued through to completion on 18 December 2019 at a cost of \$40 million.

Construction of the stadium commenced on 15 April 2020 by construction group John Holland Group, with major piling and excavation works beginning the following month. By the end of 2020 work on the structure had commenced on all four sides of the new venue, which included the main lift cores and precast placement works which would make up the main seating area. Following this, the main formwork contractors commenced to allow the slabs to be poured for the main back of house areas. The project was completed in August 2022.

The ECI process took advantage of prefabricating the structural elements. This approach to modular construction meant less work at heights for construction crews, with more than 85 per cent of roof steelwork formed on the ground before being positioned in place. It also minimised materials wastage and maximised the speed of concurrent construction activities. The roof design was technically complex, yet the lightest, in Australia, with almost 5,000 individual pieces of steel, each with unique geometry. The volume of steel was reduced by 40 per cent compared with a similar traditional design, one aspect of achieving a LEED (Leadership in Energy & Environmental Design) Gold accreditation.

Project: Allianz Stadium  
Architect: COX Architecture + Schlaich Bergermann Partners  
Photographer: Christopher Frederick Jones



## CASE STUDY

Allianz Stadium, Moore Park, Sydney, COX Architecture + Schlaich Bergermann Partners

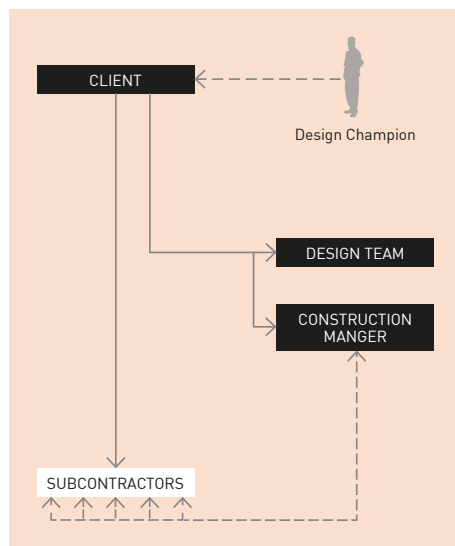
### KEY INITIATIVES ADOPTED TO PROTECT THE DESIGN QUALITY

- » Developed a clear project methodology and design intent.
- » Ensured that risk is shared equally among all parties.
- » Ensured that the contractor brings the right culture and people to the project.
- » Appointed the contractor as early as possible.
- » Ensured the contractor can meet the Guaranteed Maximum Price (GMP) target price.
- » Ensured that the Government agency would definitively resolve issues and act in the public interest.
- » Embedded strong advocacy from the (NSW) Government Architect's office.
- » Ensured continuity of design managers throughout the project, from government and the contractor, to protect corporate knowledge.
- » Preliminaries detailed the remuneration conditions and financial incentives for design managers and construction managers to avoid conflicts of interest.

Project: Allianz Stadium  
Architect: COX Architecture + Schlaich Bergermann Partners  
Photographer: Hamilton Lund



CONSTRUCTION MANAGEMENT



———— Contractual relationship  
----- Working relationship

### 5.1.3 Construction Management

A Construction Management contract is where the 'traditional builder' is replaced by a Construction Management organisation. Their responsibility is to work directly for the client in the management of the construction phase. The works are completed by a series of trade contracts between the client and each contractor. The Construction Manager does not take any cost risk or design risk although the construction manager may be paid to assist the client with cost control and design advice. A significant aspect of construction management is that the Construction Manager has no direct involvement in the payments to the trade subcontractors.

These contracts are also used to carry out maintenance or upgrading work. The advantage is that they allow the early stages of construction to commence while the design and documentation of later trade packages are being finalised. For example, hospital upgrades often require staging such that the hospital remains operational while staged construction works are undertaken. The Construction Manager performs a purely management and coordination role without the same risk in terms of delivery and is generally paid an agreed fee. The fee may be a fixed lump sum, a percentage of the building cost, or an agreed hourly rate. The client manages the scoping and appoints the design team.

The role of the design team and their relationship with the client and Construction Manager is very similar to the traditional contracts between architect, client and contractor. More recently, the Construction Manager has taken over some of the architect's traditional roles, such as certification during construction. It is also becoming more common for the design team to be novated to the Construction Manager.

**Construction Management is considered appropriate:**

- » where the client needs to start work on the early stages of construction while the design and documentation of later trade packages are being finalised;
- » where the client needs to retain direct control over works e.g. in an operating hospital or rail corridor;
- » for complex projects where it is not possible for design of some elements to be started before work is undertaken on others; and
- » if a contractor financially collapsed mid-project, it may be more efficient to complete the project through Construction Management than to fully document and tender the balance of the works as a single package.

**CONSTRUCTION MANAGEMENT - IMPACT ON DESIGN**

Strengths	Risks
<ul style="list-style-type: none"> <li>&gt; The direct payment by the client to the trade contractors provides a climate for a better working relationship on site and removes the typical delay associated with a payment from the builder to the subcontractor.</li> <li>&gt; Claims for variations and time extensions are directly related to trade contract claims as opposed to a builder's claim under lump sum contract that may or may not relate to any particular trade contract delays on site.</li> <li>&gt; Input of construction advice into the design is readily enabled.</li> <li>&gt; Construction may commence prior to the completion of the design, allowing for project time compression.</li> <li>&gt; Construction management allows for competitive tendering as packages of work are developed.</li> <li>&gt; The client selects the architect and design consultants.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; The construction manager does not take any cost risk or design risk although the construction manager may be paid to assist the client with cost control and design advice.</li> <li>&gt; The final project cost is not known until later in the construction when the last package is let.</li> <li>&gt; The construction manager acts as an agent for the client and only takes the risk for their own services, with a responsibility on a best-endeavours basis to achieve defined objectives. The trade contractors are contracted directly with the client, and the client takes the risk of the trade contractors.</li> </ul>

**ACTION TO BENEFIT GOOD DESIGN**

- » **Early involvement of the Construction Manager to assess buildability prior to commencing Design Development.**
- » **Engage independent design advice from either a design champion, design quality team (DQT) or the OVGA to assist with design quality management in preparing the brief and contract development and at key project milestones.**
- » **An established and positive working relationship between the Construction Management organisation and the subcontractors.**
- » **Ensure that the construction management fee is subject to achieving design benchmarks or assessment via Key Result Areas (KRAs) as assisted by independent design advice.**
- » **Ensure that each trade contract agreement specifically refers to design quality and explains how it will be delivered.**

## CASE STUDY

### Sidney Myer Music Bowl, Kings Domain, Melbourne

#### PROJECT BACKGROUND

Originally opened in 1959, the Sidney Myer Music Bowl is a celebrated, rare survivor of Melbourne's heroic postwar period of architecture and is listed on the Victorian Heritage Register. Over time the Bowl was in need of significant restoration and upgrade required to address its substantial functional deficiencies which made it inadequate to support performances. The upgrade required a change to sightlines, regarding of the grassy berm and flexibility in delivery of the project to avoid impacting the operation of key annual events, specifically the Royal Victorian Institute for the Blind's Carols by Candlelight.

The brief required an upgrade of all facilities to integrate back of house production, catering artist change and warm up, theatre infrastructure and technologies, commercially supportive facilities, hire-out function spaces and a cafe. The refurbishment needed to respect the heritage value of the original structure, while rejuvenating its cultural life as one of Melbourne's most loved venues. Apart from the original cable network and supporting columns, the existing fabric has been restored and reconstructed. The new work extends the original footprint, mainly underground. Major areas for refurbishment included replacing the canopy damaged by prolonged water penetration through the edges of the 'Alumpy' panels which caused deterioration of the plywood, and some delamination of the aluminum cladding. The entire canopy was replaced with a new cladding system. The use of construction management offered a flexible procurement method that supported the changing nature of the brief and the potential for the design to evolve.





## CASE STUDY

### Sidney Myer Music Bowl, Kings Domain, Melbourne

#### KEY INITIATIVES ADOPTED TO PROTECT THE DESIGN QUALITY

- » Design advice early in the procurement process supported the management of design quality in contract and brief development.
- » An early understanding of the complexity and heritage sensitivities of the site.
- » Independent advice from the original architect Barry Patten.
- » An “open book” approach offered transparency with preliminaries and profits declared.
- » Use of Hooker Cockram as experienced sub-contractors, as the construction management organisation.

#### CONSTRAINTS

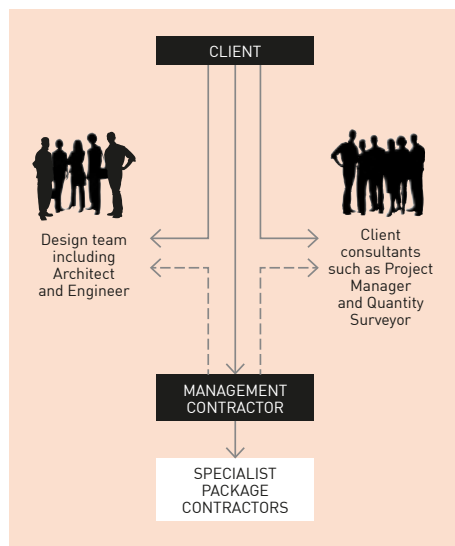
- » The breakdown of the project into two separate stages to facilitate the continuity of use for the Royal Victorian Institute for the Blind’s Carols by Candlelight.
- » Unexpected change to the brief for required patron sightlines to the stage area.
- » Unforeseen industrial issues beyond the control of the client or construction management organisation.
- » A change in government halfway through the project.

#### WHAT WORKED WELL

- » **The flexibility of construction management as a procurement method supported the design changes required, including adjustment to audience sightlines, the need to raise the berm and additional fill.**
- » **Efficient and effective resourcing of the project by Hooker Cockram as the construction management organisation.**
- » **Major Projects Victoria (MPV) acting as design champion.**



MANAGING CONTRACTOR



—— Contractual relationship  
 - - - - Working relationship

## 5.1.4 Managing Contractor

This form of contracting involves the client appointing a head contractor (the Managing Contractor) who may deliver or engage subcontractors to deliver the works. The Managing Contractor is responsible for administering these subcontracts and accepts some delivery risk, manages the scope definition, some or all of the design documentation and construction of the works. The client and the Managing Contractor generally negotiate a fixed lump sum management fee. The Managing Contractor may also receive incentive payments for achieving cost and schedule targets. There are many variants of the Managing Contractor model in use by agencies across Australia. The design team, including architect, may be appointed prior to the Managing Contractor where their primary role is to create a design brief, documentation and specifications as a basis for the tender documentation to be issued to competing Managing Contractors. Once the Managing Contractor is appointed, the design team continues to develop the documentation so that the Managing Contractor can let each specialist package.

They may be engaged early in the process to manage the scope definition, design documentation and construction of the works. The Managing Contractor can also determine elements of the design and/or construction and is paid for these services, in addition to the management fee. The Managing Contractor does not undertake the work – rather, they are engaged to manage the work of the subcontractors.

**The Managing Contractor is typically:**

- » the person who engages the subcontractors, with the Managing Contractor being paid a management fee (based on a fixed lump sum or percentage of actual cost) and may receive incentive payments for achieving target price or other key parameters;
- » responsible for preliminaries (e.g. crane hire, site sheds, supervision services etc), general project requirements (e.g. security, insurances etc) and project management (e.g. scheduling, coordinating, liaising, monitoring, reporting etc);
- » responsible for preparing the trade packages, conducting the tenders, and selecting suppliers in close collaboration with the client;
- » responsible for the quality of the design and construction;
- » responsible for warranting the fitness for purpose of the design and the completed works and the completion of the works by the date for Practical Completion;
- » responsible for the planning and implementation of quality assurance covering all of the works undertaken by the subcontractors, suppliers and consultants; and
- » warrants the suitability and completeness of the subcontract construction documentation and for ensuring that it is consistent with the developed design.

**Managing Contracting is considered appropriate:**

- » for complex or high-risk projects with uncertain scope, risks or technology;
- » where a high degree of expert government input is available;
- » where early contractor involvement is beneficial;
- » where the managerial skills of the parties involved can best be utilised; and
- » when industry input and innovation during the design stage are desirable. The specialist subcontractors, architect and Managing Contractor work together to develop project requirements, resolve issues and develop the design.

Managing Contractor is virtually the same as Construction Management with one major difference - the Managing Contractor not the client, enters into numerous Trade Contracts directly with Trade Contractors.

**MANAGING CONTRACTOR - IMPACT ON DESIGN**

Strengths	Risks
<ul style="list-style-type: none"> <li>&gt; The client may appoint the design team before the Managing Contractor.</li> <li>&gt; Potentially allows for a reduction in the project duration and improved working relationships between the project parties.</li> <li>&gt; There is a single point of responsibility for the design and construction of the works including fitness for purpose.</li> <li>&gt; The client retains a higher degree of control over the management of the project – the client has the ultimate right to choose which consultants and subcontractors are used and also has final say over the design.</li> <li>&gt; Design changes to the works may be easier to accommodate due to the progressive nature of letting trade contracts. If a finishing package (e.g. joinery) has not been let, it is possible to delay the final documentation until much later in the overall program than would be allowed under a traditional lump sum approach.</li> <li>&gt; The client brings insider knowledge, stakeholder interactions, technical skills etc to complement supplier skills and it is necessary for the parties to collaborate to achieve optimal project outcomes.</li> <li>&gt; Can facilitate the early involvement of the contractor allowing buildability issues and whole-of-life considerations to be addressed during the design phase.</li> <li>&gt; The client and the Managing Contractor are able to collaborate to develop the project requirements and resolve issues through the design and construction phases of the project.</li> <li>&gt; The client can provide input into the design development and has opportunity to influence the design and construction processes.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Insufficient time to establish the scope and develop the tender documents.</li> <li>&gt; When payment does not include quality of design as a key performance parameter.</li> <li>&gt; Difficulty setting cost targets with limited design details.</li> <li>&gt; Contract obligations to achieve design ambitions are not clear and do not clearly outline the architect's role in the process.</li> <li>&gt; The Managing Contractor takes the risks of on-time completion and trade contractor performance. The number of tenderers who want to take on this role may be limited.</li> </ul>

**ACTION TO BENEFIT GOOD DESIGN**

- » Encourage the client to be involved continuously in the project and to appoint only a highly experienced and competent Managing Contractor.
- » Fully resolve the brief and scope to ensure the design team has clarity and confidence in undertaking the concept design.
- » Nominate the key specialist stakeholders to assist the development of the design.
- » Directly engage the design team early in the process and then novate the design team across to the Managing Contractor.
- » Allow adequate time and resources in earlier stages of the project's program to develop the design.
- » Engage design independent design advice from either a design champion, design quality team (DQT) or the OVGA to assist with quality management in contract and brief development and at key project milestones.
- » Effective project delivery, especially for alterations to existing buildings, necessitates a realistic contingency for design and construction.
- » Ensure the contract clearly defines what constitutes the completion of design development.
- » Be responsive to the contractual time constraints of the design team and managing contractor.

## CASE STUDY

### Melbourne Park, Margaret Court Arena

#### PROJECT BACKGROUND

The Western Precinct project will add an extra 1,500 seats to the 23-year old Margaret Court Arena, bringing its capacity to 7,500. The arena, which opened with Rod Laver Arena in 1988, will become the third enclosed stadium at Melbourne Park and will fill the gap between the 3,500-seat State Netball & Hockey Centre and the 10,500-seat Hisense Arena. A retractable roof and new spectator facilities will also be added to the venue. When complete, Margaret Court Arena will be able to host basketball, netball and concerts, in addition to tennis. The Western Precinct project is part of a \$363 million larger project, which will also feature eight new indoor courts, 13 outside courts, a plaza and a pedestrian link between AAMI Park, Melbourne Park and the MCG.

The Western Precinct design team is a joint venture between Melbourne's NH Architecture and international firm Populous and the managing contractor is Lend Lease. The Margaret Court Arena refurbishment is scheduled to be fully operational in 2015. The project is being delivered in three stages:

1. Enabling works, foundations and concrete structures (2012).
2. Erection of the roof (2013).
3. Commissioning of the operable roof and all major services, construction of main building façades and completion of 'back of house' facilities including green room, anti-doping facilities, change rooms (2014).



## CASE STUDY

### Melbourne Park, Margaret Court Arena

#### KEY INITIATIVES ADOPTED TO PROTECT THE DESIGN QUALITY

- » The design team was appointed early in the process to work directly with the client Major Projects Victoria (MPV) and stakeholders to resolve the final project scope.
- » Adequate time was given during Concept Design to establish the scope and included consideration of constructability challenges.
- » Adequate time provided to allow for design team to consult fully with stakeholders, with clear hold (review) points integrated into the design program.
- » Design team provided informal advice on the building tender to the client.
- » As lead consultant the architect was the primary point of contact for the design.
- » Strong integration of the architectural, engineering and other specialist design consultants throughout the process, with strong involvement of the engineering consultants from the early stages of the project.
- » The client (MPV) required ongoing contact with the design team following novation.
- » Design team developed a positive relationship with all stakeholders.
- » The design was able to evolve with the appointed managing contractor at novation, with time for managing contractor's input into the design prior to agreeing the final Warranted Maximum Price (WMP).
- » The project was regularly re-costed at key hold points, and a WMP was agreed based on the detailed design. This allowed the required flexibility in establishing the best design solution within budget plus allowing adequate time for extensive site assessment and exploration of latent conditions.
- » Provision for independent design advice at all key project milestones.



## CASE STUDY

### Melbourne Park, Margaret Court Arena

#### CONSTRAINTS

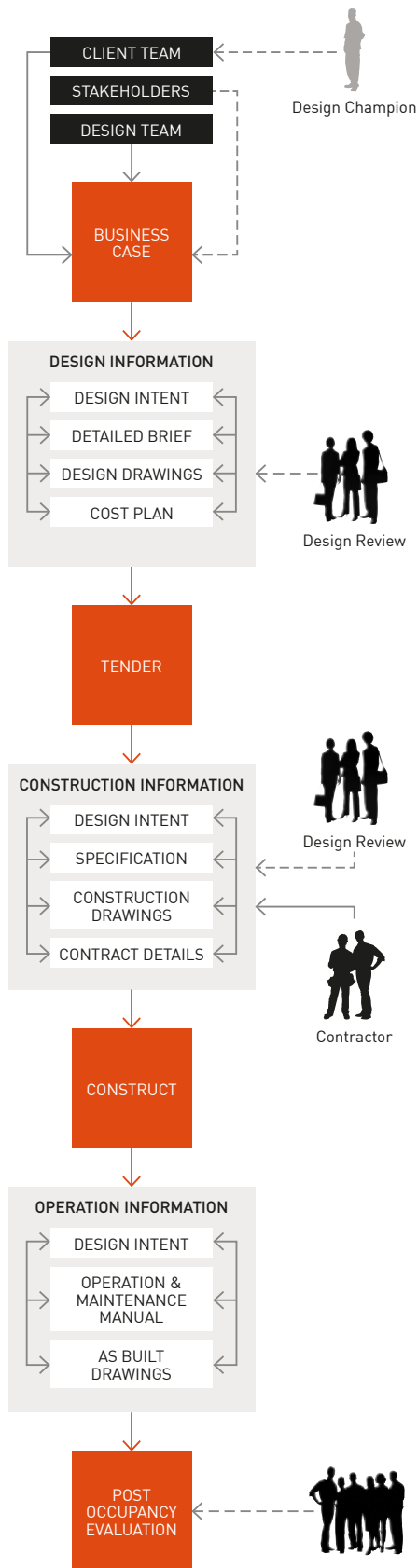
- » Complexity of project, including new roof design, and extensive latent condition challenges due to the brownfield site.
- » Availability of background information within the brief; including existing plans, surveys and detail of any latent conditions.
- » Complexity of building program which was required to allow for the Australian Open to utilise the venue annually thereby restricting construction to between February and November. Responding to moral rights issues of the original design for the adjacent Rod Laver Arena and protecting its original design intent.

#### WHAT WORKED WELL

- » Providing sufficient time to establish the scope and develop the tender documents.
- » Formal and informal interviews with tenderers, with a focus on people and team in the tender evaluations.
- » Getting the best people for each team: a competent design team and an experienced management contractor.



**INDIRECT BUILDING PROCUREMENT**



**5.2 Indirect Procurement of Design**

The 'Indirect Procurement' process is where the design team is engaged partly or wholly by an agent rather than the client, for example, by a developer or consortia. In effect, the Government -as client- procures a contract which includes the design and construction costs and may also include a combination of the finance and operating costs.

**INDIRECT ENGAGEMENT OF THE DESIGN TEAM**

Strengths	Risks
<ul style="list-style-type: none"> <li>&gt; The design scope is more "open", and offers the potential of a higher degree of innovation regarding buildability and a greater variety of design options.</li> <li>&gt; The overlap between design and construction schedules enables faster project completion.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Loss of control over the design outcome and limited direct management of design quality.</li> <li>&gt; Danger of reduced design quality and consequently not a 'fit for purpose' outcome.</li> <li>&gt; Design team's primary concern may be to satisfy the consortium it is part of, rather than the client.</li> <li>&gt; The building contractor may be more focussed on the time and cost of the project than the quality of the design outcome.</li> <li>&gt; Opportunities for stakeholder and end-user input are often limited, potentially diminishing effectiveness and acceptability of outcome.</li> <li>&gt; Whole-life performance is not likely to be a key concern without direct incentives.</li> </ul>

**WHEN APPROPRIATE**

- >> **When there is a need to move quickly to tender and/or construction.**
- >> **When design can be specified.**
- >> **When design control is not critical, allowing a reduction in the contract administration, or when design requirements are well understood by all concerned.**
- >> **When it is appropriate to transfer the design risk from the client to the developer or consortia.**

The following forms of building and infrastructure procurement are all forms that work with the Indirect Procurement Process.



## 5.2.1 Design & Construct

The procurement method of Design & Construct is where the client enters into a single contract with a construction company that provides both the design and construction of a project based on requirements specified by the client. The project requirements typically include functional performance, quality and design life requirements. The design services may be subcontracted to a team of designers, depending on the requirements of the tender.

The client tenders a project brief and each tenderer prepares a preliminary design and basic indication of the time and cost needed to complete the project. The contractor/builder engages their preferred design team to undertake the design work and tenders a price for the delivery of that design and its construction costs. Once all tenders have been received the client (or client's representative) and the client's quantity surveyor will review and select a proposal best suited to the client's requirements. A single contractor is then appointed to manage the design, documentation and construction of the project, generally for a fixed price. Typically all design risk as well as construction risk is allocated to the contractor. Essentially, it represents a package deal. The design team is appointed and contracted directly to the contractor from the start of the project. Following construction, the client owns and operates the facility to deliver the service promised in the Business Case.

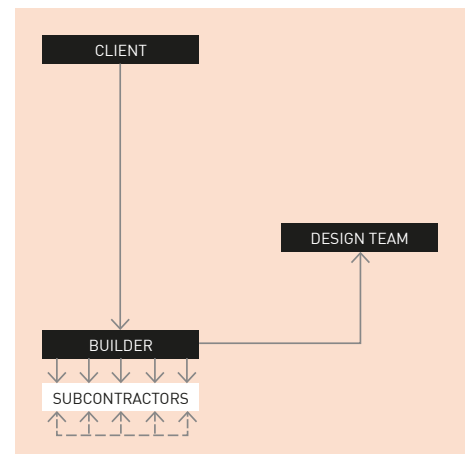
**Design and Construct is considered appropriate when:**

- » An early commencement on-site is required. This allows design and construction to occur in parallel and for a faster construction time.
- » The client can prepare clear, concise and well-documented performance and technical criteria for the project. These include criteria and objectives for durability, community standards, environmental standards, whole-of-life and any other significant issues. This will allow the contractor to understand and sensibly accept and price the risks.
- » The client requires a total commitment for time and cost for the project, at a fixed price; and
- » Client control over design quality is not a priority or design requirements are clearly specified and understood.

For Design and Construct, the design team functions as a normal design team, but with the building contractor, interpreting the client's requirements against the known maximum cost. Both the design and construction will be 'tailored' by the contractor to fit within the 'agreed price'. It is the architect's duty to put the interests of the building contractor in front of the interests of the building owner or occupier. The process can lack independent assessment or monitoring and the design team is normally unable to deal directly with the client or user. According to DTF, recent D&C contracts have additional provisions for the client to review and approve designs including independent quality assurance.

Except in the case of very simple or repetitive buildings, design and construct project delivery provides clients with reduced assurance that they will receive an end product that fully satisfies their needs or expectations.

### DESIGN AND CONSTRUCT



—— Contractual relationship  
 - - - Working relationship

'Variations to Design and Construct include:-

- » Design, novate and construct
- » Design, develop and construct
- » Design, construct and maintain

A guaranteed maximum price is often part of a design and construct offer which includes the cost of design and the cost of construction.

While some design is usually undertaken before the guaranteed maximum price is established, the design is not complete and the owner is unlikely to have made all of the decisions that will affect the design. In this case extra costs are almost certain to arise as the owner finalises his or her design requirements.

For these reasons 'guaranteed maximum price' is probably a misnomer and there is no such thing as a true, unqualified guaranteed maximum price.'

Acumen AIA Practice Services

## DESIGN AND CONSTRUCT – IMPACT ON DESIGN

Strengths	Risks
<ul style="list-style-type: none"> <li>&gt; Faster and less exposure to risk of variations for trivial or design related issues.</li> <li>&gt; In theory, design scope is more 'open' and a higher degree of innovation regarding buildability advice is possible, as well as a greater variety of design choice.</li> <li>&gt; Suitable for projects of basic infrastructure, low complexity and that can be simply specified.</li> <li>&gt; The contractor has control over design details and timing of work. This gives potential for overlapping of design and construction activities, resulting in time and cost savings.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; The definition of quality relies on the preliminary bid documentation which, by definition, is preliminary and generalised. The qualitative interpretation of this documentation is therefore totally in the hands of the D&amp;C builder/contractor which may result in the client obtaining a different standard of building from that apparently conveyed by the preliminary documentation.</li> <li>&gt; Indirect relationship between client and designers.</li> <li>&gt; Changes to the design brief after early design phases can be costly and should be minimised.</li> <li>&gt; Tender evaluations are complex, taking more time to evaluate and potentially increasing costs to client and causing contract award delays.</li> <li>&gt; Loss of control of design outcome and limited direct management of design issues resulting in reduced design quality.</li> <li>&gt; Lack of option to select a preferred design expertise.</li> <li>&gt; Few opportunities for stakeholder and end user consultation to influence the design.</li> <li>&gt; Design teams' contractual obligation is transferred to contractors and removed from client, thus potentially compromising desired outcomes.</li> <li>&gt; Building contractor captures all benefits associated with final design arrangements and specifications.</li> <li>&gt; Limited connection to client compromises the design intent of the project as project develops through detailed design and documentation. This may also apply to personnel changes to the design team.</li> <li>&gt; The price may be exceeded if extra costs are requested or authorised by the client and the design quality is not protected or adequately detailed.</li> <li>&gt; Insufficient time allowed for tenderers to prepare quality designs that allow innovation and minimise risk allowances by finding appropriate alternative solutions.</li> </ul>

## ACTION TO BENEFIT GOOD DESIGN

- » **Support the client in seeking independent design advice to ensure that the ambition of design quality and performance criteria are appropriately embedded within the brief.**
- » **Encourage collaboration between the client and consortium.**
- » **Seek independent design review at key project milestones, e.g. brief, Concept Design and design development.**
- » **Ensure that the Client is capable in attracting and evaluating the tenderers to ensure high quality contractors and designers are selected.**
- » **Include non-negotiable deliverables in the brief to ensure quality and the delivery of key design features that have been signed off by the stakeholders.**
- » **Not recommended if the project is of special design interest or if there is uncertainty in the brief or in the desired outcomes of the client.**
- » **Require the completion of a Design Intent Document before finalising the contract and then ensure independent assessment of its achievement.**
- » **The Client needs to prepare clear, concise and well-documented performance and technical criteria for the project. These include criteria and objectives for durability, community standards, environmental standards, whole-of-life and any other significant issues.**

## CASE STUDY

### Craigieburn Bypass

#### PROJECT BACKGROUND

The Craigieburn Bypass sought to deliver a new freeway connection and gateway entry to Melbourne from the north. Taylor Cullity Lethlean (TCL) as lead consultant in collaboration with Tonkin Zulaikha Greer (TZG) and Robert Owen were engaged by VicRoads for this project via a design competition process. The project was designed to be experienced at a freeway speed of 110km per hour. It includes a series of sculptural sound walls, a pedestrian bridge and road bridges, crash barriers and retaining structures. The sound walls and road furniture stretch over a 32km stretch of freeway linking the Hume Highway with the Melbourne Ring Road. Artist and sculptor Robert Owen was involved in the concept design and modelling of all the elements. Two wall types were developed each distinctive and responding to their adjacent condition. The 'Curtain Wall' a long sinuous steel ribbon is fluid in its form, dynamic and experiential. The 'Scrim Wall' by contrast is located alongside a residential interface and is composed of patterned acrylic panels and repeated louvres.

Project: Craigieburn Bypass  
Architects: Taylor Cullity Lethlean, Tonkin Zulaikha Greer and Robert Owen  
Photographer: John Gollings



## CASE STUDY

### Craigieburn Bypass



#### PROCESS

In 2001, prior to the design-construct process an EOI was issued and four multi-disciplinary design teams were shortlisted. The successful teams then entered a paid competition process, similar to a Request for Proposal (RFP), to develop further the gateway and noise attenuation walls. In winning the commission TCL challenged the brief by linking the concepts of a 'gateway' and the 'sound wall' to create a single design proposition.

The design process in this instance was supported by detailed documentation required by VicRoads as part of the contract. Importantly, there was a five-month design development and documentation window prior to the project being tendered where the gateway design was detailed relative to the road design, which at that particular stage, was unfinished. This approach allowed for independent changes to the road design during the design and construct process without impacting the key gateway design elements, or its functionality.

#### KEY INITIATIVES ADOPTED TO PROTECT THE DESIGN QUALITY

- › A concise brief by VicRoads, as client with a clear design aspiration for the project.
- › A client who acted as the design champion to deliver a succinct brief, guide the design process and require complete documentation at design development prior to going to tender.
- › Use of specialist in-house design expertise within the client group to transfer industry specific design knowledge and guide the design process.
- › A client who had the foresight to set clear design parameters within the contract around what was negotiable and what was not.
- › A master plan approach that supported future opportunities to extend the length or increase the height of the sound walls.
- › An allowance for life cycle costing to the pedestrian bridge and sound wall.
- › Ensuring that the pedestrian bridge design was entirely engineered and detailed by VicRoads, as client, before handing over to builder for detailed design and construction. This avoided any buildability issues that may have led to a change to the original design through the design and construct process.
- › The design team were retained in an advisory role to the client VicRoads. This provided a level of quality control during construction.

## 5.2.2 Novation

Novation is a form of design construct. Novation relates to the transfer of the architect's contract with the client to the builder/head contractor after the design has reached an agreed stage – ideally, the conclusion of the design development stage. Once the contract and its terms have been 'novated,' the architect is responsible to the builder and no longer to the client, i.e. it is the client/architect agreement, which is novated to the builder. The builder is appointed after the submission of tenders based on a brief and preliminary design development documents.

The selection of a builder is made on the tender price, capability, capacity and the construction period. The architect and the other design consultants are initially contracted to the proprietor for the pre-design, Concept Design and the preliminary design development stages of the project. In some instances, this can extend to documentation. After the selection of the builder these consultants are then novated and become contracted to the builder. They are initially paid a fee for the first stages by the proprietor.

**The builder takes responsibility for:**

- » the completion of the documentation, depending on when the builder is appointed; and
- » the construction of the project generally for a Lump Sum fee or guaranteed maximum price.

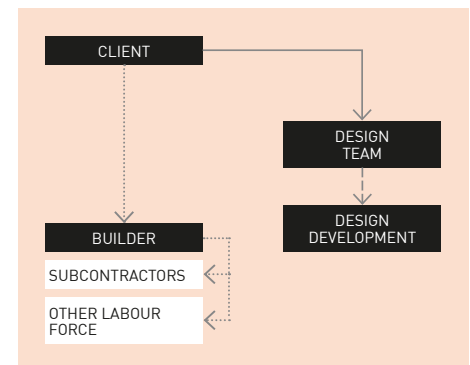
The level of documentation required before novation varies. As a minimum, it is recommended that the schematics and design development would be complete along with some part of contract documentation. A specification and preliminary schedules should also have been drafted, as is typical at the end of the design development phase. A key role of the architect is to coordinate the inputs of many disciplines. This role is compromised, if after being novated, the architect does not have visibility of the full or limited scope of services for all consultants. This transparency is required to identify what is and is not in scope for each consultant and identify conflicts and gaps between them.

By novation of the client-architect's contract to the builder, the client's architect is taken on by the builder at the time of the construction contract award without changes to the contract. The builder assumes full responsibility for the design, including payment of the designer's fees, and the architect no longer has direct contractual obligation to the client. However, the client bears a risk with respect to the detailed finish of the project and the level of quality, dependent upon the stage at which novation takes place. The project outcome, as per design and construct, generally depends upon how well the client's project requirements have been defined in the brief and/or request for proposal documents and the lines of communication between the client, builder and design team.

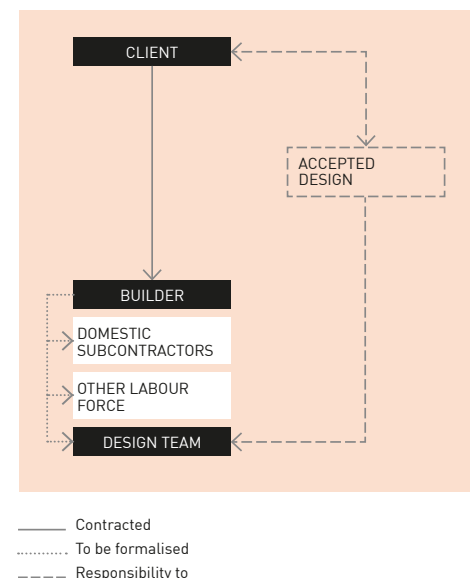
**Novation is considered appropriate where:**

- » the client requires more extended control of the design than design construct allows, but with minimum risk;
- » the builder is considered skilled enough to be responsible for the design documentation and construction;
- » the client requires competitive, comparable prices through tendering albeit in the first instance based on abbreviated documentation; and
- » the extent of works need to be fixed such that any variations to the construction contract are limited, post novation.

### PRE-NOVATION STAGE – CONTRACTUAL RELATIONSHIP



### POST-NOVATION STAGE



## NOVATION – IMPACT ON DESIGN

Strengths	Risks
<ul style="list-style-type: none"><li>&gt; When compared with D&amp;C, client maintains greater control during the preliminary design phase, particularly during Concept Design.</li><li>&gt; Design teams' initial contract with client can develop design to achieve the desired outcomes.</li><li>&gt; Design team continues as Design Champion and carries the history of strategic decisions prior to contractor engagement.</li><li>&gt; Head Contractor takes on responsibility at novation for the design documentation and construction, having won the tender. The client is then no longer responsible for design or documentation errors post contract award, however, the client bears a risk with respect to the detailed finish of the project and the level of quality, dependent upon the stage at which novation takes place.</li><li>&gt; Collaboration opportunities between design team and Head Contractor.</li><li>&gt; Detailed construction methods are tailored to the preferred systems of the contractor, resulting in enhanced time, cost and quality performance.</li><li>&gt; The contractor is given full access to the original designer, with a continuity of the designer's involvement.</li></ul>	<ul style="list-style-type: none"><li>&gt; Design teams' contractual obligation is transferred to contractors and removed from client, potentially compromising desired outcomes.</li><li>&gt; Subject to timing of novation, design quality can be compromised by Head Contractor using design changes to save costs. There is potential for client specification and requirements not to be clear enough to achieve the desired outcomes.</li><li>&gt; Potential lack of focus on lifecycle costs.</li><li>&gt; Does not provide for measurement or assessment of design outcome.</li><li>&gt; Unforeseen variations are required after novation due to changes to the scope of work or a change in authority requirements.</li><li>&gt; Post contract the level of risk to government/user is high if bids are contracted on loose and generalised documentation or at insufficient scales of detail.</li><li>&gt; There is limited opportunity for innovation by the contractor because of their late entry into the project.</li><li>&gt; Tenderers may include a contingency price to cover the risks associated with entering into a contract without having established a close working relationship and by having to adhere to, terms over which they had no input.</li><li>&gt; Potential lack of design team fees allocated to the post-novation phase.</li></ul>

**ACTION TO BENEFIT GOOD DESIGN**

- » Prior to novation, develop design at an appropriate level that allows you to go down the path of tendering for a D&C contract. Depending on scale and complexity, completion of construction documentation may be appropriate.
- » Ensure delivery of good design is a key criteria in the assessment of D&C tenders, including demonstrating previous works undertaken in similar contractual arrangements.
- » Ensure collaboration between all parties is preserved during the delivery of the project, in particular the client and design team.
- » Clearly communicate the intent to novate the design team prior to their appointment, so that the design team understands this arrangement, fees are clear and suitable design professionals are sought.
- » Engage an experienced project manager with a strong understanding of the need to deliver the design intent of the project.
- » Ensure there is a clean line of novation, outlining level of design development and documentation to be completed and agreed as part of the contractual arrangements.
- » Allow the design team opportunity to comment on proposed construction team tenderers based upon past performance and relationships.
- » Appoint the architect in advance of contractor and only novate the design team after the qualitative dimensions have been determined, including design intent and documentation.
- » Ensure adequate detail on documentation as part of the contract.
- » Ensure provision for independent design advice/assessment at key project milestones and allow sufficient time for the activities required by the consultant team.
- » Before and after novation, consultants should be involved in strategic decision-making processes at project control group (PCG) meetings and this should be written in the novation deed.
- » Prior to novation, ensure protocols and scope of service for product substitution is agreed.
- » Avoid renegotiation of the original terms of the consultancy (design team) agreement after novation.
- » The novation deed should provide a clean transfer of the consultant's liability from the principal to the head contractor.
- » Construction cost estimates and cost management processes should be visible and available to all parties to ensure the correct advice regarding value management and aligned with project outcomes.
- » Require the completion of a Design Intent Document before finalising the contract – and then ensuring independent assessment of its achievement and associated reward/penalty.
- » All consultants involved in the construction process should have free and unfettered access to the site to facilitate the appropriate level of observation envisaged within the consultancy agreements and should be part of the design and construct contract.

## CASE STUDY

### STATE LIBRARY VICTORIA, VISION 2020 REDEVELOPMENT

The Vision 2020 Redevelopment project significantly transformed State Library Victoria (SLV), one of Victoria's most important cultural institutions and Australia's oldest and busiest library. The scope included refurbishing the library's incomparable heritage spaces, creating innovative new spaces for children and teenagers, and, reinventing services to embrace new technologies and promote digital literacy. Overall, public space was increased by 40 per cent and seating by 70 per cent.

The ambitious \$88.1 million project was delivered in 2019 by Development Victoria (DV) on behalf of State Library Victoria and Creative Victoria (CV). The project was funded through a \$60.4 million grant from the Victorian Government and more than \$27.7 million raised through philanthropic support. The project client team (SLV and DV) developed an extensive written brief and tested the scope against the project budget. DV built into the design and delivery strategy multiple "holdpoints" for the project to realign scope, budget and programme and client signoff prior to proceeding to the next phase.

An open Expression of Interest (EOI) shortlisted four architectural practices to tender as lead consultant of a multi-disciplinary team through all project phases, with the knowledge that novation would occur in the later design phases. Architectus was selected as Lead Consultant and contracting entity and partnered with Danish based Schmidt Hammer Lassen as a sub-consultant alongside eight engineering and specialist design consultants. The construction contract was based on Development Victoria's standard two stage Managing Contractor contract,





## CASE STUDY

### STATE LIBRARY VICTORIA, VISION 2020 REDEVELOPMENT

which provides for novation of the architect and other consultants at the point of contract award. The Managing Contractor contract allows for a period of early contractor involvement, site investigation and further design development prior to agreement of a Warranted Maximum Price.

Construction was scheduled in multiple intricately managed stages over five years to allow the library to remain open throughout the construction period. The project was further complicated by the site being a campus of 26 connected buildings from different eras, spanning the 1850's through to the 1990's. Selection criteria for the Managing Contractor were not driven by price, but instead explored their ability to operate in a collaborative environment with both client, project manager and design team, as well as their track record of complex heritage refurbishments and delivery of projects in a live environment. Built was appointed as the Managing Contractor.

The contractor appointment and subsequent novation of the design team were timed to be after the project client team had agreed on the significant strategic design decisions, but sufficiently early to allow for constructability input from the Managing Contractor. This input was further informed by as much detailed invasive site investigation as was possible in a live operating environment.



#### KEY INITIATIVES ADOPTED TO PROTECT THE DESIGN QUALITY

- » The contractor tender occurred at 50% Design Development, allowing the Design Team time to adequately scope the works and establish quality benchmarks through fast-tracked documentation of some critical items. A full technical specification was produced as one of the tender documents.
- » A schedule of prototypes, samples and first completed examples formed part of the tender documents and the subsequent contract.
- » The novated design team remaining connected to the client and being included in key presentations and meetings. Monthly client reports also had a sparingly used 'whistleblower' clause to allow the architect to raise any matter they believed was not in accordance with design intent with the client.
- » Incentivising savings against the Warranted Maximum Price encouraged transparency around potential savings to be shared between the client and contractor, however sufficient mechanisms were embedded to ensure scope and quality were safeguarded.
- » A clear selection process for contractors fixed on the best qualifications, teams, methodology, company culture and experience level rather than the lowest cost.
- » The structure allowed for a collaborative environment which allowed for collective problem solving when the project team faced the inevitable challenges associated with such a complex project.



## CASE STUDY

### STATE LIBRARY VICTORIA, VISION 2020 REDEVELOPMENT

#### CONSTRAINTS

- » Heritage buildings with latent conditions that couldn't be destructively assessed during the design phases as they were still operational and open to the public.
- » Staged construction required to maximise ongoing operation of the library while ensuring public safety.
- » A busy constrained site with limited loading and staging areas.

#### WHAT WORKED WELL

- » **Rigorously testing the budget against scope prior to the Design Services tender, allowing conservative contingencies, and, meticulous cost planning through all project phases to ensure the project remained on budget.**
- » **Advanced design development of documentation with a full technical specification completed prior to novation with an extensive prototyping and samples schedule to safeguard scope and quality.**
- » **Collaboration between the Design Team and Contractor, with direct access to specialist subcontractors such as conservation painters and timber flooring contractors, to enable quick and effective problem solving and design resolution of unforeseen conditions on site.**

### 5.2.3 Public Private Partnerships

Public Private Partnerships projects (PPPs) are where the design team is one part of a bidding consortium (private) that bundles design, construction, finance and operational services into a single contract with Government (public) for the long-term.

A PPP is characterised by a design, development and services contract between the public and private sector where the Government pays the private sector to deliver infrastructure and related services over a specified period of time (typically 20-25 years). The private provider will not only build the facility but will also operate, service or maintain it to specified standards over a long period. The private provider usually also finances the project (as Government payments typically only commence once the infrastructure is complete and operating in accordance with contracted service levels). In recent PPPs, the government has also provided State capital contributions to complement the private financing at certain milestones. The private sector profits through various means, including the cost of capital that is passed onto Government, by efficiently managing the design, construction and operation phases and potentially developing a part of the site as a complementary adjacent property asset.

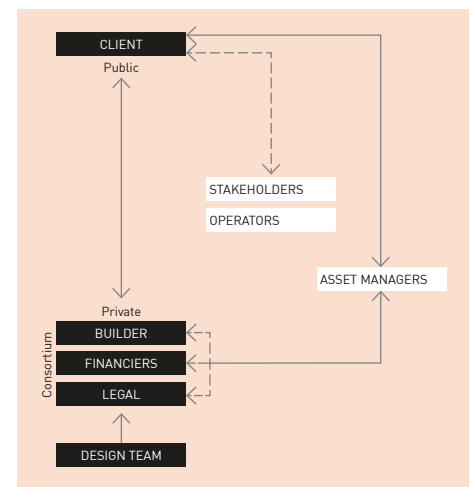
Some contracts may also include the obligation to fully operate the facility (for example a prison with a private operator).

**In a typical PPP project, the Government :**

- » prepares an output-based specification rather than a prescriptive specification;
- » commissions a Reference Design on which budget estimates are based (the Public Sector Comparator). The Output Specification is issued to bidders detailing the design and technical requirements (and therefore needs to be consistent with the Reference Design assumptions), against which bids are assessed;
- » engages the provider to deliver services over a long-term, e.g. 20 to 35 years or more;
- » requires the provider to design, build, finance, maintain and in some instances operate the facility. The private party may also provide ancillary services including cleaning, security, facilities management, catering etc (or some combination of those functions) and takes the risk for the performance of these functions;
- » typically makes no payments to the provider before the facility has commenced operations;
- » provides payments over the term of the contract based on services delivered against the achievement of key performance indicators, ensuring the infrastructure is maintained over its lifetime; and
- » eventually takes back the infrastructure/asset, operations, maintenance and ancillary services obligations of the asset at the end of the contract term, such that the private party's involvement ceases.

The State is typically seeking the whole-of-life innovation and efficiencies that the private sector can deliver in the design, construction and operating phases of the project. The State becomes a purchaser of asset-based services that are paid for according to their performance. The State allocates certain risks to the private party, locks in whole-of-life budgets and quality standards, and facilitates focus on its core business. By specifying measurable outputs, rather than inputs, the State invites the private sector to deliver the service in innovative ways and create efficiencies. The Interactive Tender Process (ITP) conducted during the RFP phase of the tender, allows State to give feedback to the bidders regarding their design, and also allows the bidders to clarify any ambiguity.

#### PRIVATE PUBLIC PARTNERSHIPS



— Contractual relationship  
 - - - Working relationship

A PPP is considered appropriate from a design perspective:

- » where the project is of sufficient scale;
- » where there is a need to consider a competitive environment to promote innovative solutions;
- » where outputs are measurable (and therefore an input-based specification can be avoided);
- » when there is a desire to create a collaborative relationship between the design team, the builder, the operator and the facilities manager;
- » when there is support to give sufficient weighting to design in the evaluation process;
- » where the private sector would be better placed to manage a considerable proportion of the project risks;
- » where there is a need to consider the whole-of-life costs and for this to be the responsibility of the private sector partner.

**PUBLIC PRIVATE PARTNERSHIPS – IMPACT ON DESIGN**

Strengths	Risks
<ul style="list-style-type: none"> <li>&gt; Design proposals can be part of the assessment process and bring together an integrated supply team from the earliest stages of the design process.</li> <li>&gt; Interactive Tender Process (ITP) between the Government and private consortia (conducted during the RFP phase in advance of bid submission) ensures that feedback is sought/given so as to minimise the risk that the private sector misinterprets the output specification.</li> <li>&gt; Government and bidders' interests (including design optimisation) are aligned, since the successful bidder will be responsible for providing ancillary long-term services, often alongside the Government which is providing the core services or operations within the facility</li> <li>&gt; Client is given the choice between different design approaches of respective consortia.</li> <li>&gt; Places a greater emphasis on the whole-of-life costs as a part of the design process. Penalties defined within PPP contracts provide commercial incentive to perform.</li> <li>&gt; Design risk rests with the private party (including Fitness For Purpose risk).</li> <li>&gt; Can offer the prospect of better value for money over the full life cycle by integrating, under the responsibility of a single consortium, upfront design and construction costs with on-going service delivery, operational, maintenance and refurbishment costs.</li> <li>&gt; Provides opportunities and incentives for innovative solutions in the delivery of service requirements.</li> <li>&gt; Innovation is embedded as private sector PPP consortia will want to use the latest, but tested, best practices for undertaking their project and reducing operational costs.</li> <li>&gt; Capital costs reduced. Where possible, contractors will ensure that facilities are not over-engineered and to provide value for money under a competitive bid process. Contractors will encourage building is fit for purpose and ensure that appropriate maintenance regimes are in place.</li> <li>&gt; Commercial and operational efficiency, where the private sector will deliver facilities as planned, on time (or ahead of schedule) and to budget. Private sector is focused on ensuring minimal waste of time, materials and labour.</li> <li>&gt; Facilities are operated and maintained to levels that are clearly defined by contract.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; The State may not get the best design team due to the commercial offer preferencing a particular consortium.</li> <li>&gt; The Reference Design is a 'point-in-time' estimate. Care must be taken to ensure the design brief is consistent with the quality proposed in the Reference Design.</li> <li>&gt; Failure to include lifecycle and handback clauses that ensure that quality is protected. For example, when materials and products reach maximum warranty period at the time the client is taking ownership or 5 years prior to handback.</li> <li>&gt; Inadequate specification detail from the State's design team or time during the Interactive Tender Process.</li> <li>&gt; The time and cost required may limit the pool of design teams with the resources and finances to offer a bid.</li> <li>&gt; Lack of client expertise to appropriately monitor design quality throughout the design and construction stages.</li> <li>&gt; Transparency of costs can be difficult to establish given the complexity and commercial nature of PPP arrangements that may impact design.</li> <li>&gt; Strong relationships are required between government agencies and consortium parties to produce effective partnerships.</li> </ul>

**ACTION TO BENEFIT GOOD DESIGN**

- » Ensure there is a clear, well articulated vision for the project that includes expectations in relation to design / architectural quality.
- » Establish, before the bidding process, a detailed and robust Reference Design that has been developed through a close working relationship between the client and an architect.
- » Ensure that the Output Specification is aligned with the Reference Design in terms of design quality (i.e. so that the output requirements can be delivered for the PSC).
- » Place emphasis on design quality in the initial briefing and Request for Proposal documentation.
- » Allow adequate time for the Interactive Tender Workshops during the RFP phase, with appropriate involvement from the Design Quality Review Team.
- » Ensure that the bidding process is not rushed, allowing sufficient time between the selection of the preferred bidder and financial close to negotiate excellent design outcomes.
- » Ensure that the output specification documents emphasise to the bidding teams the importance of engaging expert design architects.
- » Require an appropriately detailed set of drawings and documents as part of the bid submissions, to assist in evaluation and to enable the client to understand what levels of quality, functionality and performance is promised to be delivered.
- » Ensure a mechanism for end-user input into the briefing process and into any options-testing or Interactive Tender Workshops that may be undertaken in the bidding process.

## CASE STUDY

### ROYAL CHILDREN'S HOSPITAL, PARKVILLE

This project was delivered under a PPP procurement model. In this model, the architectural team's client was the contractor, Bovis Lend Lease. The Children's Health Partnership was the winning consortium that included international public partnerships as equity holders, Bovis Lend Lease as builder, Spotless Group as facilities manager and architects Billard Leece, Bates Smart and HKS (US).

The Royal Children's Hospital is broadly a two-stage project. The 1st stage (greenfield component) includes the construction of the new hospital and was completed in November 2011. The 2nd stage involves demolition of much of the old hospital, construction of additional commercial elements, and the reinstatement of most of the former site as parkland. The following section relates primarily to the 1st stage.

The design and procurement processes were staged and aligned to ensure effective consultation and agreement prior to construction of each major package. User groups were assembled for some 80 departments (to resolve primarily functional issues), and reference groups established for whole of facility issues such as logistics and ITC. Design and procurement teams were also assembled for development of the façade and public places, interior design and base building documentation. Upon award of the contract, the construction team immediately took possession of the site to commence construction of the basements and north building packages.



## CASE STUDY

### ROYAL CHILDREN'S HOSPITAL, PARKVILLE

#### KEY INITIATIVES ADOPTED TO PROTECT THE DESIGN QUALITY

- » The involvement of state's advisers/peer review and the OVGA.
- » The preparation of design strategies up front, which could be fully scoped and measured and included in the capital cost.
- » The preparation of concept sketches and renderings for interiors, which illustrated the design intent and quality.

#### CONSTRAINTS

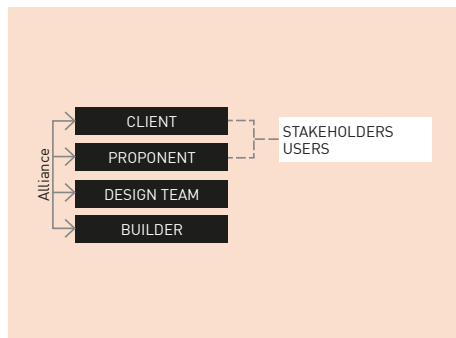
- » The Department of Health's guidelines were of benefit for describing generally compliant solutions, however, innovation beyond these was sometimes perceived as risky.

#### WHAT WORKED WELL

- » The vision components of the briefing documents remained a focus for the design team to ensure the aspirations were met.
- » The determination of all parties to ensure a quality outcome to an iconic institution.
- » The integration of artwork with the design and the inclusion of community partnerships (such as the zoo and the aquarium) added a level of design richness.
- » The master plan and expansion strategy was well considered and ensured a level of flexibility to accommodate change during the design process.
- » Cores and structural grid were locked in early to allow an early start on site while detailed design progressed.



ALLIANCE



—— Contractual relationship  
- - - Working relationship

Project alliancing has evolved from partnering, and is sometimes called strategic partnering. The main difference between 'alliancing' and 'partnering' is the introduction of risk and reward, based on the performance of the alliance team, usually comprising the major consultants, contractors and owner.

Project alliancing has been used for major infrastructure and mining projects, but is relatively untried in the Australian building industry, although it has been used for the National Museum of Australia in Canberra and the Hamer Hall redevelopment in Melbourne.'

Acumen AIA Practice Services

## 5.2.4 Project Alliance

Alliance, as a procurement method, originated in the 1990s from engineering projects and therefore requires considerable modification to be applicable on complex architectural design projects.

The two Alliance models that have emerged include:

1. A 'Project Alliance', which is generally formed for a single project, after which the team is disbanded. For example, Wandoo Offshore Oil Platform Western Australia, Hamer Hall Melbourne and National Museum of Australia in Canberra
2. A 'Program Alliance', which incorporates multiple projects under an alliance framework, where the specific number, scope, duration and budgets of projects may be unknown and the same. For example, Level Crossing Removal Authority project.

Under an alliance contract, a state agency (the 'Client') works collaboratively with private sector parties ('non-owner participants') to deliver the project.

Alliancing is aimed at creating mutually beneficial relationships between all involved parties. An agency's decision to use alliance contracting to deliver a project requires a strategic procurement analysis to be undertaken, and a good understanding of the delivery method that is most likely to best deliver value for money against business case objectives. It incorporates a legal agreement between all major participants, including the client, which sets out joint risk/reward arrangements. The alliance methodology allows such risks to be worked through collaboratively as the project develops.<sup>17</sup>

In principle, the design team, the client and the contractors are working together in good faith, acting with integrity and making best-for-project decisions. The Risk or Reward Regime is developed from and with reference to the client's specific project objectives, minimum conditions of satisfaction and cost and non-cost key result areas. All key result areas, such as timelines, budget performance, design quality and stakeholder satisfaction, are set out in the Alliance Agreement to encourage and reward exceptional performance (if required by the Owner), address poor performance, align the private sector participants' commercial interests with the client's project objectives and drive the private sector participants to meet their behavioural commitments.

In principle, the Alliance contract seeks to promote a positive culture based on "no-fault, no-blame" and unanimous decision-making. As the behavioural culture is crucial to the success of alliancing, the selection of the right team is paramount.



**Project Alliancing is generally considered appropriate:**

- » in the delivery of complex and high-risk high-value infrastructure projects;
- » the Owner has embedded knowledge, skills, preference and capacity to influence or participate in the development and delivery of the project;
- » urgent project start is required where the solution is unclear;
- » where a high level of innovation is required;
- » where risks are unpredictable and best managed collectively or too costly to transfer;
- » if the client can appoint senior executives to represent and manage its interests in relation to other participants and the alliance contract;
- » if the client is able to be closely involved, has sufficient internal resources and can add value; and
- » where there is a diverse and demanding range of stakeholders.

**PROJECT ALLIANCE - IMPACT ON DESIGN**

Strengths	Risks
<ul style="list-style-type: none"> <li>&gt; Supports a collaborative culture capable of delivering outstanding design results;</li> <li>&gt; Avoids dispute culture between designer, contractor and a Principal/ Client and greater potential for win/win outcomes; and</li> <li>&gt; Provides flexibility to modify design and allows on-going changes to be incorporated during construction.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Success highly dependent on getting the best skilled consultants and contractor, clear project objectives and lines of responsibility that are defined in the contractual agreement;</li> <li>&gt; Over emphasis on commercial incentives at the expense of design quality;</li> <li>&gt; Client not able to properly and clearly articulate the project design objectives/ requirements that align to the approved business case;</li> <li>&gt; Incentives to perform are limited and there is a tendency to incur cost overruns once the incentives are diminished;</li> <li>&gt; Failure to fully consider lifecycle or long-term servicing costs; and</li> <li>&gt; Failure to include design quality as a KPI and to correctly weight.</li> </ul>

#### **ACTION TO BENEFIT GOOD DESIGN**

- » **Ensure that the Project Alliance supports a collaborative environment.**
- » **Ensure that the project team shares the same high expectations of design quality outcomes using Key Result Areas (KRAs) and performance measurement.**
- » **Seek design advice from the Office of Victorian Government Architect when developing the tender documents.**
- » **Ensure a process that formalises design review workshops during development of the Target Outturn Cost (TOC).**
- » **Ensure provision for independent design advice (Design Quality Team) or design review at key project milestones and link that into the performance regime.**
- » **Ensure an equitable balance of risk/reward for all involved parties.**
- » **Decide upon the design KRAs early in the process and ensure they are well communicated.**
- » **Allow adequate time to develop the brief.**
- » **Choose the design team early in the project.**
- » **Consult the design team about the building program, selection of builder and establishing the design deliverables.**
- » **Ensure the culture of the alliance facilitates a high level of mutual respect and trust between members of the team.**
- » **Ensure that qualitative outcomes are measured during the project and inform future projects.**

All departments and agencies which are planning alliance contracting are required to comply with the Government Alliancing policy, published as the National Alliance Contracting Guidelines (September 2015). The Guidelines promote knowledge, best practice, and give rise to cost savings by creating a consistent national alliance contracting standard, whilst ensuring the existing benefits of alliancing around the Nation are maintained.

## CASE STUDY

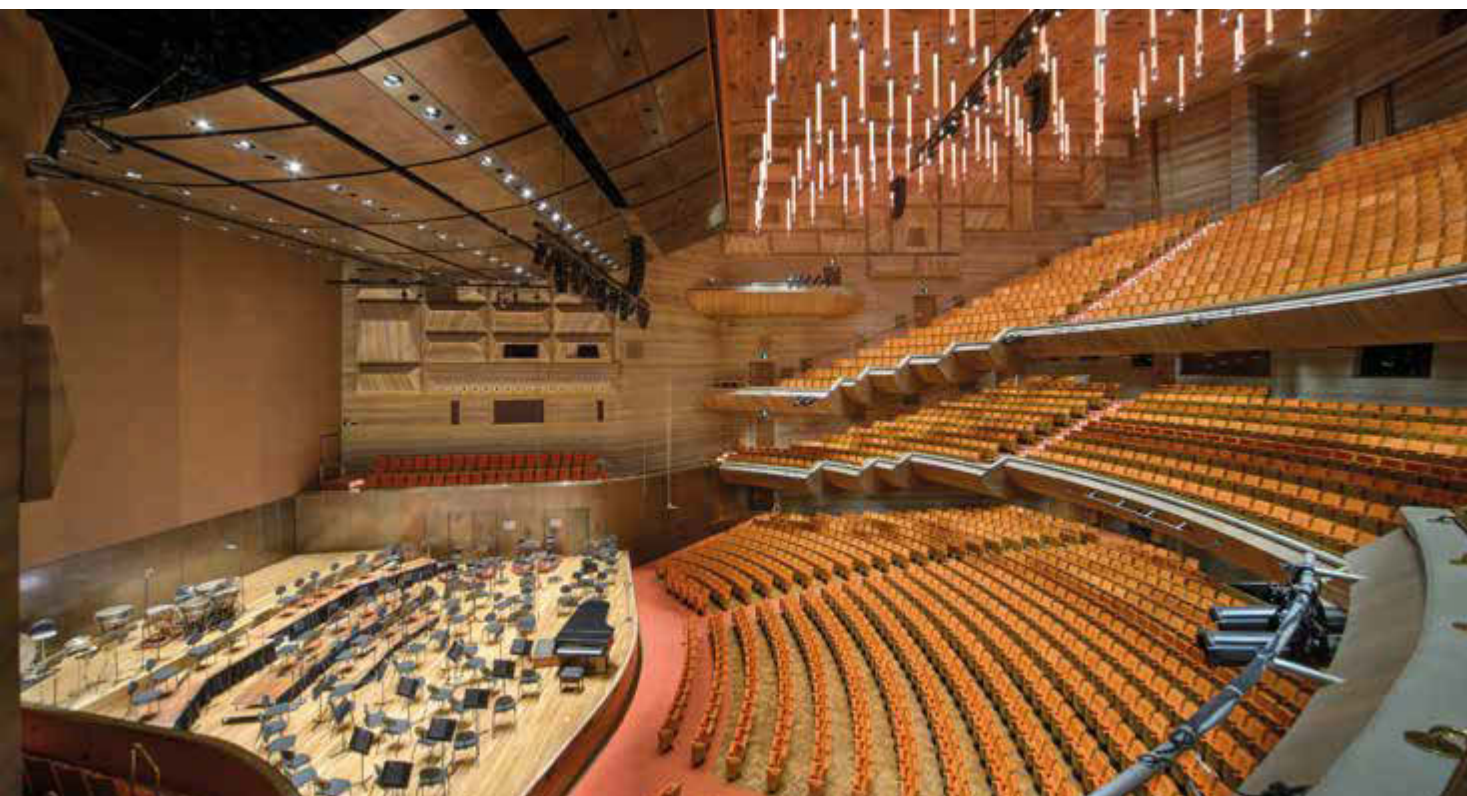
### HAMER HALL REDEVELOPMENT, SOUTHBANK CULTURAL PRECINCT

The Hamer Hall redevelopment was a four-year, \$135.8 million Victorian Government project that revitalised the 30-year-old hall and created:

- » new connections with the city, St Kilda Road and the Yarra River
- » better amenities with new stairs, improved disability access, escalators and lifts
- » new and expanded foyer spaces
- » improved acoustics, new auditorium seating, cutting edge staging systems and technology.

The redevelopment of Hamer Hall was an alliance between Arts Centre Melbourne, the architects ARM, the builder Baulderstone and the Victorian government (through Major Projects Victoria and Arts Victoria), with risk and reward shared between project participants. According to Architect Ian McDougall, "in an alliance there is no client – the alliance is the client".

The government's decision to use an alliance instead of a traditional building contract reflected the inherent project complexities: "fast-track redevelopment of an existing heritage building located on a severely access-constrained site", according to Tony Murphy, Arts Centre Project director and chair of the alliance leadership team. In addition, there were contamination issues for the site, operational issues for the Arts Centre, and the need to deliver the project on time due to future programming for the venue.



## CASE STUDY

### HAMER HALL REDEVELOPMENT, SOUTHBANK CULTURAL PRECINCT



#### SUMMARY OF THE KEY INITIATIVES WITHIN THE ALLIANCE APPROACH THAT HELPED PROTECT THE DESIGN INTENT

- » The selection process for the architects' appointment was very important. It was a Quality Based Selection (QBS) process, but a very time intensive one that additionally involved workshops with the short listed proponents aimed at establishing the design team that was the best fit for the project.
- » The architect was a full Alliance partner, and therefore represented on both the alliance leadership team and the alliance management team – this is critical.
- » The design team was collocated with the rest of the alliance in the project office.
- » There was a number of KRA's built into the alliance agreement that were design based, and importantly were of comparable weighting to the commercial and operational KRA's. The inclusion of the design based KRA's also required the appointment of a design panel to provide independent assessment of the design KRA's, which is a positive strategy for the protection of design intent.
- » The alliance structure provides early and direct access to the construction team, including to key sub-contractors. This is an important assistance to working out what can actually be delivered while maintaining design intent – it is much harder to sort this balance out on the other side of a signed contract if it is not fully defined and achievable as documented – which it often isn't, especially in existing buildings, or with unusual design and material solutions.

#### CONSTRAINTS

- » Alliance, as a procurement method, originates from engineering projects and therefore requires considerable modification to be applicable on complex architectural design projects.
- » Establish KRAs early in the project to offer certainty to the alliance.
- » Establish the scope against the revised budget to establish the TOC.

#### WHAT WORKED WELL

- » **An alliance gets everyone "at the table" and allows the user to interrogate the brief.**
- » **The selection of the design teams through an EOI process.**
- » **As a test case for alliance, it delivered value-for-money and exceptional outcomes.**

## 5.2.5 Program Alliance

A Program Alliance aims to create mutually beneficial relationships between all involved parties and requires an effective team culture to ensure benefits are optimised. An agency's decision to use alliance contracting to deliver a project requires a Strategic Procurement Analysis to be undertaken, and a good understanding of the delivery method that is most likely to best deliver value for money against business case objectives. It incorporates a legal agreement between all major participants, including the client, which sets out joint risk/reward arrangements. The Program Alliance methodology can allow such risks to be worked through collaboratively as the project develops.

In principle, the design team, the client and the contractors are working together in good faith, acting with integrity and making best-for-project decisions. The Risk or Reward Regime is developed from and with reference to the client's specific project objectives, minimum conditions of satisfaction and cost and non-cost key result areas. Key result areas (KRAs), such as time, cost, quality of design outcomes and stakeholder satisfaction, are set out in the Program Alliance Agreement. The intent of the Agreement is to encourage and reward exceptional performance, address poor performance, align the private sector participants' commercial interests with the client's project objectives and drive the private sector participants behaviour.

The Program Alliance Agreement seeks to promote a positive culture based on "no-fault, no-blame" and unanimous decision-making. As the behavioural culture is crucial to the success of alliancing, the selection of the right team is paramount.

Program Alliances are usually longer-term arrangements, in the order of 5-10 years and for projects greater than \$50m. A Program Alliance can be effectively a pre-qualified panel of potential alliancing parties that the Project Owner establishes so it can expeditiously and conveniently select and form an alliance for a specific project or for a package of related works. Through a pipeline of works, a Program Alliance presents the opportunity for continuous improvement and innovation from project to project. It is critical that all the lessons learned are effectively captured and applied to the next project and information is disseminated across the program. The continuous improvement process should build upon all stages of the project including, for example, innovation in processes, design, prefabrication, construction, materials and detailing.

Under the Program Alliance model, if the works are completed to the satisfaction of pre agreed performance criteria, the successful Alliance team may be invited to participate in further works nominated in the pipeline.

**Program Alliancing is generally considered appropriate:**

- » in the delivery of complex and high-risk high-value infrastructure projects;
- » where the Project Owner has embedded knowledge, skills, capacity to influence or participate in the development and delivery of the project;
- » where the Project Owner requires additional skills and resources in order to advance the project, particularly in defining, mitigating and allocating project risks;
- » where there is a pipeline of works;
- » when a project start is urgent;
- » where a high level of innovation is required;
- » where risks are unpredictable and best managed collectively or too costly to transfer;
- » where there is a diverse and demanding range of stakeholders; and
- » if there is a commitment to capture innovations and continuous improvements from project to project.

**PROGRAM ALLIANCE - IMPACT ON DESIGN**

Strengths	Risks
<ul style="list-style-type: none"><li>&gt; Supports a collaborative culture capable of delivering outstanding design results;</li><li>&gt; Avoids dispute culture between design team, contractor and a Project Owner and greater potential for win/win outcomes;</li><li>&gt; Continuous improvement through project delivery;</li><li>&gt; Provides flexibility to modify design and allows on-going changes to be incorporated during construction;</li><li>&gt; Opportunity to create a strong multi-disciplinary and collaborative design environment;</li><li>&gt; Flexibility to develop design options and advance risk mitigations, including engagement with key stakeholders and the community, prior to any commitment to the project.</li></ul>	<ul style="list-style-type: none"><li>&gt; Success highly dependent on getting the most appropriately skilled consultants and contractor, clear project objectives and lines of responsibility that are defined in the Program Alliance Agreement (PAA) and subsequent Annexures;</li><li>&gt; Failure to consider designated KRAs for urban design and correctly weight design quality;</li><li>&gt; Limited opportunity to influence short list of preferred urban designers, architects and landscape architects;</li><li>&gt; Need to actively engage designers to maintain design quality and detail through on-site design changes during construction;</li><li>&gt; Often insufficient time for designers to develop a robust reference design during the TOC period to ensure that the project ambition can be achieved and appropriately scoped;</li><li>&gt; Limited ability to improve design quality post contract award;</li><li>&gt; Failure to fully consider lifecycle and sustainability costs;</li><li>&gt; Lack of commitment to consider urban renewal opportunities in an integrated manner.</li></ul>



**ACTION TO BENEFIT GOOD DESIGN**

- » Ensure that the Program Alliance supports a collaborative and multi-disciplinary design environment.
- » Ensure that the project team shares the same high expectations of design quality outcomes using Key Result Areas (KRAs) and performance measurement.
- » Engage appropriately skilled urban design, architectural and landscape architectural expertise to closely collaborate with the design and construction teams to deliver high quality, integrated design outcomes.
- » Ensure the design team/architect are appropriately represented in key design decisions as part of the Alliance Leadership Team and/or the Alliance Management Team.
- » Seek early engagement with the OVGA during business case planning and throughout the program lifecycle to embed a rigorous design review process.
- » Establish a consistent, expert design review model (Urban Design Advisory Panel or Design Quality Team) that provides independent design review and advice at regular project milestones linked to the performance regime.
- » Ensure the program of works are adequately aligned with the State's ambition for delivering and supporting high quality built form and public realm outcomes.
- » Consider incentivising the Program Alliance to ensure that desired design intent, built outcomes and quality are achieved and community benefits are fully realised.
- » Ensure an equitable balance of risk/reward for all involved parties.
- » Articulate the urban design KRAs early in the process and ensure they are well communicated.
- » Provide a realistic contingency that covers both design and construction.
- » Ensure the culture of the alliance facilitates a high level of mutual respect and trust between members of the team.
- » Ensure that qualitative urban design outcomes are measured across the program to inform future projects.
- » Ensure lessons learnt are effectively captured during the planning, design and construction lifecycle and then applied across the program and more broadly across industry.

## CASE STUDY

### SOUTHERN PROGRAM ALLIANCE LEVEL CROSSING REMOVAL PROJECT

The Level Crossing Removal Projects' (LXRP) Southern Program Alliance (SPA) was formed, following a competitive tender process, to remove level crossings along the Frankston train line. As part of the Alliance's Initial Works Package (IWP), SPA designed and delivered:

- » The removal of three level crossings at Station Street and Eel Race Road, Carrum and Seaford Road, Seaford.
- » A well resolved urban design response with a strong coastal corridor identity.
- » High quality train station and platform environments exploiting local views and improving the public transport experience
- » New recreational and civic spaces below the elevated rail providing better connectivity and improved public realm for the community and public transport users
- » Revitalisation of Carrum's local community and business activity centre through good station precinct planning, introducing high quality facilities and improved access between the station, town centre and foreshore.
- » Extensive integrated landscape works along the rail corridor and in the vicinity of Seaford Rd level crossing, including upgrading of RF Miles reserve
- » 10km of new linear shared paths along the corridor from Patterson River to Kananook Station.
- » Integrated Indigenous cultural motifs into the Karrum Karrum bridge and yarning circle as a welcoming space for Traditional Owners to meet, gather and exchange cultural practices and values.

Project: Level Crossing Removal Project, Carrum  
Architects: Cox Architecture  
Landscape Architect: Rush Wright + Associates  
Photography: Peter Clarke





## CASE STUDY

### SOUTHERN PROGRAM ALLIANCE LEVEL CROSSING REMOVAL PROJECT

The Project was delivered as part of a Program Alliance between the State of Victoria (Level Crossing Removal Project) and the SPA. As part of the Alliance, Cox Architecture collaborated with Rush Wright + Associates to deliver on the urban design, station architecture, public realm, landscape and path networks along the corridor.

A Program Alliance was adopted as the most appropriate procurement model given the complexities of the \$500+million program of works involving the construction of elevated rail alongside live rail, realignment of a major arterial road close to residents and businesses in a sensitive coastal environment. Following the successful design and delivery of this package of works, the Southern Program Alliance have been engaged to deliver several Additional Works Packages (AWPs) now under construction.

#### **SUMMARY OF THE KEY INITIATIVES WITHIN THE ALLIANCE APPROACH THAT ASSISTED IN DELIVERING THE DESIGN INTENT:**

- » A rigorous competitive tender process at the outset involving interactive workshops with proponent teams to develop proposals for the State's thorough (Project Owner) assessment on a preferred design solution.
- » The competitive tender process allowed the State to fully appreciate the scope and complexity of works and better understand the associated risks and costs of these works
- » Regular and open engagement and design review with the Urban Design Advisory Panel (UDAP) to ensure a contextually integrated design solution was achieved and design quality was maintained.
- » Co-location of the architectural and landscape architectural design teams with the engineering teams led to a close collaboration in a multidisciplinary environment.
- » Early collaboration of the urban design team with the engineering and construction team to influence key design decisions including:
  - horizontal and vertical geometry of the rail alignment
  - the siting, design and integration of the station and corridor design elements with the surrounding urban fabric
  - increasing the extent and quality of open space below the viaduct
  - minimising impacts on adjacent residents and significant vegetation
  - improved connectivity with walking and cycling prioritised throughout the station precinct and along the rail corridor

#### **CONSTRAINTS**

- » The Alliance, as the Superintendent of the contract, can formally sign-off on hold points for construction activities without urban design involvement. This has potential negative impacts on the quality of architectural and landscape outcomes through the construction phase. For this IWP, this constraint was well managed by the Alliance.
- » Coordination and agreement between the Alliance and local government as the ultimate asset owners, specifically for the maintenance of public realm areas and open space, continues to prove a challenging process. Again, this constraint was well managed by the Alliance.

## CASE STUDY

### SOUTHERN PROGRAM ALLIANCE LEVEL CROSSING REMOVAL PROJECT

#### WHAT WORKED WELL

- » The Program Alliance model provides an environment for all design teams to function in an open, collaborative, multidisciplinary design environment.
- » The Program Alliance model fostered an open and collaborative engagement with the Urban Design Advisory Panel through regular forums during the intensive design stages of the project.
- » The Program Alliance model provides flexibility to engage with the urban design team to address any changes to the scope of works during the design process.
- » A rigorous selection criteria and competitive tender process ensured the preferred design solution and team were awarded the contract for the IWP.
- » For a major transport project that traversed a sensitive coastal setting, with potentially significant impacts on the local community, the Alliance model was able to deliver a positive and high quality design outcome for the station precinct and corridor.



Accessibility

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