

Building and Construction Procurement Guide Principles and Options



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Abstract: The *Building and Construction Procurement Guide – Principles and Options* ('the Guide') consolidates current jurisdiction-specific approaches to procurement and contracting of civil (road and bridge) and non-residential building works and services into a single overarching framework.

The Guide defines a series of methods, processes and principles that have been designed to reduce inconsistency in member agencies' approaches to procurement and contracting, and responds to a variety of issues raised by industry.

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Project Manager

Peter Bamford, Roads and Maritime Services NSW

Prepared by

Elisa Casey ARRB Group Ltd and Peter Bamford, NSW Roads and Maritime Services

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Published by Austrroads Ltd
Level 9 Robell House
287 Elizabeth Street
Sydney NSW 2000 Australia
Phone: +61 2 9264 7088
Fax: +61 2 9264 1657
Email: austrroads@austrroads.com.au
www.austrroads.com.au

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Austroads

Austroads purpose is to:

- promote improved Australian and New Zealand transport outcomes
- provide expert input to national policy development on road and road transport issues
- promote improved practice and capability by road agencies
- promote consistency in road and road agency operations.

Austroads Membership

Austroads membership comprises the six state and two territory road transport and traffic authorities, the Commonwealth Department of Infrastructure and Regional Development, the Australian Local Government Association, and NZ Transport Agency. Austroads is governed by a Board consisting of the chief executive officer (or an alternative senior executive officer) of each of its eleven member organisations:

- Roads and Maritime Services, New South Wales
- Roads Corporation, Victoria (VicRoads)
- Department of Transport and Main Roads, Queensland
- Main Roads Western Australia
- Department of Planning, Transport and Infrastructure, South Australia
- Department of Infrastructure, Energy and Resources, Tasmania
- Department of Transport, Northern Territory
- Department of Territory and Municipal Services, Australian Capital Territory
- Commonwealth Department of Infrastructure and Regional Development
- Australian Local Government Association
- New Zealand Transport Agency.

The success of Austroads is derived from the collaboration of member organisations and others in the road industry. It aims to be the Australasian leader in providing high quality information, advice and fostering research in the road sector.

Australasian Procurement and Construction Council

The Australasian Procurement and Construction Council Inc (APCC) is the peak body whose members are responsible for procurement, construction and asset management policy for the Australian, State and Territory Governments and the New Zealand Government. Papua New Guinea is an associate member. The APCC is made up of 14 member agencies.

Over the last 35 years, the APCC has established itself as a leader in government procurement. It has championed innovation and harnessed the benefits of nationally consistent approaches for its members. Through the collective expertise and open exchange of information between individual members, the APCC is at the forefront of developing strategies and directions that balance the complex and divergent procurement imperatives.

The work of the APCC is directed towards procurement and construction innovation, solutions and efficiencies which can create savings and maximise service delivery to the communities of Australia, New Zealand and Papua New Guinea.

APCC Membership

- Department of Finance and Services, New South Wales
- Department of Finance, Western Australia
- Department of Treasury, Western Australia
- Department of Planning, Transport and Infrastructure, South Australia
- Department of Treasury and Finance, South Australia
- Ministry of Business, Innovation and Employment, New Zealand
- Department of Treasury and Finance, Victoria
- Department of Housing and Public Works, Queensland
- Australian Department of Finance and Deregulation
- Australian Defence Materiel Organisation
- Department of Business, Northern Territory
- Department of Infrastructure, Northern Territory
- Commerce and Works Directorate, Australian Capital Territory
- Central Supply and Tenders Board, Papua New Guinea.

Foreword by Austroads and the APCC

Austrroads and the Australasian Procurement and Construction Council (APCC) are pleased to support the release of the *Building and Construction Procurement Guide – Principles and Options*. This Guide has been custom-designed for use by Australian state and territory agencies in the civil (road and bridge) and non-residential building sectors. Representatives from industry and all relevant member agencies provided input into its content.

While our two sectors operate in different landscapes, and each has its own unique issues to manage, there are also many common challenges that can be overcome by working collaboratively. By coming together to develop the Guide, Austrroads and the APCC have clearly demonstrated the level of progress toward harmonisation and problem-solving that can be achieved through goodwill and cooperation.

The Guide will help project owners to develop procurement strategies that respond to the needs of individual projects. While some member agencies already have guidelines available on this topic, there are certain divergences in approach. The Guide addresses this by harmonising terminology, methods and processes currently in use to create an overarching framework for the assessment of procurement options and development of procurement strategies that can be added onto as appropriate to ensure that any unique jurisdictional and national requirements are met.

The Guide specifically responds to a range of issues raised by industry regarding member agencies' procurement practices and risk allocation in contracts. It includes a range of agreed principles that tackle some of the most difficult topics in the tendering and contracting spheres such as warranties, indemnities, insurances and intellectual property. The principles recognise that while member agencies will continue to use different forms of contract and follow different procurement processes, there are some fundamental doctrines that can be applied to key issues to ensure a reasonably consistent approach across our two sectors. This, in turn, provides a greater level of certainty to industry and will help drive down the cost of tendering.

The Guide also provides summary information regarding recent developments around the use of interactive and collaborative procurement processes and project techniques such as building information modelling. This recognises the raft of positive outcomes that can be achieved by fostering positive relationships with industry and building provision for teamwork into contracts including improved efficiency, decreased disputes and practical, progressive learnings that can be applied to future projects. This section of the Guide is likely to be expanded in the future as more agencies adopt these techniques and document experiences that can be shared with others.

We thank member agencies for their involvement in the development of this Guide and welcome further input from agencies and industry in future Guide reviews and updates as we continue along the path toward greater harmonisation and consistency across the two important sectors we represent.



Andrew Milazzo
Chairperson
Austrroads



Rod Hook
Chair
APCC Council

Summary

Austrroads and the Australasian Procurement and Construction Council have developed this *Building and Construction Procurement Guide – Principles and Options* ('the Guide') to consolidate current jurisdiction specific approaches to procurement and contracting of civil (road and bridge) and non-residential building works and services into a single overarching framework.

The Guide, which has been prepared in response to a request from the Council of Australian Governments' Infrastructure Working Group, builds on existing documentation – including national guidelines and key jurisdictional documents – by merging common aspects and addressing gap areas to define a series of methods, processes and principles recommended for use by member agencies. These methods, processes and principles are focused on reducing current inconsistencies in member agencies' practices and responding to a variety of issues raised by industry, particularly with respect to contractual risk allocation.

Specifically, the Guide includes:

- a range of procurement options for member agency project owners to consider, to support the delivery of specific projects
- profiles of relevant delivery models (e.g. construct only, alliance etc.) and associated forms of contract, together with details of typical procurement processes
- a recommended process for the development of procurement strategies for individual projects adapted from the *National public private partnership policy and guidelines* (Infrastructure Australia 2008), and also broadly consistent with the *National alliance contracting policy and guidelines* (Department of Infrastructure and Transport 2011) and pre existing jurisdictional guidelines
- information for project owners considering the use of building information modelling and other information and communications technology (ICT)-based project techniques
- agreed common tendering and contracting principles to be adopted by member agencies.

Use of the Guide in the assessment of procurement options and development of procurement strategies will help to:

- improve current methods and processes
- promote consistency of approaches to tendering and contracting
- support equitable risk allocation in contracts
- identify opportunities to use interactive or collaborative procurement processes or incorporate ICT-based project techniques, where appropriate.

Benefits to industry include greater certainty with respect to member agency approaches and practices across jurisdictions, and confidence that contractual risk allocation will be based on a number of fundamental principles that take into account issues raised by industry.

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1 Introduction

The social and economic value of infrastructure (including buildings) cannot be underestimated. Appropriate infrastructure, particularly that which has been specifically designed to improve the liveability of the urban environment, is fundamental to building communities, improving social wellbeing and maintaining high standards of living into the future. Well planned and managed investment in public infrastructure plays a vital role in supporting economic growth and providing capacity to meet the increasing demand for services that accompanies strong population growth. Investment in roads, rail and ports is essential for business development and the improvement of productivity and industry competitiveness. The provision of infrastructure also underpins the delivery of community services such as education, health, law and order, public transport and housing.

Governments' capacity to invest in public infrastructure is ultimately constrained by finite funding resources and the need to responsibly manage the balance between competing budget priorities. Investing in the right mix of infrastructure assets and managing them well throughout their lifecycle is important in enabling governments to meet current and future service delivery demands and maximise value-for-money from the funding available.

In addition to determining the mix of infrastructure investments that will most effectively meet government objectives, a key factor in optimising value-for-money outcomes from infrastructure investments is a project's procurement strategy.

A comprehensive procurement strategy that demonstrates careful consideration and analysis of all available options will enable project owners to identify the delivery model and procurement method most suitable for the project in question. By using an appropriate delivery model and procurement method, project owners can expect to attain improved value-for-money outcomes as risks will be most effectively managed and the incidence of contractual disputes, cost and time overruns is likely to be reduced.

The *Building and Construction Procurement Guide – Principles and Options* ('the Guide') has been developed by Austroads and the Australasian Procurement and Construction Council (APCC) in consultation with industry to provide information about the various alternatives available for the procurement of civil (road and bridge) and non-residential building construction works or services, guide users through the process of preparing tailored procurement strategies for individual projects, and provide a range of agreed principles for inclusion into local procurement methods.

1.1 Purpose of the Guide

The purpose of the Guide is to provide member agency project owners involved in the development of procurement strategies with an outline of potential procurement options along with high-level instruction on the steps to be followed in developing effective procurement strategies for specific projects. By ensuring that personnel follow these steps, project owners can be confident that the recommended procurement strategy for a project – which includes the delivery model (e.g. construct only, alliance etc.) and procurement method – is appropriate, taking all of the relevant circumstances into account.

While there are already a number of other documents in existence that deal with procurement strategy development including national guidelines and, in some cases, jurisdictional and agency guidelines, their terminology and content is not entirely consistent and there is no guidance available to member agency project owners that explains how to use and navigate through all of this material. The Guide brings this pre-existing material together by extracting the major common components to define a 'core' set of commonly used alternatives and a baseline process for developing procurement strategies to which other elements can be added as appropriate.

The Guide also includes a range of defined contracting and tendering principles for member agencies to adopt within their own procurement methods, which will lead to increased consistency of approach and help minimise the incidence of inequitable risk allocation in contracts.

Importantly, the Guide also draws attention to circumstances where consideration should be given, as part of the procurement strategy development process, to the development of high-performing teams through the use of ICT-based project development techniques such as building information modelling (BIM). A complementary guide that addresses these matters is currently being developed, for use where appropriate. Further details are provided in Section 7.

1.2 Scope of the Guide

The Guide is primarily intended to apply to the procurement of civil (road and bridge) and non-residential building infrastructure by Austroads and APCC state and territory member agencies, for projects of any value, but may also be utilised for other areas such as rail, ports and public utilities.

1.3 Who should use the Guide?

The Guide has been specifically designed to assist project owner personnel in member agencies that have been tasked with the responsibility of planning a future infrastructure procurement.

Note: The four-step procurement strategy development process detailed in Section 4 is not prescriptive, but is instead designed to alert project owner personnel to the main items that need to be taken into account, and to steer them through the analysis and decision-making process. In fact, rigid adherence to each of the specific items listed in the procurement strategy development process may be counter-productive in circumstances where these are not relevant to the project in question.

Professional judgement is required to work through each of the nominated steps to ensure that all relevant items, together with any project-specific matters not specifically listed in the Guide, are properly considered. It is therefore essential that procurement strategies are developed by personnel experienced in infrastructure procurement and contracting or, where insufficient resources exist, that the draft strategies are reviewed by such personnel before finalisation.

1.4 How to use the Guide

The Guide is to be used as a reference document for member agency project owners when examining procurement options and developing procurement strategies.

The Guide has been designed to complement rather than override existing policies and requirements, and is to be read in conjunction with those to ensure that any additional national or local-level requirements are met.

Specifically, project owner personnel can use the Guide as a starting point to assist in developing draft procurement strategies, but will need to cross-check the outcomes of their work against the relevant national guidelines and jurisdictional documents referenced in the Guide before these strategies can be finalised.

An outline of the process is as follows¹:



Figure 1.1: Process for development of a procurement strategy using the Guide

■ **Addressing national policies and guidelines – public private partnerships (PPPs) and relationship delivery models (alliance, ECI and managing contractor)**

In circumstances where users of the Guide consider that a PPP or relationship-style² delivery model may be suitable for detailed consideration as part of the procurement strategy development process, they should refer to the following national guidelines for specific guidance³:

- Infrastructure Australia 2008, *National public private partnership policy and guidelines*: http://www.infrastructureaustralia.gov.au/public_private/ppp_policy_guidelines.aspx
- Department of Infrastructure and Transport 2011, *National alliance contracting policy and guidelines*: <http://www.infrastructure.gov.au/infrastructure/nacg/index.aspx>.

■ **Addressing local requirements**

Users of the Guide must also review any local requirements documented in the key reference documents listed in Table 1.1, as amended from time to time, and ensure that procurement strategies developed using the Guide are compliant with these. Details regarding the currency of the listed documents can be obtained by contacting the relevant agency.

1 Victorian practitioners should reverse the first two steps referred to in Figure 1.1, i.e. the national and jurisdictional requirements need to be checked before the draft procurement strategy is prepared.

2 With respect to national policy, the requirements in the *National alliance contracting policy and guidelines* (Department of Infrastructure and Transport 2011) also extend to ECI and managing contractor delivery models.

3 Consideration of the national guidelines is a mandatory requirement for Victorian practitioners, for all civil (road and bridge) and non-residential building procurements.

Table 1.1: Key jurisdictional reference documents (as at January 2014)

Jurisdiction	Reference documents
NSW	<p>Civil (road and bridge) sector</p> <p>NSW Government Code of Practice for Procurement http://www.procurepoint.nsw.gov.au/sites/default/files/documents/code_of_practice_for_procurement_2005.pdf</p> <p>Implementation Guidelines to the NSW Code of Practice for Procurement: Building and Construction http://www.procurepoint.nsw.gov.au/sites/default/files/documents/nsw_implementation_guidelines_building_and_construction_0.pdf</p> <p>NSW Government Procurement System for Construction http://www.procurepoint.nsw.gov.au/before-you-buy/procurement-system-construction</p>
	<p>Non-residential building sector</p> <p>NSW Government Code of Practice for Procurement http://www.procurepoint.nsw.gov.au/sites/default/files/documents/code_of_practice_for_procurement_2005.pdf</p> <p>Implementation Guidelines to the NSW Code of Practice for Procurement: Building and Construction http://www.procurepoint.nsw.gov.au/sites/default/files/documents/nsw_implementation_guidelines_building_and_construction_0.pdf</p> <p>NSW Government Procurement System for Construction http://www.procurepoint.nsw.gov.au/before-you-buy/procurement-system-construction</p>
	<p>Civil (road and bridge) sector</p> <p>Department of Treasury and Finance Investment Lifecycle and High Value High Risk Guidelines, in particular:</p> <p>Procurement Strategy Technical Supplement to the Stage 2: Prove Guideline and the Stage 3: Procure Guideline http://www.lifecycleguidance.dtf.vic.gov.au/subsection.php?section_ID=1&subsection_ID=19</p> <p>Project Development and Construction Management Act 1994, Ministerial Directions 1 and 2 http://www.dtf.vic.gov.au/Infrastructure-Delivery/Public-construction-and-policy-and-resources/Ministerial-Directions</p> <p>Department of Treasury and Finance Partnerships Victoria Framework http://www.dtf.vic.gov.au/Infrastructure-Delivery/Public-private-partnerships/Policy-and-guidelines</p> <p>Department of Treasury and Finance, Alliance Contracting http://www.dtf.vic.gov.au/Infrastructure-Delivery/Alliance-and-traditional-contracting</p> <p>Victorian Code of Practice for the Building and Construction Industry including 2012 Implementation Guidelines http://www.dtf.vic.gov.au/Infrastructure-Delivery/Public-construction-and-policy-and-resources/Code-of-Practice-for-the-Building-and-Construction-Industry</p>
	<p>Non-residential building sector</p> <p>Department of Treasury and Finance Investment Lifecycle and High Value High Risk Guidelines, in particular:</p> <p>Procurement Strategy Technical Supplement to the Stage 2: Prove Guideline http://www.lifecycleguidance.dtf.vic.gov.au/subsection.php?section_ID=1&subsection_ID=19</p> <p>Project Development and Construction Management Act 1994, Ministerial Directions 1–4 inclusive http://www.dtf.vic.gov.au/Infrastructure-Delivery/Public-construction-and-policy-and-resources/Ministerial-Directions</p>

Jurisdiction	Reference documents
VIC (cont.)	<p>Department of Treasury and Finance Partnerships Victoria Framework http://www.dtf.vic.gov.au/Infrastructure-Delivery/Public-private-partnerships/Policy-and-guidelines</p> <p>Department of Treasury and Finance, Alliance Contracting http://www.dtf.vic.gov.au/Infrastructure-Delivery/Alliance-and-traditional-contracting</p>
QLD	<p>Civil (road and bridge) sector</p> <p>Queensland Department of Transport and Main Roads Main Roads Project Delivery System:</p> <ul style="list-style-type: none"> ■ Volume 1: Selection of Appropriate Project Delivery Options 2006 ■ Volume 2: Tendering for Major Works 2009 ■ Volume 3: Major Works Prequalification System 2009 <p>Queensland Department of Transport and Main Roads, Standard Contract Provisions Roads:</p> <ul style="list-style-type: none"> ■ Volume 1: Road Construction Contract July 2010 ■ Volume 2: Roadworks Performance Contracts November 2011 ■ Volume 3: Minor Works Contract Based on AS4905 January 2011 ■ Volume 4: Design & Construction Contract November 2011 ■ Volume 5: Alliance Contract January 2011 ■ Volume 6: Early Contractor Involvement January 2011 ■ Volume 7: Relational Incentive Contract January 2011 ■ Volume 8: Performance Incentive Cost Reimbursable Work Contract December 2011 <p>Queensland Department of Transport and Main Roads, Contract Administration System Manual 2011</p> <p>Queensland Department of Transport and Main Roads, Engineering Policy Directions and Guides 2012</p> <hr/> <p>Non-residential building sector</p> <p>Queensland Department of Infrastructure and Planning 2009, Project Assurance Framework: Procurement Options Analysis</p> <p>Queensland Department of Public Works 2008, Capital Works Management Framework: Procurement Strategy and Contract Selection</p>
WA	<p>Civil (road and bridge) sector</p> <p>Infrastructure Procurement Options Guide 2010, Centre for Excellence and Innovation in Infrastructure Delivery</p> <p>Various internal Departmental guidelines may also apply – please contact the relevant agency for further details</p> <hr/> <p>Non-residential building sector</p> <p>Infrastructure Procurement Options Guide 2010, Centre for Excellence and Innovation in Infrastructure Delivery</p> <p>Various internal Departmental guidelines may also apply – please contact the relevant agency for further details</p>
SA	<p>Civil (road and bridge) sector</p> <p>N/A</p> <hr/> <p>Non-residential building sector</p> <p>N/A</p>

Juris-diction	Reference documents
TAS	<p>Civil (road and bridge) sector</p> <p>Tasmanian Treasurer's Instructions – Part 12 (various dates) Department of Treasury and Finance Tasmania http://www.treasury.tas.gov.au/domino/df/df.nsf/v-ti/pc</p> <p>Tasmanian Annexure to the National Code of Practice for Construction (2006) Department of Treasury and Finance Tasmania</p>
	<p>Non-residential building sector</p> <p>Tasmanian Treasurer's Instructions – Part 12 (various dates). Department of Treasury and Finance Tasmania http://www.treasury.tas.gov.au/domino/df/df.nsf/v-ti/pc</p> <p>Tasmanian Annexure to the National Code of Practice for Construction 2006, Department of Treasury and Finance Tasmania</p> <p>Guidelines for Professional Indemnity Insurance and Public Liability Insurance for Building and Construction and Maintenance Services Consultants 2011, Department of Treasury and Finance Tasmania</p> <p>Guidelines on Tender Evaluation using Weighted Criteria for Building Works and Services 2006, Department of Treasury and Finance Tasmania</p> <p>Procurement Practices Manuals comprising:</p> <ul style="list-style-type: none"> ■ Project Initiation Process 1996 ■ Best Practices for the Maintenance of Assets 2006 ■ Best Practice for the Engagement of Consultants 2011 ■ Contract Documentation Delegation and Risk 2011 <p>Refer: http://www.purchasing.tas.gov.au/buyingforgovernment</p>
NT	<p>Civil (road and bridge) sector</p> <p>Procurement Act 1995 http://notes.nt.gov.au/dcm/legislat/legislat.nsf/d7583963f055c335482561cf00181d19/ce58025e4359b0516925635b0020ca31?OpenDocument</p> <p>Procurement Regulations http://notes.nt.gov.au/dcm/legislat/legislat.nsf/d7583963f055c335482561cf00181d19/71e71138c1b2ceba69257b350002893d?OpenDocument</p> <p>Procurement Directions http://www.dob.nt.gov.au/business/tenders-contracts/legislative_framework/Pages/directions.aspx</p> <p>Northern Territory Procurement Code http://www.dob.nt.gov.au/business/tenders-contracts/legislative_framework/Pages/code.aspx</p> <p>Construction Contracts (Security of Payments) Act 2004 http://www.nt.gov.au/justice/policycoord/construction/</p> <p>Conditions of Quoting / Tendering and Contract http://www.dob.nt.gov.au/business/tenders-contracts/legislative_framework/tendering-contract/Pages/default.aspx</p>

Jurisdiction	Reference documents
NT (cont.)	<p>Non-residential building sector</p> <p>Procurement Act 1995 http://notes.nt.gov.au/dcm/legislat/legislat.nsf/d7583963f055c335482561cf00181d19/ce58025e4359b0516925635b0020ca31?OpenDocument</p> <p>Procurement Regulations http://notes.nt.gov.au/dcm/legislat/legislat.nsf/d7583963f055c335482561cf00181d19/71e71138c1b2ceba69257b350002893d?OpenDocument</p> <p>Procurement Directions http://www.dob.nt.gov.au/business/tenders-contracts/legislative_framework/Pages/directions.aspx</p> <p>Northern Territory Procurement Code http://www.dob.nt.gov.au/business/tenders-contracts/legislative_framework/Pages/code.aspx</p> <p>Construction Contracts (Security of Payments) Act 2004 http://www.nt.gov.au/justice/policycoord/construction/</p> <p>Conditions of Quoting / Tendering and Contract http://www.dob.nt.gov.au/business/tenders-contracts/legislative_framework/tendering-contract/Pages/default.aspx</p>
ACT	<p>Civil (road and bridge) sector</p> <p>Government Procurement Act 2001, as amended www.legislation.act.gov.au</p> <p>Government Procurement Regulation 2007 www.legislation.act.gov.au</p> <p>Public Sector Management Act 1994, as amended www.legislation.act.gov.au</p> <p>Financial Management Act 1996, as amended www.legislation.act.gov.au</p> <p>Procurement Circulars http://www.procurement.act.gov.au/About/procurement_circulars</p> <p>AS2124 -1992 General Conditions of Contract http://www.procurement.act.gov.au/tenders/standard_conditions_of_contract_and_tender</p> <hr/> <p>Non-residential building sector</p> <p>Government Procurement Act 2001, as amended www.legislation.act.gov.au</p> <p>Government Procurement Regulation 2007 www.legislation.act.gov.au</p> <p>Public Sector Management Act 1994, as amended www.legislation.act.gov.au</p> <p>Financial Management Act 1996, as amended www.legislation.act.gov.au</p> <p>Procurement Circulars http://www.procurement.act.gov.au/About/procurement_circulars</p> <p>AS2124 -1992 General Conditions of Contract http://www.procurement.act.gov.au/tenders/standard_conditions_of_contract_and_tender</p>

1.5 Glossary of key terms

A review of contemporary literature in the area of infrastructure tendering and contracting shows a significant variance in terminology, resulting in inconsistencies with respect to how key concepts are expressed and understood.

This glossary aims to minimise confusion in terminology and promote a common level of understanding by providing basic definitions of the key terms that appear in the Guide, which includes the various delivery models typically utilised in the non-residential building and civil (road and bridge) sectors. However, the glossary is not intended to be exhaustive and as such, there may be other terms used at agency or jurisdictional level (including different names for the delivery models defined in this glossary) that may not be captured below.

■ Alliance

Alliances are defined in the *National alliance contracting policy and guidelines* (Department of Infrastructure and Transport 2011) as follows:

Alliance contracting is delivering major capital assets, where a public sector agency (the Owner) works collaboratively with private sector parties (Non-Owner Participants or NOPs). All Participants are required to work together in good faith, acting with integrity and making best-for-project decisions. Working as an integrated, collaborative team, they make unanimous decisions on all key project delivery issues. The alliance structure capitalises on the relationships between the Participants, removes organisational barriers and encourages effective integration with the Owner.

This Guide deals with project alliances; however, alliances can also occur at program level ('program alliances').

■ Construction management

A delivery model that involves the appointment of a construction manager to oversee and coordinate the work of a range of individual trade contractors and designers engaged directly by the project owner to deliver a specific construction project.

■ Construct only

A 'traditional' delivery model under which a designer develops the detailed design and other documentation for the project owner. Once the project owner is satisfied with the design and documentation, it will separately call for competitive bids from construction contractors to construct the project works. Following completion of the construction works, the project owner assumes responsibility for the ongoing maintenance and/or operation of the asset.

■ Delivery model

An approach to the delivery of a construction works or services project.

■ Design and construct (D&C)

A delivery model (which includes variants such as novated design and construct, and design development and construct) under which a project owner selects a single contractor to deliver both the design services and construction works for a specific project. Following completion of the construction works, the project owner assumes responsibility for the ongoing maintenance and/or operation of the asset, except in cases where such responsibilities are appended to the D&C model under such variants as design, construct and maintain; design, construct and operate; or design, construct, maintain and operate.

■ Direct managed

This delivery model involves the project owner managing the full delivery of the project, which includes directly providing the plant and resources or obtaining these by subcontracting activities.

The project owner is responsible for administering the subcontracts and accepts all of the delivery and interface risk.

- **Early contractor involvement (ECI)**

A two-stage relationship-style delivery model, generally structured to resemble a project alliance model during the first stage and a D&C model during the second. This delivery model is specifically designed to achieve good relationship, cost and constructability outcomes by fostering the involvement of construction contractors during the preliminary (design and development) stages of project delivery.

- **Infrastructure**

For the purposes of the Guide, this means civil (roads and bridges) and non-residential buildings.

- **Managing contractor**

A delivery model which involves a head or 'managing' contractor being appointed by the project owner to provide advisory and management services; create work packages; source and enter into contracts with designers and subcontractors; and coordinate, supervise and potentially directly undertake some elements of the work pertaining to a specific construction project.

- **Procurement method**

The form of contract and procurement process to be used with respect to the selected delivery model, as documented in the procurement strategy.

- **Procurement options analysis**

The process of critically assessing a project against available delivery models to determine suitability.

- **Procurement strategy**

A document that presents the outcome of the procurement options analysis process and identifies the recommended delivery model and procurement method for a project, based on the project's individual characteristics and circumstances.

- **Public private partnership (PPP)**

A delivery model under which the project owner selects a private sector partner to finance, design and construct the project works, and assume responsibility for operations and/or maintenance over a long-term period.

- **Value-for-money**

Value-for-money is an essential determinant in the procurement of goods, services and works by Government agencies. It does not necessarily represent lowest cost; rather the achievement of the best available outcome for money spent on the procurement, taking into account whole-of-life considerations such as:

- fitness-for-purpose and other considerations of quality
- performance
- price
- delivery
- accessories and consumables
- service support
- disposal⁴.

4 The definition of value-for-money differs marginally in all the Australian states and territories; however, the broad concepts are the same. This particular definition is derived from the Australia and New Zealand Government Procurement Agreement (September 2007), which is substantially consistent with the various state and territory definitions.

2 What is a procurement strategy?

2.1 Overview

To properly manage risks presented to government, it is important that procurement decisions are justifiable on the basis of documented facts and analysis. Soundly based decisions involve a comprehensive exploration of a range of potential delivery models and procurement methods to determine the approach best suited to each infrastructure project. By methodically exploring all available options, project owners can ensure that opportunities for achieving increased value-for-money and improved infrastructure investment outcomes are readily identified and capitalised on.

The procurement strategy is a core project document that presents the outcome of a rigorous procurement options analysis undertaken by the project owner to identify the recommended delivery model and procurement method for a project, taking into account the project's individual characteristics, risks and circumstances.

An appropriate procurement strategy, which is typically developed during the 'evaluation' or 'definition' phases of a project, is a key determinant of successful project delivery (refer Figure 3.2).

A procurement strategy is more than just a high-level plan. While it will detail, in a practical sense, how the recommended delivery model and procurement method are to be deployed for project delivery, it also provides clear justification for their use on a value-for-money basis. Such justification should also show how project or program outcomes can be optimised, and how the strategy will facilitate aspects of risk management.

The then Queensland Department of Main Roads (Jensen & Fernando 2006) outlined the benefits of developing tailored procurement strategies for individual projects and some of the considerations relevant to their development by stating that:

The department has achieved significant value for money outcomes through many initiatives such as packaging of projects, effective supply chain management and the selection of appropriate forms of delivery. In packaging of projects, combining similar works, breaking up larger projects into smaller contracts and varying the sequence, scheduling and programming of works bring excellent results for Main Roads. Relationship contracts, particularly alliance contracts and Early Contractor Involvement are some forms of delivery that are extremely useful, if selected for appropriate projects. Main Roads' use of non-price factors in the selection of tenderers is another initiative that contributes to achieving value-for-money outcomes in the delivery of road infrastructure projects.

To develop an effective procurement strategy, it is important to:

- fully understand the project including key drivers, constraints and risks
- assess agency and market capabilities and capacity
- rigorously evaluate potential delivery models and procurement methods for suitability
- involve key stakeholders and experts as early as possible in the planning and development process
- challenge assumptions in order to better achieve desired outcomes
- use practical analytical techniques in the decision-making process.

Some Austroads and APCC member agencies already have internal guidelines in place that outline the role of a procurement strategy in making a value-for-money assessment of available options and provide guidance on how a procurement strategy could be developed. However, while these guidelines include some common themes and approaches their methods, processes and underlying principles are not entirely consistent.

To achieve more consistent outcomes from the evaluation of procurement options, procurement strategies for infrastructure projects should be developed in accordance with the process detailed in Section 4 of this Guide, having regard to any relevant national or jurisdictional requirements, as outlined in Section 1.4.

2.2 Structure and format

There is currently no common template for member agency project owners to use to present their procurement strategies, but in-house templates may exist within some agencies.

Appendix A of the *National public private partnership policy and guidelines* (Infrastructure Australia 2008) contains an example structure that project owners may wish to use when compiling the content of their procurement strategies.

Regardless of whether or not a formal template is used, the documented strategy for a high-risk, high-value project will typically contain the elements listed below:

- a statement of objectives
- a summary and analysis of project objectives, requirements, characteristics and risks
- a review of agency and market capabilities
- an analysis of delivery model options and identification of a recommended delivery model
- an analysis of applicable procurement methods and identification of a recommended method (Infrastructure Australia 2008).

Other matters that should be addressed, where appropriate, include the number of proposed contracts (e.g. single or multi-contract delivery), timing and sequencing, agency contract management requirements, opportunities for bundling or unbundling, and the use of collaborative methods including ICT-based project techniques.

Procurement strategies for less risky, lower-priced projects may not always contain all of the above-listed elements, as a cut-down version may be appropriate in the circumstances.

3 When to develop and implement a procurement strategy

Properly programming the development and implementation of the procurement strategy is critical, both from a funding perspective and as part of good project management, as further described below.

3.1 Informing the funding decision

From a funding perspective, it is vital that the procurement strategy is developed in a timely manner as member agencies may be required to submit details of the procurement options under consideration to government as part of the business case in support of an investment decision for the project. Following this, the final procurement strategy will generally also need to be approved by government before delivery of the project can commence.

In developing procurement strategies, member agency project owners must allow sufficient time for a robust analysis of all available procurement options, validation exercises and reviews, and government approvals.

The exact process may differ marginally across jurisdictions as:

Governments in individual jurisdictions will have their own processes for procuring agencies to follow in order to obtain government approval for the investment (and/or funding), and whether this should occur simultaneously with (or before) a decision on the preferred procurement method' (Infrastructure Australia 2008).

However, the typical steps are as follows:

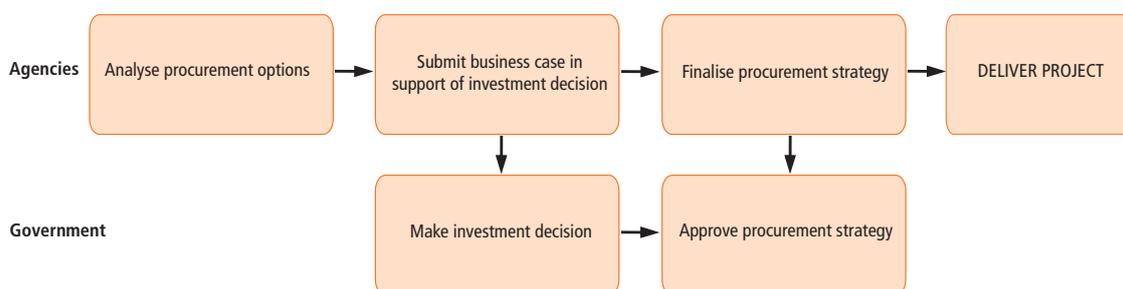


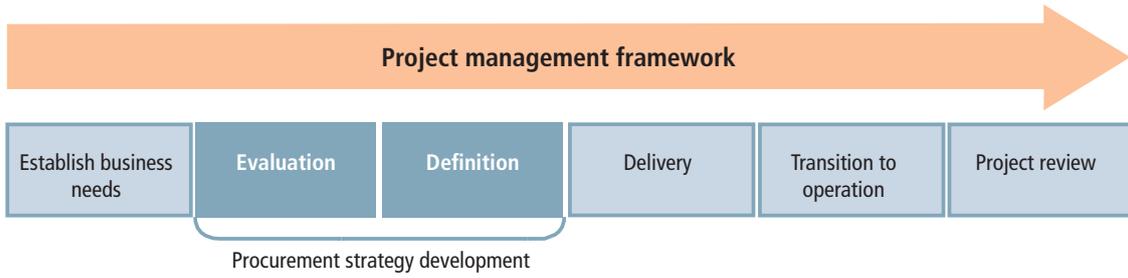
Figure 3.1: Procurement strategy development and approvals process

3.2 Programming for development

Project delivery, which is described in the Austroads *Guide to Project Delivery* as '...the process by which the aim or goal of a project is realised or achieved' (Austroads 2007), must be supported by an appropriate procurement strategy to ensure the required works and/or services are not delayed or otherwise poorly executed.

Programming the development of the procurement strategy is therefore extremely important from a project management perspective.

To achieve optimum timing, the procurement strategy development process should commence as early as possible in the project lifecycle, as part of the project's 'evaluation' and 'definition' phases (refer Figure 3.2).

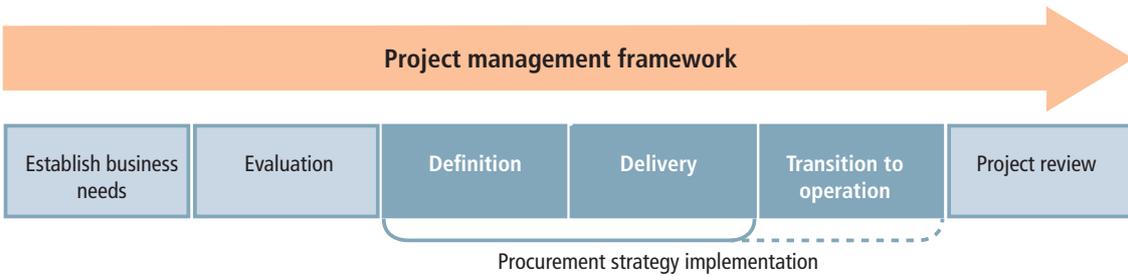


Source: Based on Centre for Excellence and Innovation in Infrastructure Delivery (2010).

Figure 3.2: Procurement strategy development

3.3 Programming for implementation

From a project management perspective, implementation of the recommended procurement strategy generally commences in the project 'definition' phase, and continues throughout the 'delivery' phase and potentially also the 'transition to operation' phase, depending on which delivery model is chosen. Implementation of a procurement strategy should therefore be programmed to occur during these phases (refer Figure 3.3).



Source: Based on Centre for Excellence and Innovation in Infrastructure Delivery (2010).

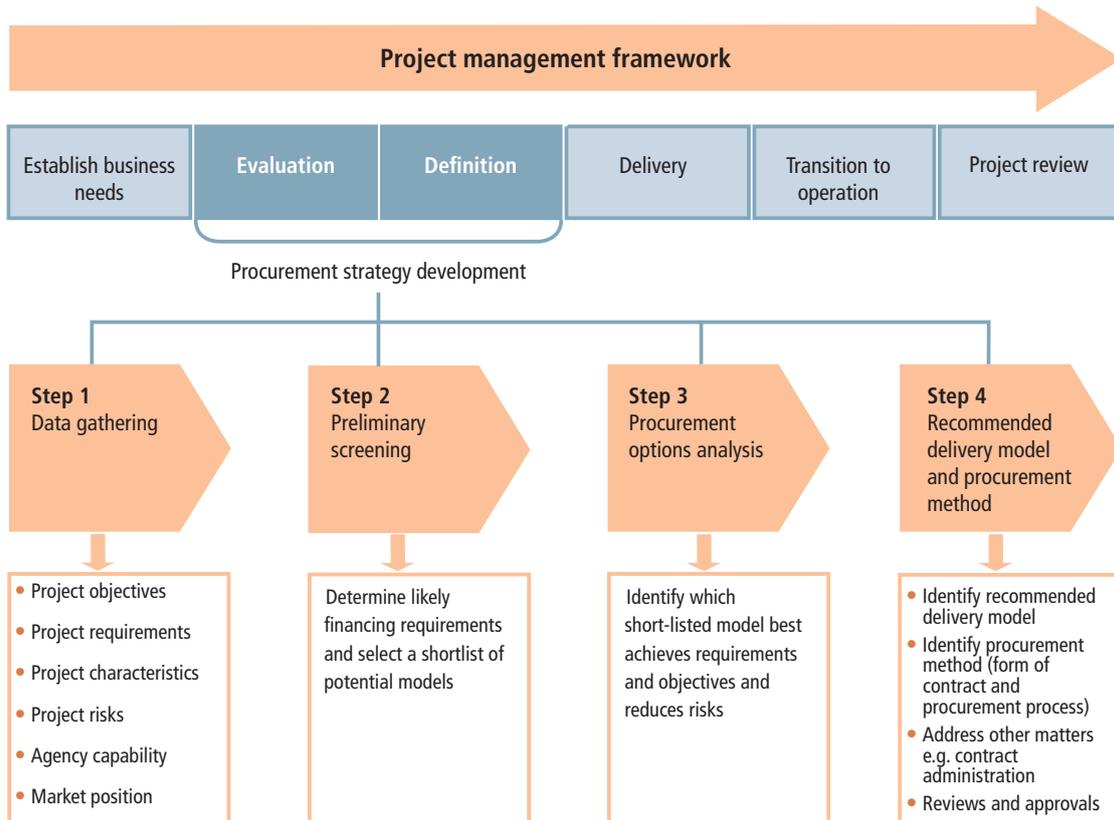
Figure 3.3: Procurement strategy implementation

4 How to develop a procurement strategy

4.1 Four-step development process

The major matters to be determined as part of the procurement strategy development process are which delivery model and procurement method, from the options outlined in Section 5 and Section 6, are likely to provide the best value-for-money in meeting the government’s service objectives (Infrastructure Australia 2008).

To arrive at a recommended delivery model and procurement method member agency project owners should undertake the four steps shown in Figure 4.1 and summarised in the following subsections.



Source: Based on Infrastructure Australia (2008).

Figure 4.1: Key steps in procurement strategy development process

The above process is an adaptation of that recommended in the *National public private partnership policy and guidelines* (Infrastructure Australia 2008) and is broadly consistent with the processes outlined in the *National alliance contracting policy and guidelines* (Department of Infrastructure and Transport 2011) and the pre-existing jurisdictional reference documents listed in Table 1.1.

The main amendment made to the process described in the *National public private partnership policy and guidelines* (Infrastructure Australia 2008) is the inclusion of a preliminary screening step. This reflects the likelihood that a decision will need to be made on the expected source of project funding (particularly where private funding may be required) before the procurement strategy can be finalised and approved by government.

This amendment also aligns the overall process with the two-stage procurement strategy development approach detailed in the *WA Infrastructure procurement options guide* (Centre for Excellence and Innovation in Infrastructure Delivery 2010) which involves undertaking a 'Preliminary Procurement Options Analysis' followed by a 'Detailed Procurement Options Analysis'.

The differences between the process outlined in the *National public private partnership policy and guidelines* (Infrastructure Australia 2008) and the process detailed in Section 4 are:

- Step 2 in the original version ('Shortlist delivery models') has been changed to a 'Preliminary screening', aimed at determining whether the project could be a potential candidate for private financing. This change is proposed on the basis that a decision on the likely need for private financing should be made early in the process, to enable the procurement options analysis to focus in detail on either privately financed or non-privately financed delivery model options identified as potentially suitable for the project.
- Step 3 in the original version ('Validation') has been removed, as the market soundings undertaken during Step 1 ('Data gathering') are generally considered a sufficient indicator of market sentiment with respect to appropriateness of the various potential delivery models. If necessary, additional validation should be undertaken as part of the 'Procurement Options Analysis in Step 3.

4.2 Step 1: Data gathering

This step involves gathering and documenting all information pertinent to the project, so that the project can be effectively profiled against potential delivery models and procurement methods. As well as being the first step in the procurement strategy development process, this data gathering exercise is an essential precursor to the development of a 'Project Brief' and 'Specification', which are they key documents that describe the project characteristics and the project owner's requirements and form part of the procurement documentation issued to the market⁵.

At a minimum, the following areas should be covered in detail as part of the data-gathering exercise:

- **Project objectives**
This may include social, economic, safety-related, operational agency objectives (e.g. knowledge management or information-sharing) and any desired legacy benefits.
- **Project requirements**
For example, the level of core services or requirements to be delivered and whether they would be suitable for delivery by a private sector provider.
- **Project characteristics**
For example:
 - location, including planned future expansion on or affecting the site
 - site status including land ownership, geotechnical conditions, demolition and disposal needs, environmental and Aboriginal or European heritage issues
 - project value, size and scale

⁵ Where this step does not establish sufficient foundation for a comprehensive Project Brief and Specification to be developed, this outcome needs to be factored into the subsequent steps in the process, as there may be a need to only consider delivery models that do not include a requirement for such comprehensive documentation (e.g. managing contractor or alliance).

- project features e.g. design features, user needs, operator and maintainer needs etc.
- functionality to be delivered by the project
- quality standards and drivers, new technology, etc.
- design and construction complexity and scope for innovation
- design, scope and quality opportunities, uncertainties and risks
- need for specialised or custom-built plant or equipment
- scoping issues relevant to the project e.g. likelihood that the documented scope will need to be changed during delivery
- key challenges, including timing and/or unusual project characteristics
- opportunities to bundle or unbundle.

■ **Project risks**

Including all major overall risks (and opportunities) outlined in the project's 'Risk Management Plan' such as those relating to site issues, permits, design, materials, constructability etc.; agency risk culture; market maturity and capability; political opportunities and risks.

Other stakeholder-related risks (and opportunities) should also be documented following a review of the stakeholder environment and cross-section of current opinions. This should include the degree of stakeholder input required for a successful outcome; potential for community disruption and opposition; interfaces with adjacent assets (including roads), operation, works or supply contracts; commitments made to stakeholders or the public etc.

In considering risk (and opportunity), most authors in this area counsel against relying too much on standardised risk analyses and the use of checklists. For example, Hayford (2006) states:

...the formulation of the risk framework must take into consideration the unique characteristics and risks of the project. Thus, although precedents and risk allocation tables are useful in drawing on previous experiences, they should only be used as a starting point when developing a risk framework for a project.

Project owners should therefore always ensure that risk assessments are specifically tailored to the project in question, i.e. a customised 'checklist' approach may be suitable for assessing risk relating to projects of a low-to-medium value and/or complexity, but a more robust analysis will usually be required for high-value complex projects. Importantly, in identifying project risks, consideration must be given to the desired risk allocation relevant to the delivery of the project in light of which party(s) is best placed to manage the risk.

■ **Agency capability**

Different delivery methods and project sizes require specific levels of knowledge, skill, experience and resource requirements. Project owners therefore need to determine:

- the availability and capability of human resources e.g., if there are inadequate resources within the agency to manage the preferred delivery model, consideration may need to be given to recruiting an experienced external consultant or employing other personnel from within government (e.g. via secondment)
- the level of oversight the agency is able to provide
- the agency's ability to manage a particular delivery model and/or develop or administer on a new form of contract not previously used.

■ **Market position**

- The market's appetite for risk and its views about different potential delivery models and capability with respect to each can be ascertained through activities such as market soundings and industry briefings (Infrastructure Australia 2008).

- For high-value projects (i.e. projects valued at over \$100 million) which may potentially be suitable for delivery via a D&C, alliance or PPP delivery model, project owners may wish to refer to the time benchmarks in the *Efficiencies in major project procurement* report (Infrastructure Australia 2012) to help determine when market soundings should be undertaken.

4.3 Step 2: Preliminary screening

The *National public private partnership policy and guidelines* (Infrastructure Australia 2008) state that typically, governments will only make a decision on the final delivery model and procurement method once investment details have been confirmed. To that end, a preliminary screening should be undertaken as early as possible in the procurement strategy development process to determine the likely nature of funding requirements and shortlist potential delivery models.

As part of the preliminary screening process, member agency project owners should closely examine the project profile established during Step 1 against the key characteristics of potential delivery models to establish the degree of alignment.

An overview of delivery models commonly used for the delivery of infrastructure procurement is located in Section 5. These can be grouped into the following broad categories:

- traditional e.g. construct only⁶
- D&C (plus variants including design, construct and maintain)
- managed e.g. managing contractor, construction management
- direct managed
- relationship e.g. ECI, alliance
- PPPs.

As procurement and contracting in the civil (road and bridge) and non-residential building sectors is highly fluid and innovative, with new delivery models and procurement methods (or variations of existing models/methods) being developed continuously, project owners are encouraged to also investigate other delivery models and methods that may not be nominated in this Guide.

PPP delivery models should be considered as part of the screening process for projects above a certain financial threshold, typically either \$50m or \$100m⁷. Inclusion of PPP models in the preliminary screening will enable agencies to either eliminate PPP models from the mix of potential delivery models under consideration or, where considered feasible, provide sufficient justification for undertaking additional analysis (via a detailed 'Procurement Options Analysis' and the 'Public Sector Comparator' process) to confirm suitability.

Relevant matters that should be considered as part of the preliminary screening process to help identify whether a PPP model would be suitable for short-listing are listed in the *National public private partnership policy and guidelines* (Infrastructure Australia 2008) and include:

- determining core versus non-core services – in other words, services which the government wishes to continue delivering directly and others that it may be willing to outsource to the private sector as part of a PPP arrangement
- value-for-money – whether private sector involvement is likely to deliver value-for-money, based on an assessment against a list of nominated value-for-money drivers
- public interest – consideration of public interest matters associated with the proposed procurement approach.

⁶ In some jurisdictions, D&C is also considered a 'traditional' delivery model.

⁷ Refer to Table 1.1 for details of jurisdictional requirements.

4.4 Step 3: Procurement options analysis

Selecting a delivery model that is inappropriate for the project in question has the potential to increase project risk and negatively impact the achievement of a value-for-money outcome. A thorough procurement options analysis will substantially reduce the risk of this occurring.

Under this step, users of the Guide should work through the short-listed delivery model to identify a recommended model. There is currently no established methodology for doing this. However, what is essentially required is an analysis of the project requirements compiled in Step 1, the development of a range of bespoke assessment criteria specific to the project, and an evaluation of each of the delivery models shortlisted during Step 2 against those criteria, paying particular attention to any significant risk criteria that could not be effectively managed under each of the short-listed delivery models.

The assessment criteria should be specifically designed to test the shortlisted delivery models' sensitivity to different project conditions or risks, taking into account lessons learned from previous projects where relevant. In other words, the criteria must be tailored to reflect the key project profile elements identified during Step 1.

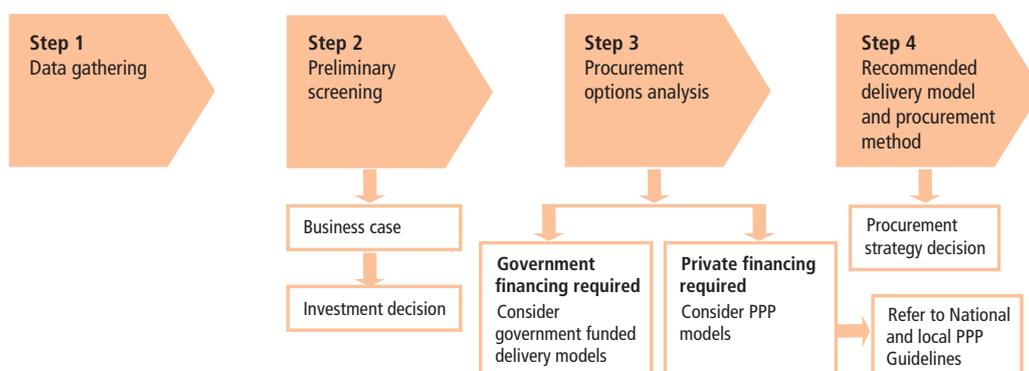
There are no nationally prescribed forms or templates available for use in documenting the procurement options analysis. However, there are numerous decision support tools, both commercial and in-house, used by some project owners to assist with this step. These tools typically include provision for the assessment of qualitative and quantitative criteria ('selection factors') that have been weighted by the project owner to reflect their importance with respect to the project.

Some known examples, none of which are specifically promoted or recommended by Austroads and the APCC, are:

- 'Suitability Matrix' (Ross 1999), which can be tailored to reflect the main considerations for each project
- 'Procurement Delivery Models Assessment Tool' (Centre for Excellence and Innovation in Infrastructure Delivery 2010, at pp. 58–60)
- 'Ranking Schedule' (NSW Department of Commerce 2004, at pp. 35–36)
- 'Template Evaluation Matrix' (Infrastructure Australia 2008, Section A4, Part 1)
- Project Assurance Framework 'Procurement Options Analysis' (Queensland Department of Infrastructure and Planning 2009).

Whichever tool is selected, member agency project owners must be satisfied that its use genuinely adds value to the procurement options analysis. To that end, Infrastructure Australia suggests checking the formula or methodology underpinning the tool to ensure it clearly reflects the logic of the analysis and counsels against placing too much reliance on a single tool, instead advising project owners to evaluate the result arrived at by using the tool against an analysis from first principles (Infrastructure Australia 2008).

The exact nature of the work to be carried out under this step depends on whether or not the preliminary screening carried out in Step 2 identified the possibility of a PPP delivery model, as shown below:



Source: Based on Infrastructure Australia (2008).

Figure 4.2: Procurement options analysis

4.4.1 Where private financing is not required

If the results of the preliminary screening suggest private financing will not be required, this Step 3 should exclude consideration of any PPP models.

4.4.2 Where private financing may be required

Where the preliminary screening undertaken in Step 2 suggests the delivery model is likely to require private financing, i.e. a PPP, the procurement options analysis undertaken in Step 3 will involve both:

- a further assessment of the appropriateness of using a privately financed model, using the Public Sector Comparator (PSC) model described below
- consideration of the types of PPP models that would be most appropriate for use e.g. design, build finance and operate; build own operate; build own operate and transfer etc.

The PSC model, described in the *National public private partnership policy and guidelines* (Infrastructure Australia 2008), compares the anticipated outputs and costs of PPP proposals to determine whether a PPP delivery model presents value-for-money, by estimating the risk-adjusted whole-of-life cost for a project on the basis of it being financed, owned and implemented by government (the 'Reference Project') as opposed to under a PPP model.

The Reference Project must be structured to provide for an equivalent degree and quality of service as would be expected from private sector bidders, to facilitate a 'like for like' comparison.

The PSC evaluates the project against the following four criteria:

- project costs (capital and operating)
- value of risk to be transferred to the private sector
- value of risk to be retained by the public sector
- competitive neutrality adjustments.

In addition to the above, all states and territories have processes and guidelines in place for assisting agencies to determine whether a PPP model may be suitable for further consideration, which are typically maintained by the various Departments of Treasury. Where such processes and guidelines exist, they must be considered in any procurement strategy development process that includes private financing as a potential funding source.

4.4.3 Validation of findings

Once a recommended delivery model has been identified, project owners should validate its suitability through further market soundings or benchmarking against other like projects as necessary (Infrastructure Australia 2008). Market soundings are particularly beneficial for testing alternatives in circumstances where it is unclear as to which delivery model should be recommended for use on a particular project.

For high-value projects (i.e. projects valued at over \$100 million) which may potentially be suitable for delivery via a D&C, alliance or PPP delivery model, project owners may wish to refer to the time benchmarks in the *Efficiencies in major project procurement* report (Infrastructure Australia 2012) to help determine when validation activities should be undertaken.

4.5 Step 4: Identification of recommended delivery model and procurement method

Following the first three steps of the procurement strategy development process the project owner should be in a position to clearly identify a recommended delivery model, which can be tailored and adjusted if necessary to better accommodate the project requirements and risk profile. For example,

a D&C delivery model may be adjusted by including responsibilities for maintenance or operations. Alternatively, a number of delivery models may be combined to create a hybrid model.

Very large projects may be split into a number of components, proceeding under different delivery models and procurement methods. The interface between any such components should be fully documented in the procurement strategy.

Once the recommended delivery model(s) is established, project owners can decide what form of contract to use to formalise the delivery arrangement with the successful contractor and agree a process to procure the infrastructure works and/or services in line with government purchasing requirements in the relevant jurisdiction (refer Section 1.4 and Table 1.1).

5 Delivery models

Every delivery model has its own strengths, weaknesses and characteristics that suit different conditions and circumstances. Examining these conditions and circumstances in detail as part of Step 3 (Procurement Options Analysis) of the procurement strategy development process described in Section 4.1 will help project owners identify the delivery model that best suits each project. While the analysis may point to the potential suitability of several different delivery models, the objective will be to identify the model that best aligns with the project profile, is able to be managed appropriately by the project owner and is likely to deliver the best value-for-money outcome.

Construction

The delivery models predominantly used by the various member agencies that deliver civil (road and bridge) and non-residential building projects are:

- construct only
- D&C, plus variants
- managing contractor
- construction management
- direct managed
- ECI
- alliance
- PPPs.

Many of these are associated with known variants or hybrid forms, and new models (and variants) are often in development. As such, the above list is not intended to be exhaustive.

Of the above, the construct only and D&C models are the most commonly used across the civil (road and bridge) and non-residential building sectors. The managing contractor, construction management and cost plus models, whilst widely used amongst APCC state and territory member agencies, have only been used occasionally by Austroads state and territory member agencies. Direct managed models are also occasionally used by Austroads state and territory member agencies in WA, SA, NSW and QLD and by the WA APCC member agency.

Alliances, ECIs and PPPs have been used for major (i.e. high-risk and/or high-value) projects across both sectors.

This section provides a general description of the above-listed delivery models, including a summary of the key characteristics, advantages and disadvantages of each. Additional profile information for each of the nominated delivery models is located in Table A 1.

Professional services

Under the majority of the delivery models, the contracts for the construction works contain a service element e.g. consultancy or design. However, where provision is not included in the construction contracts for such services, they are either provided in-house or procured externally using a variety of professional services arrangements which differ from agency-to-agency and include panel arrangements, single and multi-party consultancies.

5.1 Construct only

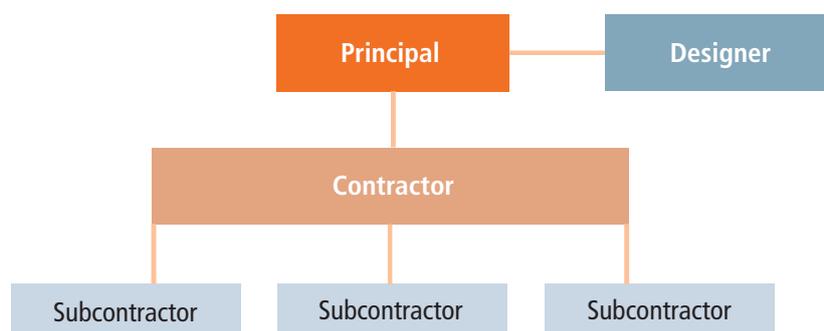


Figure 5.1: Structure of a typical construct only arrangement

This is generally regarded as the most commonly used delivery model for the delivery of infrastructure projects in Australia. Under this model, the design and construction stages are undertaken completely separately, with the project owner preparing the design either in-house or using consultant resources, and a contractor subsequently being engaged to construct the works in line with an agreed program, pre-existing design and other project documentation. This type of model is typically used for both ‘minor works’ and straightforward ‘major works’ projects.

Table 5.1: Construct only – advantages, disadvantages and guidelines for use

Guidelines for use	
<p>Generally regarded as the best delivery model to use for routine, uncomplicated works of small-to-medium size and duration where:</p> <ul style="list-style-type: none"> ■ Timeframes are sufficient to comfortably complete the design and then follow up separately with the construction works. ■ Construction innovation is not required as the design is settled and the scope well-defined. ■ The project owner is willing to retain all of the design risk, as relevant to the construction component of the delivery model. ■ Site conditions are well known. ■ There is likely to be a large pool of tenderers and strong competition. ■ The project owner wishes to retain overall control of the project during construction. ■ There is need for a high degree of cost certainty at the time of award. ■ There are appropriately skilled and experienced resources available to administer and manage the contract. 	
Advantages	Disadvantages
<ul style="list-style-type: none"> ■ The project owner has full control of the project, including community and other stakeholder interfaces. ■ The design and construction stages can proceed at times most convenient to the project owner, e.g. the design can be progressed when preferred designers are available, and the works can be tendered when there are favourable market or weather conditions and/or when budget is confirmed. ■ The project owner can ensure that all design issues are resolved, that design innovation is considered (where appropriate) and that the design fully meets its requirements before procuring the construction works, thereby reducing design-related risk. 	<ul style="list-style-type: none"> ■ Price certainty relies on the accuracy and completeness of the project owner’s documentation. Where there are deficiencies and errors, the final cost may well exceed the award value. ■ A long lead-time may be required to progress the design and documentation in advance of construction. ■ The ‘Request for Quotation’/‘Request for Tender’ documentation may be voluminous, and any errors may be used as the basis for claims. ■ There is a lack of a single point of accountability for project owners to deal with for design and construction, with increased interface risk.

Advantages	Disadvantages
<ul style="list-style-type: none"> ■ The straightforward nature of the bidding process, lower cost of tendering and level of risk retention by the project owner usually encourages a competitive field at tender time. ■ Bids are generally less complex and costly to assess than under many other models. ■ There is a high degree of cost certainty at the time of award. ■ The model is well known and understood by industry and project owners. 	<ul style="list-style-type: none"> ■ There is little or no opportunity for the contractor to have input into the constructability of the design. ■ The project owner retains significant risk, particularly around design and constructability. ■ The scope and requirements cannot be changed without a formal variation to the contract. ■ There have been reported impacts on morale for both contractors' staff and contract administration staff due to the challenges involved in managing potentially numerous claims, variations, issues and disputes. ■ The level of project owner resources required to administer the contract may be high, depending on the nature and frequency of audits, surveillance etc. required. ■ There is limited scope for building relationships between the parties and sharing learnings. ■ There is a lack of incentives for innovation during the construction stage. ■ Lifecycle considerations may not be properly taken into account during the construction phase. ■ There may be a propensity toward poor stakeholder relations, due to a lack of 'ownership' by the contractor of stakeholder issues.

5.2 D&C

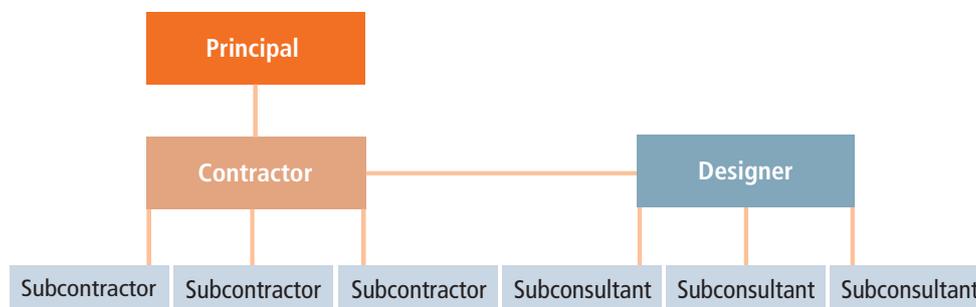


Figure 5.2: Structure of a typical D&C arrangement

Under this delivery model, a contractor is engaged to both design and construct the project works, based on a design brief supplied by the project owner. The contractor either uses in-house design resources to prepare the design or bids as part of a consortium that includes external designers.

Common variants include design, construct and maintain (DCM); design, construct and operate (DCO); and design, construct, maintain and operate (DCMO). These are structured as for a standard D&C arrangement except that the contractor is also responsible for post-construction maintenance and/or operation of the asset for a designated time period – commonly at least 10 years – at agreed prices.

In the non-residential building sector, some agencies also use novated design and construct (NDC) variants, under which the project owner's designer is novated to the D&C contractor, or design development and construct (DD&C) variants where the extent of the design to be completed by the D&C contractor varies from contract to contract to suit project owner requirements.

Table 5.2: D&C – advantages, disadvantages and guidelines for use

Guidelines for use	
<p>The model is best used when:</p> <ul style="list-style-type: none"> ■ There is need for a high degree of cost certainty at the time of award. ■ The project requirements are well-defined at the time of going to tender and comprehensive design, quality and finishes standards are available. ■ Alternative and innovative design solutions are desirable, but the project owner does not want to assume all of the design risk. ■ There is a desire for the administrative efficiency of a single point of accountability and improved integration of the design with construction, along with improved constructability outcomes. <p>In addition to the above considerations, an expanded version of this model that includes a maintenance or operations component is best used when the project owner wants to achieve full integration of the design, construction and maintenance or operations and transfer the bulk of the maintenance and operating risks (along with the design and construction risks) under a single contract without the need for private financing that characterises the PPP-type delivery models.</p>	
Advantages	Disadvantages
<ul style="list-style-type: none"> ■ Construction can commence shortly after contract award, in anticipation of all detailed design packages being finalised. ■ There is high potential for innovation in the preliminary design, resulting from the contractor’s input into constructability and flexibility in identifying optimum materials and construction methodologies. ■ There are potentially fewer disputes and more effective management of any design-related issues, due to having a single point of accountability for both the design and construction work and minimising design/construction interface risk. ■ There is a high degree of price certainty for both the design and construction works when a lump sum arrangement is used. ■ The contractor generally warrants the design’s fitness-for-purpose. <p>Where a maintenance or operations component is included:</p> <ul style="list-style-type: none"> ■ The contractor is less likely to deploy lowest-cost methods in delivering the works due to its ongoing obligations. ■ Defects are proactively managed due to the strict performance standards that must be maintained by the contractor during the maintenance/operating period. ■ As some project owners back-end payments for construction work and make them conditional on meeting operating performance targets, there is an additional incentive for performance because the contractor’s capital investment is at risk (Arndt 1999). 	<ul style="list-style-type: none"> ■ A longer tender period is required to enable preliminary designs to be prepared and assessed. ■ The cost of tendering is generally higher than under construct only delivery models, attracting a smaller pool of tenderers. ■ The designer’s primary duty is to the contractor not the project owner. ■ Quality outcomes of the project will reflect the ‘Principal’s Project Requirements’, so it is critical that these are carefully specified in the Project Brief to ensure high-quality outcomes are delivered. ■ It may be difficult for the project owner to exert any significant level of control over the design process, and design changes that may be required during construction may be complex and expensive. ■ There is a possibility that the contractor will tweak the design and construction to suit its price, which may be disadvantageous to the project. ■ The added complexity of assuming responsibility for a partially completed design may prove problematic in situations where a project owner has to take over the contract (e.g. due to a major breach or repudiation by the contractor). ■ Any uncertainty in the project owner’s requirements may lead to claims and disputes. ■ There is generally a lack of any specific relationship management provisions in the contract. ■ A higher price may be paid for the project due to uncertainties at the time of pricing the tender and the level of risk transference to the contractor.

Advantages	Disadvantages
	<p>Where a maintenance or operations component is included:</p> <ul style="list-style-type: none"> ■ Inclusion of a maintenance or operations component may limit the field of potential tenderers. ■ Where maintenance activities are to be subcontracted, the interface risk increases. ■ Any uncertainty in the project owner's maintenance or operational requirements may lead to claims and disputes.

5.3 Construction management

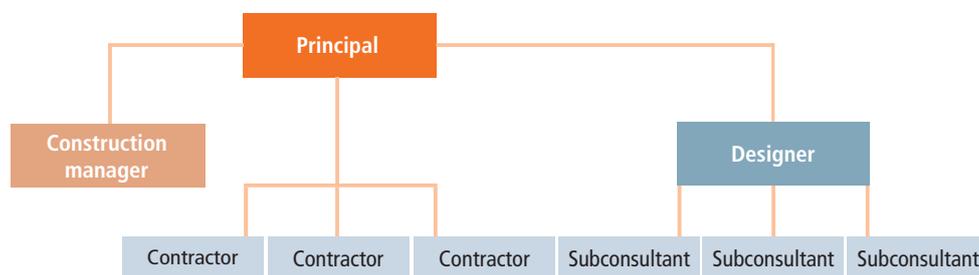


Figure 5.3: Structure of a typical construction management arrangement

Normally used for the construction of buildings, this model involves the project owner engaging the designer and trade contractors directly, whilst also engaging a construction manager to act as its agent and manage the delivery of the construction works on its behalf. The construction manager usually either receives a time-based fee, or is paid a percentage of the cost of the works.

This model is often confused with the managing contractor model. However, the construction management model is much narrower in application in that the construction manager is basically only the manager and coordinator of the works. Consequently, it is critical that the project owner/principal has sufficient experience in project delivery to ensure the construction manager is able to be provided with effective oversight and direction.

Table 5.3: Construction management – advantages, disadvantages and guidelines for use

Guidelines for use
<p>This model is best used when:</p> <ul style="list-style-type: none"> ■ The project owner wants to retain overall control of the project, including the design aspects, to ensure flexibility to amend the design without incurring excessive cost. ■ There are complexities that warrant the expert advice of an experienced construction manager who can coordinate and administer the delivery of the construction contracts. ■ The works can readily be broken down into separate parts and an early commencement (or specific early works) is required.

Advantages	Disadvantages
<ul style="list-style-type: none"> ■ The project owner can retain continuity of its designers. ■ Management and coordination risk to the project owner is reduced. ■ Contract administration is undertaken by the construction manager, reducing time and cost for project owners. ■ The project owner can still retain a high degree of control of the project with management, coordination services and general expertise contributed by the construction manager. 	<ul style="list-style-type: none"> ■ There is no single point of accountability as the project owner must enter into numerous different contracts to deliver the works. ■ The bulk of the risk remains with the project owner – the construction manager only performs a management and coordination role. ■ There is a lack of specific relationship management provisions in the contract. ■ The arrangements can be administratively complex and problematic in terms of liabilities, insurances etc. ■ There may be some uncertainty to project owners regarding final construction costs, and the construction manager’s fees add an additional element of cost to the project.

5.4 Managing contractor

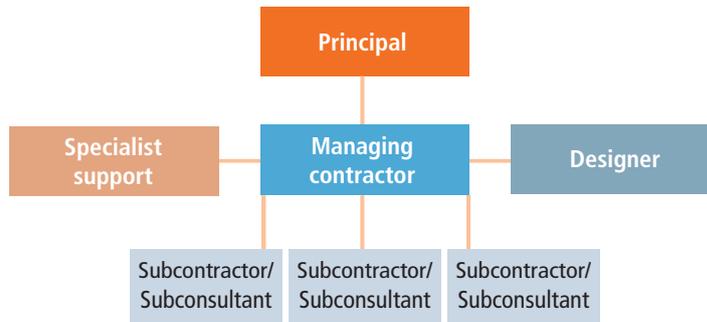


Figure 5.4: Structure of a typical managing contractor arrangement

Normally used for the construction of large complex buildings, this relationship-style delivery model, based on collaborative principles, involves a head contractor being engaged as the ‘managing contractor’ to manage the development of the design, coordinate production of construction documentation, enter into contracts and manage the delivery of the works on behalf of the project owner.

The managing contractor usually provides advisory and management services, creates work packages, sources and engages designers⁸ and subcontractors, and coordinates and supervises the works.

The selection of the managing contractor is generally undertaken via a competitive tender process.

The managing contractor delivery model typically includes a two-stage contractual arrangement with the following characteristics:

■ Stage 1

From a preliminary Project Brief prepared by the project owner, the design is developed collaboratively from which a guaranteed construction sum (GCS)⁹ is prepared and submitted. Following negotiation, if the project owner and managing contractor are unable to agree upon

8 In some instances, a novation variant may be used for the engagement of designers, or the project owner may engage the designer directly.

9 A guaranteed construction sum (GCS) is sometimes also referred to as a guaranteed maximum price (GMP).

the GCS, the contract comes to an end and the project owner may go to the market to complete the project.

■ **Stage 2**

If the GCS is accepted then Stage 2 involves the documentation, construction and commissioning of the project. The subcontract trade packages are competitively tendered by the managing contractor in an open book type of arrangement and only the actual cost of construction is paid up to the agreed GCS cap.

While the two-stage arrangement described above is the most common, having been used by agencies delivering non-residential building work in a number of jurisdictions including QLD, NSW, WA and TAS, a number of variants also exist including single-stage and three-stage arrangements, with pricing based on either GCS, lump sum or target contract cost arrangements.

Managing contractor arrangements have customarily been formalised through bespoke forms of contract, however some member agencies that use this delivery model on a regular basis have developed standard in-house form of contract.

Project owners should refer to the *National alliance contracting policy and guidelines* (Department of Infrastructure and Transport 2011) for further details (including policy requirements) applicable to the managing contractor delivery model.

Table 5.4: Managing contractor – advantages, disadvantages and guidelines for use

Guidelines for use	
<p>The model is best used when:</p> <ul style="list-style-type: none"> ■ The scope is uncertain, many project risks are unknown, project management is complex, innovation is likely to be required, and early expert assistance would be advantageous with continuity throughout the delivery of the project. ■ Project delivery timeframes are constrained. ■ Stakeholder interfaces are complex and require specialist handling. ■ Project owner resources to oversee the design and construction works are limited. 	
Advantages	Disadvantages
<ul style="list-style-type: none"> ■ A reduced level of management effort and oversight is required from the project owner. ■ The scope of the works can be managed to meet the project owner’s budget. ■ Use of the model can help promote a more team-oriented approach to project delivery. ■ The project owner and key stakeholders can provide input into the design with less cost and risk than in many other models. ■ There is a high potential for efficiencies through continuity of the contractor and constructability reviews of the design. ■ There is an ability to flexibly stage the delivery of the works, including undertaking early works on site, prior to the final design and documentation being completed.¹⁰ 	<ul style="list-style-type: none"> ■ The model is fairly specialised, so bids may be limited in some jurisdictions. ■ It is sometimes difficult for project owners to set accurate cost targets with limited design details, where such targets are required early on in the delivery process. ■ The GCS is negotiated at the end of Stage 1, which may make it more difficult to verify value-for-money. ■ The negotiation of the GCS can be protracted, leading to possible project delays. ■ If the GCS is not acceptable, then the project will be delayed if the project owner has to tender the delivery of the project.

¹⁰ When considering early works attention should be given to accountability, competition requirements and the protection of public interest to ensure best value-for-money outcome for the project. It is important that any early works undertaken do not prejudice the project owner’s ability to not proceed with successive stages of the contract, e.g. if the GCS is not accepted.

Advantages	Disadvantages
<ul style="list-style-type: none"> ■ There are opportunities for the project owner to oversee the managing contractor’s tendering processes to confirm value-for-money and verify actual subcontractor costs. ■ The managing contractor’s pricing is usually subject to an open book approach. ■ Use of a GCS helps to cap the construction cost risk for project owners. ■ There is a possibility of shared savings resulting from the actual construction cost coming in lower than the GCS and other incentives regimes. 	

5.5 Direct managed

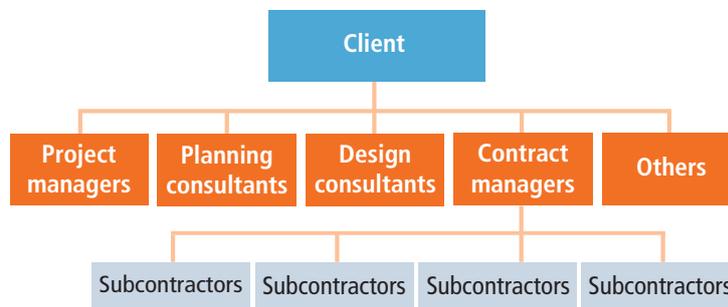


Figure 5.5: Structure of a typical direct managed arrangement

This delivery model involves the project owner directly managing the full delivery of the project works. Under this model, the project owner typically:

- undertakes and coordinates some of the design activities
- is responsible for all preliminaries (e.g. crane hire, site sheds and supervision services) and project management (e.g. scheduling, coordinating, liaising, monitoring and reporting)
- prepares the trade packages, conducts the tenders and selects and pays suppliers and subcontractors
- has control over the quality requirements of the whole of the works.

Table 5.5: Direct managed – advantages, disadvantages and guidelines for use

Guidelines for use
<p>This model is best used:</p> <ul style="list-style-type: none"> ■ Where there is a need for the project owner to control all aspects of the project. ■ When there is a desire for the project owner to remain an informed client and develop the skills of in-house personnel. ■ For minor works contracts and emergency works. ■ Where there are uncertain or complex interfaces and where flexibility on scheduling and delivery are required.

Advantages	Disadvantages
<ul style="list-style-type: none"> ■ Use of the model may result in efficient outcomes for small value works where full-blown procurement and contracting is not economical. ■ The project owner has the ability to control all aspects of the project and directly manage any non-performance. ■ The flexibility of the model helps to manage any difficult coordination or interface issues. ■ The model helps develop and/or retain the skills of project owner’s personnel. ■ The model is useful where there are limited numbers of suitable contractors in the market to deliver the overall package of required works. 	<ul style="list-style-type: none"> ■ The project owner retains all of the delivery and interface risks. ■ There is a need for a detailed work program and schedule to manage trade package interfaces. ■ It may be difficult to find skilled project managers with construction expertise to manage the works. ■ The level of oversight can be resource-intensive. ■ There is considerable uncertainty about price, and lack of tender price competition for trade arrangements may result in inflated prices.

5.6 ECI

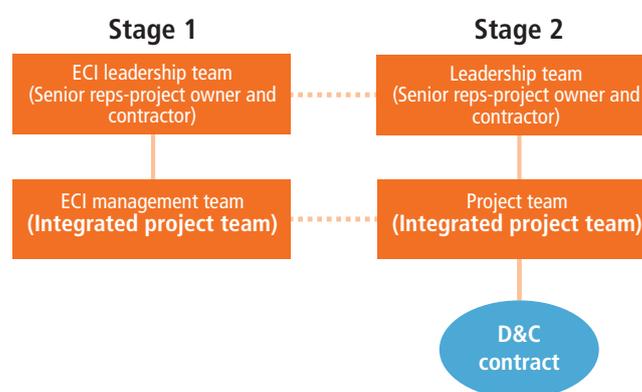


Figure 5.6: Structure of a typical ECI arrangement

ECI is a two-stage relationship-style delivery model generally structured to resemble a project alliance model during the first stage of the contractual arrangement and a D&C model during the second.

There are many variants of the ECI model in use by agencies across Australia. However, a typical profile is as described below:

■ Stage 1

During this stage (sometimes described as the ‘ECI phase’ or ‘tender phase’) a concept design is prepared by the project owner, and two contractors are engaged under a services agreement (‘ECI agreement’) to work collaboratively with the project owner and designers to further the design, plan the Stage 2 construction works and prepare a risk adjusted price for the delivery of Stage 2, commonly referred to as a ‘Stage 2 offer’¹¹. The ECI agreement embeds a number of relationship-style principles, which are generally carried through into Stage 2 via express provision in the contract documents.

¹¹ The selection of two contractors for Stage 1 is the default position, with any alternative arrangements requiring a formal exemption as specified in the *National alliance contracting policy and guidelines* (Department of Infrastructure and Transport 2011).

■ **Stage 2**

This stage (sometimes described as the ‘construction phase’) is typically structured as a lump sum D&C arrangement. However, it is only activated in circumstances where the project owner accepts one of the Stage 2 offers. If the project owner decides not to accept one of the offers it can terminate the contract(s) (if Stage 1 and 2 are combined into a single agreement) or elect not to enter into the Stage 2 contract with those contractors (if two separate agreements are used) and seek other contractors from the market to deliver the Stage 2 construction works.

Project owners should refer to the *National alliance contracting policy and guidelines* (Department of Infrastructure and Transport 2011) for further details (including policy requirements) applicable to the ECI delivery model.

Table 5.6: ECI – advantages, disadvantages and guidelines for use

Guidelines for use	
<p>An ECI delivery model is attractive to contractors, due to the embedded relationship principles and overall collaborative approach. It is therefore reported to be a good model to consider in strong construction markets, when contractors can be selective about which projects they tender for (Eddie & O’Brien 2007). Project owners should also consider this model in circumstances where:</p> <ul style="list-style-type: none"> ■ The project risks are somewhat unknown, and some degree of innovation is likely to be required. ■ Project delivery timeframes are constrained. ■ They are interested in using a relationship model rather than a more adversarial model, but where there are insufficient resources to fully resource an alliance. ■ There is identified value in participating in a collaborative Stage 1 arrangement to drive innovative outcomes and provide for knowledge transfer. ■ There is a need to obtain certainty of price and demonstrate transparency of price. ■ There are uncertain or complex interfaces, and flexibility on scheduling and delivery are required. 	
Advantages	Disadvantages
<ul style="list-style-type: none"> ■ There is the potential for improved potential cost and time savings. ■ The model provides enhanced opportunities for innovation. ■ The model promotes a less adversarial culture (with fewer variations and disputes) due to the inclusion of relationship principles and collaborative practices into the contractual arrangement. ■ There is improved integration of the design with construction under this model, together with improved constructability outcomes. ■ The ability to novate the project owner’s designers across to the contractor, thereby ensuring continuity of design and the potential for construction to commence quickly in anticipation of all detailed design packages being finalised. ■ The open book approach to accounting under the contract, and the ability to have the contractor’s rates and margins independently verified to ascertain value-for-money. <p>The Queensland Department of Transport and Main Roads, which has been at the forefront of the use and development of the ECI model amongst road agencies, has reported additional advantages, including:</p> <ul style="list-style-type: none"> ■ Synergies arising from a high performance design and construction team. 	<ul style="list-style-type: none"> ■ Where designers are novated, the designer’s primary duty transfers from the project owner to the contractor so the project owner loses an independent source of advice. ■ While the project owner can decide not to accept the Stage 2 offers, it is unlikely that it will exercise this right given the time invested in developing the relationship in Stage 1 and the disruptions to the project timelines from re-tendering. ■ High turnover of staff or major relationship breakdowns can significantly impact on performance, due to the criticality of relationships to the success of the model.

Advantages	Disadvantages
<ul style="list-style-type: none"> ■ Better integration of specific construction methods into the design. ■ Greater flexibility in timing and planning. ■ Earlier dedication of construction resources. ■ Earlier procurement of critical construction materials such as steel liners and precast concrete products. ■ Good understanding of risk by all parties. ■ Negotiated apportionment of risk (Swainston 2006). 	

5.7 Alliance

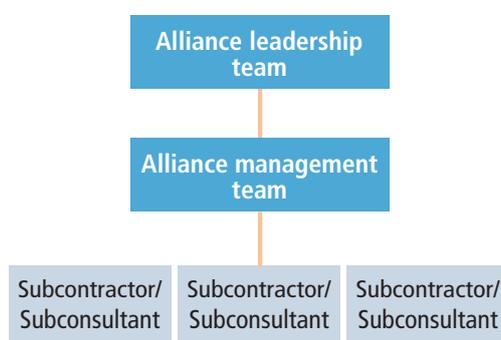


Figure 5.7: Structure of a typical alliance arrangement

This is a true relationship-style arrangement that brings together the project owner and one or more non-owner participants or ‘NOPs’ to work collaboratively to deliver the project, sharing project risks and rewards. It is often used for highly complex projects with uncertain risk profiles that would be difficult to effectively scope, price and deliver under a more traditional delivery model.

Some key features of an alliance include:

- in-built good faith and trust provisions with a ‘no blame, no disputes’ philosophy
- an ‘open book’ approach to contract pricing
- decisions made unanimously on a ‘best for project’ basis, rather than a ‘best for the individual participants’ basis
- joint development of a target outturn cost (TOC) between the participants
- equitable risk and reward sharing via an apportionment of the ‘pain’ and ‘gain’ with respect to achievement against the TOC and other non-cost performance criteria for the works
- an ability for the project owner to terminate for convenience, subject to reimbursement to the NOPs of any costs incurred prior to and as a result of the termination, plus any applicable gain share that may be owing.

There are also numerous ‘hybrid’ models in existence which may not include all of the key features of an alliance, such as the ‘no blame, no disputes’ philosophy (Hayford 2007).

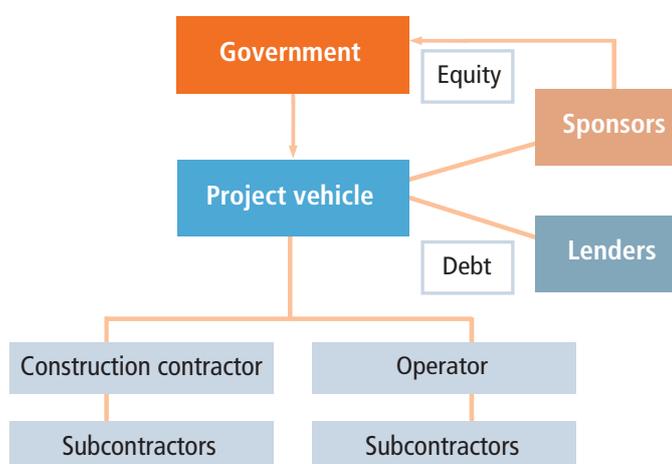
Project owners should refer to the *National alliance contracting policy and guidelines* (Department of Infrastructure and Transport 2011) for further details (including policy requirements) applicable to the alliance delivery model.

Table 5.7: Alliance – advantages, disadvantages and guidelines for use

Guidelines for use	
<p>This model is generally considered suitable for consideration in more extraordinary project circumstances where several of the following characteristics are present:</p> <ul style="list-style-type: none"> ■ The project scope and risks are highly uncertain. ■ There are significant time constraints. ■ The project is highly challenging in a technical sense. ■ There are complex external factors e.g. political, environmental or stakeholder-related. ■ Innovative or cutting-edge solutions are required. ■ There is a need for flexibility in scheduling and programming etc. ■ A collective approach is considered advantageous to the management of manage project risks and challenges. ■ There is a desire for knowledge sharing and transfer between the parties. ■ There is capacity to fully resource the alliance leadership team (ALT) and alliance management team (AMT). 	
Advantages	Disadvantages
<ul style="list-style-type: none"> ■ The possibility, under the model, of attracting a wide range of proponents due to its popularity amongst potential contractors. ■ The model provides an ability to go to the market early, before the scope and details of the project are finalised. ■ There is better risk sharing than in most other models. ■ The likelihood of improved efficiency and innovation that can be achieved under the model. ■ A high degree of project owner involvement in project delivery. ■ The model is supported by a fully integrated project team that deals with planning, design and construction with involvement of all necessary parties. ■ There is maximum flexibility across all aspects of delivery, enabling fast-tracking where necessary to meet time constraints. ■ Participants can develop a detailed understanding of pricing and cost due to the transparent, collective contract pricing process. ■ The open book approach to development of the TOC and overall accounting under the contract, and the ability to have the NOPs' rates and margins independently verified to ascertain value-for-money. ■ There is a historical trend of good achievement against established TOCs. ■ The participants commit to looking for 'best for project' solutions and there is a record of strong design and quality outcomes on past alliance projects. ■ The model supports a high level of knowledge transfer between the participants, and provision of learning and development opportunities for individual ALT and AMT members. ■ Working under this model is reputed to result in increased job satisfaction for both the project owner's and NOPs' staff. 	<ul style="list-style-type: none"> ■ While risks are shared, it is likely that the project owner will be exposed to uncapped open-ended risk in some areas, whereas the risk of the other NOPs is generally capped. ■ The 'no blame, no disputes' philosophy can be problematic in that avenues for legal claims between the participants are generally limited to matters of wilful default or insolvency. Other contract and negligence-related matters are commonly excluded. ■ There is a risk that quality outcomes may be compromised in order to meet cost targets and time demands. Additionally, re-work must be paid for, which compounds the 'pain' for all participants. ■ Requiring decisions by unanimous agreement of the ALT could put the legal standing of the entire alliance in jeopardy if agreement cannot be reached. Many project owners include 'deadlock breaking' clauses into their alliance agreements to ensure this does not occur. ■ Resourcing of ALTs and AMTs can be a difficult proposition for some project owners. ■ It may also be difficult to source personnel with the right personal attributes and preparedness to work in an alliance structure. ■ High turnover of staff (owner and/or NOPs) or major relationship breakdowns can significantly impact the alliance's performance, due to the criticality of relationships to the success of the model.

Advantages	Disadvantages
<ul style="list-style-type: none"> ▪ The alignment of commercial interests, plus the relationship approach and ‘no blame’ culture are likely to result in fewer disputes, with any disputes that do arise generally dealt with quickly by the AMT or ALT (or dispute resolution board, where relevant). ▪ There are incentives for the parties to minimise time and cost overruns, and the ability to work cooperatively together to recover time and costs (if necessary) through innovation and other strategies deployed during the construction period. 	

5.8 PPP



Source: Based on Infrastructure Australia (2008).

Figure 5.8: Structure of a typical PPP arrangement

PPP delivery models embrace a range of structures and concepts that involve the allocation of risks and responsibilities between the public and private sectors.

Typically in a PPP delivery model, a concession makes the private sector operator (concessionaire) responsible for the full delivery of services in a specified area including operation, maintenance, collection, management, construction and rehabilitation of the system. Importantly, the operator is now responsible for all capital investment.

Although the private sector operator is responsible for providing the assets, such assets are publicly owned even during the concession period. The public sector is responsible for establishing performance standards and ensuring that the concessionaire meets them. In essence, the public sector’s role shifts from being the service provider to regulating the price and quality of service.

Broadly speaking, a PPP is a model that uses a long-term, performance-based contract or concession where appropriate risks associated with a project can be transferred cost effectively to a private sector partner. These risks can include construction, schedule, functionality of design, financing, and the long-term performance of the asset through the optimal allocation of responsibility for operations, maintenance and rehabilitation. In some cases, PPPs can also be structured so that the private partner assumes demand and price risk based on the availability of a facility, e.g. road, and they can also assume varying degrees of commercial risk with respect to tolls and other types of revenue.

Although the field of PPPs continues to rapidly evolve, by way of elaboration two principal models and payment options are employed for PPP road projects:

■ **Road user payments**

Traditionally under a concession model, characterised by the direct link between the private partner and the final user; the private partner provides a service to the public ‘in place of’, though under the control of, the public partner. The concessionaire is allowed to charge the general public a service fee for using the facility e.g. through paying a toll. The toll reimburses the concessionaire for the cost of building and operating the road which can revert back to the public sector at the end of the concession period. The concession model is the traditional PPP method for public service provision and is important as being a tried and tested PPP model.

■ **Availability-based payments**

This involves the private partner providing and administering infrastructure for the public partner. In this model, the remuneration for the private partner does not take the form of charges paid by the users of the works or of the service, but of regular payments by the public partner based on the level of service provided. These payments may be fixed or variable, e.g. availability payments for the road infrastructure, or based on level of use (e.g. shadow tolls). This model embodies the notion of the private sector providing a defined level of service to the public sector.

A concession contract is typically valid for 25–30 years so that the operator has sufficient time to recover the capital invested and earn an appropriate return over the life of the concession. The public partner may contribute to the capital investment cost if necessary. This can be an investment ‘subsidy’ (viability gap financing) to achieve commercial viability of the concession. Alternatively, the government can be compensated for its contribution by receiving a commensurate part of the toll collected.

Project owners should refer to the *National public private partnership policy and guidelines* (Infrastructure Australia 2008) for further details (including policy requirements) applicable to PPP models.

Table 5.8: PPP – advantages, disadvantages and guidelines for use

Guidelines for use
<p>This model is recommended for use in circumstances where the following considerations are relevant:</p> <ul style="list-style-type: none"> ■ Complex risk profile and opportunity for risk transfer. ■ Whole-of-life costing – full integration, under the responsibility of one party, of up-front design and construction costs with ongoing service delivery, operational, maintenance and refurbishment costs. ■ Innovation – PPP model focuses on output specifications, this provides a wider opportunity to use competition as an incentive for private parties to develop innovative solutions in meeting these service specifications. ■ Measurable outputs – the nature of the services enables output specifications and a performance-based contract. ■ Asset utilisation – reducing costs to government through potential third-party utilisation and through more efficient design to meet performance (e.g. service delivery) specifications. ■ Competitive process – a competitive market exists and the use of a competitive process helps to encourage the private party to develop innovative means of service delivery while meeting government cost objectives.

Advantages	Disadvantages
<ul style="list-style-type: none"> ■ Full integration of design, construction, financing, operational, maintenance and refurbishment responsibilities. ■ Greater transfer of risk (including price risk) to the private sector at each phase. ■ Opportunity to develop innovative solutions. ■ Transfer of lifecycle cost risk encourages efficient design and quality construction and finishes – therefore certainty of maintenance standards as agreed and cost certainty as approved for a long term, e.g. 25 years. ■ Overall design and fit-for-purpose risk lies with the private partner. ■ Potential for lower cost of asset development and service provision. ■ Less demand on member agency resources over the long term. ■ Payments commence following successful commissioning. ■ Performance standards are in place. 	<ul style="list-style-type: none"> ■ Success relies on well-defined functional and service specifications. ■ Where there are multiple concept designs being developed simultaneously during the bid phase, this can require significant stakeholder resources. ■ Changes to design may require contract negotiations. ■ The ability to make a variation needs to be addressed in the contract. ■ Potential for higher agency tendering costs (this higher cost should be considered against savings in asset development and service provision through PPP delivery). ■ Requires agency skills (or consultants) for financial and technical assessment, tendering and management. ■ A need to educate stakeholders who are likely to be unfamiliar with this delivery model to ensure that other project success factors are not compromised.

6 Procurement methods

The procurement method, which is selected and documented as part of Step 4 of the procurement strategy development process described in Section 4.1, comprises:

- the form of contract
- the procurement process
- other factors such as contract administration arrangements, bundling or unbundling etc.

6.1 Applicability and selection

Member agency project owners generally use the following parameters to determine the applicability of different procurement methods to a particular project:

- **Compliance with government or agency requirements where relevant, including:**
 - Applicable free trade agreements¹², the Australia and New Zealand Government Procurement Agreement (September 2007)¹³ and the Australian Industry Participation National Framework (April 2001)¹⁴.
 - Prescribed forms of contract – in some jurisdictions, the forms of contract that can be used for each type of delivery model are mandated at either whole-of government or agency level. Hence, agency project owners are often restricted in the forms of contract they can select, particularly with respect to commonly-used delivery models such as construct only and D&C.
 - Mandated procurement processes – most jurisdictions prescribe specific methods and timeframes that must be adhered to e.g. in TAS open tenders must be called for the procurement of any civil (road and bridge) construction works valued at more than \$250k, and there are also specified minimum numbers of days during which a tender must be open.
- **Estimated contract value**
 - In some jurisdictions, a contract's estimated value will influence which form of contract and what type of procurement process must be used for projects proceeding under particular delivery models. For example, for the construct only delivery model a minor works form of contract such as AS4905-2002 (TAS) or in-house short form contract (ACT) may be used instead of the agency's standard construction contract form for procurements valued at below a certain threshold.
- **Suitability**
 - The form of contract selected must be suitable for the project in question (including the nature of the work, risk profile and anticipated timeframe for delivery) and the nominated delivery model, or must be able to be modified to suit.
 - Similarly, the selected procurement process must also effectively support the recommended delivery model. For example, an alliance delivery model requires the inclusion of selection workshops as part of the evaluation process, because of the team-based nature of the alliance

12 These are bilateral agreements between Australia and other countries designed to provide access to each country's procurement market and which describe specific rules and procedures applicable to government purchasing.

13 This is a cooperative arrangement between the Australian Government, the New Zealand Government and all state and territory governments, which is the subject of its own circular, and which disallows local suppliers being given preferences in goods and/or services procurement processes over and above other Australian or New Zealand suppliers. A copy can be downloaded from <www.apcc.gov.au> or <http://www.dfat.gov.au/fta/anzcerta/downloads/anzcerta_1997revised_npa.pdf>.

14 This framework complements the Australia New Zealand Procurement Agreement, and focuses on participation by local industry in investment projects. A copy of the framework can be downloaded from: <<http://www.innovation.gov.au/INDUSTRY/AUSTRALIANINDUSTRYPARTICIPATION/Pages/AustralianIndustryParticipationNationalFramework.aspx>>.

arrangement and the need to assess the behaviours and performance of individuals and groups across a range of identified critical areas.

Member agency project owners should refer to the documents listed in Table 1.1 for details regarding applicability and selection of procurement methods that may be relevant for their jurisdiction.

Additionally, projects owners structuring the procurement method for a high-value project (i.e. valued at over \$100 million) under a D&C, alliance or PPP delivery model may wish to refer to the *Efficiencies in major project procurement* report (Infrastructure Australia 2012) for details of time, qualitative and quantitative benchmarks that have been established to maximise procurement efficiency when using these particular models.

6.2 Forms of contract

The most appropriate form of contract to formalise the arrangement between the project owner and contractor for delivery of the project may be an off-the-shelf agreement or a bespoke agreement developed purely for the project in question. Importantly, the form of contract will help ensure high quality and cost-effective outcomes for the project by specifying performance and quality standards, appropriately apportioning risk between the parties, and incentivising the contractor to perform where appropriate in line with value-for-money considerations. Ideally the contract should also facilitate the parties working together in the most collaborative and constructive way possible.

Standard forms of contract are popular amongst both project owners and industry because their use helps reduce procurement and contract administration costs and they are generally well understood by users, thereby resulting in fewer disputes on matters of interpretation. This advantage may, however, be reduced when amendments and supplementary or 'special' conditions are included that significantly alter the standard general conditions.

However, it is generally accepted that some of the standard forms currently available are not sufficiently flexible to accommodate the many delivery models (and their variants) used by the various member agencies and may require amendment if they are to be used for such models. Indeed, there are numerous examples of where standard forms of contract have been adjusted for use on delivery models different to those originally envisaged e.g. AS4300-1995 is frequently used for Stage 2 of the ECI delivery model, and a modified version of the NSW Government's GC21 contract is sometimes used for DCM or managing contractor delivery models.¹⁵

Additionally, in some circumstances standard forms of contract may not fully reflect a project owners' desired risk allocation for a particular project and may therefore be subject to amendment. This is not necessarily a negative outcome, as the critical issue is to ensure that the contract provisions are properly aligned to the requirements of the project in question. However, as the risk allocation in standard form contracts is generally well-balanced due to representation of a range of different government and industry representatives on the development committee, project owners are advised to be cautious when considering amendments to these contracts and should limit any alterations to those matters that cannot be reasonably accommodated within the original drafting. Legal advice should also be obtained to ensure that any amendments do not result in conflicts with other provisions or create ambiguity with respect to provisions which were designed to be mutually explanatory.

¹⁵ The GC21 forms of contract, as amended from time-to-time, are available for download at: <<http://www.procurepoint.nsw.gov.au/supplying/contract-management-construction/contract-management-gc21>>

As stated by Bremen (2002):

It should not be a matter of trying to fit the delivery method to the form of contract. If that is done then the contract drives the project other than what should drive the project, being the owner's wishes as to outcomes.

Where standard forms do not exist or require too much customisation, bespoke agreements should be considered. While such agreements are custom-designed to be a good 'fit' for the project in question, their development may require significant time and incur substantial legal drafting costs. Additionally, tenderers may need legal advisory support in interpreting the contract documents, which has the potential to increase procurement costs and the risk of disputes due to the unfamiliarity of the contractual provisions.

The following provides a snapshot of the most commonly-used forms of contract for major works and services delivery models. Project owners using these delivery models are encouraged to examine the relative merits of the various available contract forms when selecting which one to use for a particular project, where there is flexibility to do so at jurisdictional level.

6.2.1 Commonly used forms

■ **Construct only**

With respect to major works construction, AS2124-1992 is the most widely used standard general conditions of contract for straightforward infrastructure projects in the civil (road and bridge) and non-residential building sectors. Other standard forms also exist, which are briefly summarised below:

- NPWC3-1981 – This refers to the National Public Works Committee form of contract (Edition 3), which was published in 1981 and which is still in use by member agencies in the NT (both sectors) and VIC (road and bridge sector only).
- GC21 – This is the standard form of construction contract that is prescribed for use by NSW state agencies, which is also used in the ACT.

AS4000-1997, which is the standard form that replaced AS2124-1992, is also available for use. However, it has not been widely taken up by member agencies, particularly in the civil (road and bridge) sector.¹⁶

AS2124-1992 is currently being revised and will be made available to Austroads and APCC member agencies after completion of the Standards Australia process. The APCC is directly involved in updating AS2124-1992.

■ **D&C**

AS4300-1995 is the most commonly used contract form for D&C projects being delivered under the D&C delivery model. However, agencies in NSW, the ACT and SA sometimes use the GC21 form of contract for this delivery model¹⁷, and the NT (both sectors) and VIC (road and bridge only) use the NPWC3-1981 form of contract with additional design clauses. In-house templates and custom-designed deeds are also occasionally used by the various member agencies.

■ **Construction management**

In the civil (road and bridge) sector, this delivery model has only been used for road and bridge works procurements in the ACT, with the form of contract being a custom-designed agreement

¹⁶ Also available for use are the Australian Building Industry Contracts (ABIC) forms of contract, which are jointly published by Master Builders Australia and the Australian Institute of Architects. These forms, which are intended for use in building projects where an architect administers the contract, are widely used in the non-residential building sector but are not currently used by state and territory APCC member agencies.

¹⁷ NSW Roads and Maritime Services also use the in-house C91 D&C Deed for works > \$100m < \$700m.

based on a standard 'Project Management Agreement' (PMA). The use of PMA as a basis for any modifications is mandated at agency level.

In the non-residential building sector, a modified version of AS4916-2002 is used in QLD and a modified AS2124-1992 is used in WA. VIC agencies use either amended Department of Health construction management contracts or custom-designed agreements.

- **Managing contractor**

This model is commonly used in the non-residential building sector. Aside from NSW, SA and the ACT, which use a modified version of GC21, other jurisdictions use agency templates or custom-designed agreements for this delivery model. In QLD, the most common form of contract used for the managing contractor delivery model is the 'Managing Contractor Design and Construction Management' contract, which includes a negotiated GCS.

In the civil (road and bridge) sector, this delivery model is currently only used in the NT, along with one previous use in VIC, supported by custom-designed agreements.

- **Direct managed**

Due to their specialised nature, direct managed arrangements do not generally proceed by way of standard forms of contract. Instead, they utilise many different styles of contract – predominantly short-form in-house trade agreements.

- **ECI**

Standard forms of contract do not appear to be available for this delivery model, but may exist to some extent at agency level. For example, this model has been used extensively in the civil (road and bridge) sector by the Department of Transport and Main Roads in QLD, which has its own form of contract based on the use of two separate agreements for Stages 1 and 2. However, the template document has been extensively tailored on a case-by-case basis to meet the requirements of each project and many hybrid versions have been created as a result.

Austrroads state and territory member agencies in other jurisdictions such as WA, TAS, SA and ACT have used ECI delivery models occasionally. In WA, a custom-designed agreement was initially developed, which was adopted and modified by the member agency in TAS. In SA, a custom-designed professional services agreement has been used for Stage 1 and a lump sum D&C contract based on AS4300-1995 or GC21 is used for Stage 2. The ACT member agency has used a custom-designed agreement based on GC21.

In the non-residential building sector this delivery model is only currently used in the NT and WA, supported by custom-designed agreements.

- **Alliance**

A template 'Project Alliance Agreement' was recently released by the Department of Infrastructure and Transport, which is to be used as the basis for contract documentation for all alliances unless prior approval is given (Department of Infrastructure and Transport 2011).

- **PPP**

High level commercial principles are described in the *National public private partnership policy and guidelines* (Infrastructure Australia 2008) – specifically, Volume 2 (applicable to social infrastructure projects) and Volume 7 (applicable to economic infrastructure projects) – which must be taken into account by member agencies as part of the drafting process for any standard or custom-designed PPP contracts.

However, as this delivery model is largely outcome-based rather than prescriptive with respect to specifications, performance standards etc., standard forms of contract do not appear to be available, but may exist at agency level. For example, with respect to the civil (road and bridge) sector, this delivery model is currently only used in NSW, where the member agency utilises in-house template PPP or Build Own Operate Transfer (BOOT) deeds customised to accommodate project requirements.

In the non-residential building sector, PPP delivery models are only currently used in the NT and WA, based on custom-designed agreements.

■ **Professional services**

With respect to the Austroads state and territory member agencies two jurisdictions (SA and TAS) currently use AS4122-2010 as the basis for their professional services arrangements. The TAS agency also uses a whole-of-government 'Standing Offer for Services' form of contract for panel arrangements. The WA agency uses the 'Request Conditions and General Conditions of Contract' (2012), which is a Government of Western Australia, Department of Finance document. The remaining member agencies have their own standard in-house forms of contract, which are tailored for each procurement.

APCC member agencies profiled for this Guide use a mixture of AS4122 (2000 and 2010 versions), agency templates and custom-designed agreements to secure their professional services arrangements.

A number of member agencies are examining the updated Australian Standards form (AS4122-2010) with a view to potentially adopting this within their agency for future professional services arrangements.

6.3 Contracting principles

As noted in the previous section, there is a reasonable degree of commonality in the forms of contract selected for frequently used delivery models, which include:

- Australian Standard forms (e.g. AS 2124-1992 and AS4300-1995)
- NPWC forms
- GC21.

However, the standard forms are often significantly amended to reflect the project owner's chosen risk profile, or to accommodate a contractual arrangement or delivery model not naturally aligned with the standard form.

These supplementary or 'special' conditions and amendments have their place. However, their use can result in higher tender prices due to legal costs incurred by tenderers in reviewing the documentation, and more disputes in contract on the grounds of uncertainty. Industry consultation undertaken in 2011 by the Council of Australian Governments' Infrastructure Working Group suggested this situation may be improved if such provisions were to be structured in line with certain established principles accepted by project owners and the broader industry.

In response to this, Austroads and the APCC have developed the following common principles, which are aimed at improving consistency of approach by member agencies and providing greater certainty to tenderers and contractors.

These principles, which are intended to apply to project owners (principals), tenderers and contractors, will be adopted by state and territory member agencies and incorporated into their contract

documentation. However, there may be exceptional circumstances that would preclude the adoption of particular principles at jurisdictional level or for specific contracts.¹⁸

By agreement of APCC and Austroads members, the following contracting principles will be adopted.

Table 6.1: Contracting principles for construction and professional services

Subject	Principle
Procurement method	<ul style="list-style-type: none"> ■ Use standard or government-owned forms of contract where possible. ■ Select the form of contract and tendering process to suit the delivery model for the project.
Innovation	<ul style="list-style-type: none"> ■ Include provision in contracts to encourage innovation.
Collaboration	<ul style="list-style-type: none"> ■ Where collaborative principles are used, include obligations for all project parties in the contract.
Risk allocation	<ul style="list-style-type: none"> ■ Allocate risk to the party best able to manage the risk. ■ Clearly define roles and responsibilities of the parties and identify the responsibility for management of each key risk.
Limitation of liability	<ul style="list-style-type: none"> ■ Where liability capping is considered: <ul style="list-style-type: none"> – it is to be on the basis of rigorous risk assessment in accordance with jurisdictional policies – regard is to be had to the level of insurances to be provided under the contract by the principal and/or contractor. ■ Consider limiting indirect or consequential losses of both parties where these can be appropriately defined.
Warranties	<ul style="list-style-type: none"> ■ Limit warranties to the work and services to be provided by the contractor, including subcontractors, consultants and suppliers. ■ Fitness-for-purpose warranties are ascertainable from the contract.
Indemnities	<ul style="list-style-type: none"> ■ Do not require the contractor to indemnify the principal for the principal's (including its employees and agents) negligent actions.
Insurances	<ul style="list-style-type: none"> ■ Apply a risk-based approach to determining insurance types and levels that are appropriate to the contract. ■ Reference full details of insurance which benefits other parties in the contract and/or make this information available to the contractor.
Intellectual property	<ul style="list-style-type: none"> ■ The contractor retains ownership of pre-existing intellectual property, and an irrevocable licence to use this property is provided to the principal for the purposes of the project. ■ In circumstances where ownership of intellectual property created during the term of a contract is owned by the principal, contractors are able to use it under licence.
Confidentiality	<ul style="list-style-type: none"> ■ Confidentiality provisions are to be defined in the contract and appropriate to the needs of the project.
Key personnel	<ul style="list-style-type: none"> ■ Key personnel nominated for the project at tender time are to be supplied. ■ Contract personnel are to have skills and experience appropriate to their roles.
Subcontracting	<ul style="list-style-type: none"> ■ Subcontracting of the whole-of-the-works is not permitted.
Cost adjustment	<ul style="list-style-type: none"> ■ The inclusion of cost adjustment provisions, where relevant to the contract and its duration, is to be considered.
Dispute resolution	<ul style="list-style-type: none"> ■ Adopt a collaborative approach. ■ Include alternative dispute resolution procedures in the contract.

¹⁸ Additionally, for PPP delivery models, users of the Guide should also refer to the high level commercial principles described in the *National public private partnership policy and guidelines* (Infrastructure Australia 2008).

Subject	Principle
Electronic notices	<ul style="list-style-type: none"> Use electronic documentation and notices, where practicable.
Additional principles applicable to construction	
Security	<ul style="list-style-type: none"> Subject to jurisdictional requirements, security in the form of unconditional undertakings from various security providers (acceptable to the principal) is to be permitted. Unless specifically required to manage identified risks, principals should consider including a provision in contracts for the release of part of the security after practical completion (or equivalent).
Overheads and profit	<ul style="list-style-type: none"> Define in the contract what is covered by payments for overheads and profit, where such payments apply.
Site conditions	<ul style="list-style-type: none"> Detail in the contract which party is responsible for which site conditions.
Time management	<ul style="list-style-type: none"> Include provisions for the management of extensions of time in the contract. Unless otherwise specified in the contract, the contractor owns the float.
Defects liability	<ul style="list-style-type: none"> Set the defects liability appropriate to the delivery model and the scope, complexity and value of the contracted works.
Subcontractor conditions	<ul style="list-style-type: none"> Subcontract conditions are to align with the contracting principles included in the head contract.
Additional principles applicable to professional services	
Novation	<ul style="list-style-type: none"> Where novation is included in the tender documents, the successful tenderer will comply with the required novation.

6.4 Structuring the procurement process

One of the final but crucial elements in the procurement strategy is deciding on the process that will be followed for the procurement. For example, project owners need to determine whether they will issue a Request for Quotation (RFQ), Request for Tender (RFT), Expression of Interest (EOI) or Request for Proposal (RFP); whether they will use an open tender or selective tender process; whether the procurement will be single-or-multi-stage; and how to structure the evaluation criteria and process.

The most appropriate procurement process for any particular project is one that complements the delivery model and form of contract and is most likely to identify a preferred tenderer/respondent that has the financial capacity, technical capability and other attributes required to deliver the particular works or services.

The importance of tailoring the procurement process to meet the project requirements cannot be overstated. In particular, given the unique characteristics of the various delivery models and contract forms, a 'one size fits all' approach to procurement is simply impractical. As explained by Bremen (2002):

The traditional tendering process is designed to produce a set of circumstances to enable price competition followed by direct comparison. A valuation based solely on price (although a natural and 'safe' tendency) does not necessarily deliver project value nor provide the necessary information to enable an owner to properly evaluate a whole of life project cost.

In some jurisdictions, the procurement process to be followed – particularly for projects being delivered under commonly-used models such as construct only and D&C – is mandated at government or agency level. These are generally standardised processes that include an RFT stage, sometimes preceded by an EOI stage, which must be undertaken in accordance with strict timeframes, and communication and probity protocols.

Project owners should refer to the list of key reference documents in Table 1.1 to locate details of any procurement processes that may be mandated in their jurisdiction.

6.4.1 Interactive and collaborative processes

For high value procurements, including under PPP delivery models and relationship-based delivery models such as alliance or ECI, interactive tendering processes are often used by member agencies. These processes use a series of structured interviews and/or workshops held through the tender period to clarify the contract scope and documents and assess the performance of tenderers (refer, for example, Infrastructure Australia 2008).

There is also a growing trend toward the use of interactive and collaborative procurement processes for more 'traditional' delivery models, particularly D&C, which enables prospective tenderers to interrogate project owners regarding the design and documentation and obtain feedback on their proposed approaches with respect to their alignment with the project owner's requirements. This interactive tendering approach is being further examined by the COAG IWG as part of its 'Tender strategies to improve D&C infrastructure delivery outcomes' project, with a view to further promulgation of this type of approach within infrastructure agencies that undertake D&C procurements (Victorian Department of Treasury and Finance 2011).

Similarly, some agencies in the civil (road and bridge) and non-residential building sectors have recently been using an 'Early Tender Involvement' approach in their procurements. This involves the participation of prospective tenderers in the documentation finalisation process (Watt GW n.d. and NSW Government Procurement 2010).

All of these approaches are aimed at:

- minimising misunderstandings arising from the project owner's documentation and project requirements
- improving the documentation (where necessary) prior to finalising the contract documents
- fostering a more open, transparent and collaborative project culture
- improving time and cost outcomes, including through the minimisation of contingency amounts in the tender price to cover unknown factors and risk.

Project owners are encouraged to further explore the potential use of these interactive and collaborative procurement processes where such processes are available for use in their jurisdiction, and to also consider the relevant time benchmarks listed in the *Efficiencies in major project procurement report* (Infrastructure Australia 2012).

6.5 Tendering principles¹⁹

While there will continue to be differences in member agency procurement practices, due to local policy requirements, there are opportunities to achieve a greater consistency of approach. To that end, Austroads and the APCC have developed the following common principles, which are aimed at harmonising member agency approaches in key areas and providing greater certainty to tenderers and contractors.

These principles, which are intended to apply to project owners (principals), tenderers and contractors will be adopted by state and territory member agencies and incorporated into their procurement processes. As with the contracting principles, there may be exceptional circumstances that would preclude the adoption of particular principles at jurisdictional level or for specific procurement processes.

¹⁹ A number of the tendering principles are similar to and substantially align with the AS4120-1994 *Code of tendering*, which is adopted by some member agencies, but not universally used in member agency procurement.

Table 6.2: Tendering principles

Subject	Principle
Prequalification	<ul style="list-style-type: none"> ■ Prequalification is to be used where appropriate, to ensure that prospective tenderers have the capability to carry out the required works or services. ■ Prequalified entities are to inform their prequalifying agency of any material changes to their status.
Principal's commitment	<ul style="list-style-type: none"> ■ Only call for tenders after making a firm commitment to proceed with the project. ■ Do not discriminate against a prequalified contractor or prospective tenderer that declines an invitation to tender.
Cost of tendering	<ul style="list-style-type: none"> ■ Recognise that this cost is a significant industry and agency overhead. ■ Do not engage in multiple rounds of tendering without industry support. ■ Be mindful of the potential number of tenderers. In particular, for high-value and/or complex contracts, use expression of interest (or similar) processes to short-list prospective tenderers and limit the number of short-listed tenderers.
Tender documents	<ul style="list-style-type: none"> ■ The tender documents are to be the same for each tenderer. ■ Tender documents are to include all critical and relevant information, including information relating to the project and the proposed contract. ■ The principal is to ensure the scope of work or services included in the tender documents contains sufficient detail to support proper evaluation and pricing. ■ Tender documents are to be reviewed before issue, with a view to addressing any conflict or ambiguity and minimising the need to issue supplementary documentation. Where amendments are required they must be provided to all prospective tenderers as an addendum. ■ Extend the tender period where an addendum that materially affects the tender is issued.²⁰ ■ Where an addendum has been issued, all prospective tenderers are to be afforded equal time to review and update their tenders.
Innovation	<ul style="list-style-type: none"> ■ Innovation in tenders is to be encouraged, including (for appropriate projects) through submission of an alternative tender in addition to a conforming tender. ■ Ensure the conformance requirements, evaluation criteria and length of the tender period do not act as a barrier to innovation.
Timeframes	<ul style="list-style-type: none"> ■ The time allowed for tendering is to be sufficient for tenderers to evaluate the project and adequately prepare their tenders.²¹ ■ Tender validity periods are clearly specified in the tender documents.
Tender process	<ul style="list-style-type: none"> ■ Enable site inspections to be undertaken by each tenderer, where appropriate. ■ For complex, high-value contracts, offer interactive or collaborative tender briefings, within appropriate probity frameworks and Free Trade Agreement timeframes. ■ Clearly specify the method and timeframe for the lodgement of tenders.
Requirements for tenderers	<ul style="list-style-type: none"> ■ No tenderer should seek or expect to be given any information that is not provided to all other tenderers. ■ Tenderers must not engage in anti-competitive practices. ■ Tenderers should only submit bids when they have the competence and capacity at the time to complete the works. ■ If the tender is submitted by a joint venture or consortia of tenderers, this should be specified in the tender response, with all tendering parties clearly identified.

20 For high value projects (i.e. projects valued at over \$100 million) being tendered under a D&C, alliance or PPP delivery model, the timeframes relating to the issue of addenda should have regard to the time benchmarks in the *Efficiencies in major project procurement* report (Infrastructure Australia 2012).

21 For high value projects (i.e. projects valued at over \$100 million) being tendered under a D&C, alliance or PPP delivery model, the timeframes for tendering should have regard to the time benchmarks in the *Efficiencies in major project procurement* report (Infrastructure Australia 2012).

Subject	Principle
Tender submissions	<ul style="list-style-type: none"> Limit the information required to be submitted with the tender to that necessary for evaluation.
Confidentiality	<ul style="list-style-type: none"> All information contained in tenders or information provided between tenderers and the principal must be regarded as confidential and not disclosed without the other party's consent.
Evaluation criteria	<ul style="list-style-type: none"> Where non-price criteria are to be weighted and used in tender evaluation, consider the disclosure of weightings.
Compliance	<ul style="list-style-type: none"> Any tender that does not comply with the tender documents is liable to be rejected.
Negotiation	<ul style="list-style-type: none"> Unless expressly allowed for in the tender documents, exhaust negotiations with the initially preferred tenderer before negotiating with another tenderer. During the negotiation process, the principal must not trade off different tenderers' prices in an attempt to seek lower prices.
Advice	<ul style="list-style-type: none"> Tenderers not under consideration for the award of a contract are to be advised as soon as practicable. Use reasonable endeavours to expedite the award of contracts to successful tenderers.
Intellectual property	<ul style="list-style-type: none"> Where a tenderer offers an alternative proposal, comparable prices for the alternative must not be obtained by the principal from other tenderers on the basis of the intellectual property used to develop the alternative proposed, nor shall the alternative be used as the basis for the recall of tenders. Unsuccessful tenderers' rights to intellectual property included in tender submissions should not transfer to principals unless consideration has been provided for such transfer.
Debriefs	<ul style="list-style-type: none"> Provide post-tender debriefs on request. Where a debrief is conducted, it is to be meaningful and provide information that may assist with potential future tenders.
Complaints	<ul style="list-style-type: none"> Establish a tender complaints process and include details in the tender documentation.
Electronic tendering	<ul style="list-style-type: none"> Work toward the use of electronic tendering, where systems permit.

6.6 Other factors

Once the form of contract is selected and an appropriate procurement process structured, project owners should document details of associated matters such as:

- contract administration arrangements, including availability of internal resources
- interface with other related projects
- opportunities to develop integrated project teams, including through the use of ICT-based project techniques (refer Section 7).

Opportunities for bundling of multiple projects into a single contract should also be considered, where this is likely to deliver efficiencies at a program level. Conversely, project owners may also consider unbundling projects into smaller component parts where appropriate to do so, e.g. where there are insufficient numbers of potential contractors capable of delivering a project of the original size and scale and/or where there is a desire to promote involvement of smaller contractors in the project to increase capability and provide legacy benefits.

Details of any recommendations regarding bundling/unbundling and the sizing and packaging of the proposed contracts should be documented in the final procurement strategy.

7 Guidelines for the use of integrated project teams and ICT-based project development techniques

7.1 Encouraging integration of project teams – why bother?

In its *Guide to Leading Practice for Dispute Avoidance and Resolution*, the Cooperative Research Centre for Construction Innovation identified key decisions made by project sponsors and owners (including with respect to end users, financiers, operators) that largely determine the outcome of building and construction projects.

Three of the factors ‘critical to minimisation and avoidance of disputes’ the guide identifies are:

- Recognition that each construction project involves the creation of a new group of people with diverse interests. There is thus the need to create a culture within the group which is project-oriented, but which recognises the financial and social requirements of each participant and facilitates the building of trust between them.
- In selecting project participants, significant weight should be given to the attitude of a participant, as well as its capacity and pricing.
- The early involvement of head contractors, specialist subcontractors and designers with the client and other project sponsors.’ (Cooperative Research Centre for Construction Innovation 2009).

The ability to influence project outcomes changes over the life of every project, as it moves from a need to design to construction and on to operation. The greatest ability for project owners to do this is at the beginning of projects. Designers and contractors assume greater control through the design and construction of projects. Consequently, project sponsors and owners make key strategic decisions at the outset of projects – commencing at the project initiation stage – involving the determination of their needs, selection of a suitable procurement strategy to satisfy these needs, and the appointment of designers and contractors to do the work. These strategic decisions largely determine the quality of contract documentation, selection of the project management system, and appointment of the project team.

Too often, the strategies adopted at this early stage result in distrust, disengagement, poor communication, antagonism, adversarial attitudes, competitive pressures and other counter-productive behaviours. This adversarial and harmful culture influences the development of organisational policies and practices. It provides the organisational framework within which organisations and their people work. It binds them through both explicit and implicit rules that perpetuate the adversarial culture.

As in any enterprise, the environment or culture of a project will have a fundamental impact on the way people work, and the way issues are addressed (Diekmann & Girard 1995). It is at the heart of whether a collaborative approach to the project is possible. These benefits are not limited to ‘relationship’ delivery models such as alliances. They may be planned for and delivered under any delivery model.

The end objective is to encourage more consistent achievement of excellent project outcomes, where:

- End users’ expectations are met or exceeded.
- The project owner’s strategic and financial objectives are met.
- Project team members achieve their financial objectives.
- The project delivery team enjoys working together, and wants to work together again.
- Community and stakeholder expectations of the project in terms of safety, design, environmental outcomes, and social objectives, are met or exceeded.

The greater the degree of integration of the skills and disciplines of its different members, the more likely it is that a collaborative approach is possible, and outstanding results achieved for the project sponsor (where applicable), project owner and the team. Involving contractors and manufacturers in the early stages of design development promises the project the benefit of considerable skills and expertise. This flows from the process of establishing cooperative working by planning and designing together, and, in doing so, aligning commercial objectives of the project sponsors, owners and the project team.

Ideally, cost planners, trade contractors and manufacturers as well as a head contractor are involved early enough in the project to optimise design, constructability, material handling, and commissioning of services.

Put at its simplest, the higher the degree of project team integration the more likely it is that outstanding results will be delivered as the project team has a collective interest in ensuring its success.

7.2 Opportunities for the use of building information modelling

Collaborative use of building information modelling (BIM) by a project team that includes contractors early in the life of a project has the capacity to break the 'silos' that typify the industry, and encourage the sharing of knowledge throughout the project lifecycle and closer collaboration to integrate valuable fabrication, construction and operations expertise into the overall design.

BIM promotes clearer, more accurate, up-to-date communication by consolidating currently disparate project information, allowing all team members to contribute to the establishment and population of the databases underpinning the planning, design, construction and operation of the asset. This improves constructability, program and budget performance, as well lifecycle management and productivity.

The higher the level of integration of team members at the early design stages, the greater the opportunities to get maximum benefit from the use of BIM.

All project sponsors and owners must decide how much integration or collaboration is appropriate or desired or possible on their building and construction projects. However, there are always commercial, policy, or legislative issues that will dictate the appropriate degree of integration for a particular project. There are straightforward approaches that can be used to enhance collaboration amongst project team members, and identify issues to be addressed to increase effective team integration.

The *Project Team Integration Workbook*, which is currently being developed by the Australian Construction Industry Forum (ACIF) and the APCC is a companion to this Guide. It will provide an assessment tool for project sponsors and owners to determine the degree to which they are able to integrate a project team and identify issues that need to be addressed to deliver optimal project outcomes.

The workbook will also provide a framework for the decision-making required by the project team if it is to ensure that collaborative behaviour becomes 'the way we do things here'.

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Appendix A Delivery model profiles

Table A 1: Typical characteristics of delivery models

	Construct only	Design and construct (D&C) & variants	Managed		Relationship		PPP
			Construction management	Managing contractor	Early contractor involvement (ECI)	Alliance	
Pricing mechanism							
	Generally lump sum and/or schedule of rates.	Generally lump sum. May include some schedule of rates components.	<ul style="list-style-type: none"> Construction manager paid a fee – potentially a percentage of the construction cost. Individual works and trades contracts are generally priced as lump sums or schedule of rates (paid by the construction manager or directly by the project owner). 	<ul style="list-style-type: none"> Pricing for Stage 1 usually on a time basis, using tendered fees and margins. Pricing for Stage 2 generally includes payment to the managing contractor based on tendered fees and margins (typically a fixed lump sum management fee which represents the managing contractor’s offsite overheads, profit and onsite overheads for any work undertaken directly) plus actual reimbursable costs for the construction work, usually up to a guaranteed contract sum (GCS). Incentives are commonly included, tied to achievement of target price and/or other nominated targets. 	<ul style="list-style-type: none"> Payment for Stage 1 is typically based on a fixed fee negotiated as part of the ECI agreement or made on a time basis, using agreed rates and margins. Pricing for Stage 2 is generally a risk-adjusted lump sum, potentially with some schedule of rates components and provisional items. Incentives are commonly included. 	<ul style="list-style-type: none"> The non-owner participants (NOPs) are typically guaranteed reimbursement of their direct project costs and payment of corporate project overheads in an open-book arrangement. In addition, if actual delivery is better than the agreed targets, parties share the reward ('gain share'). Conversely, if delivery does not meet agreed targets, a pre-agreed 'pain share' formula applies. 	<ul style="list-style-type: none"> Payment linked to performance, with bonuses payable if performance standards are met and penalties levied if they are not. Payment may also be based on usage, e.g. in some Build Own Operate Transfer (BOOT)-type arrangements, where the primary revenue stream is toll payments.

	Construct only	Design and construct (D&C) & variants	Managed		Relationship		PPP
			Construction management	Managing contractor	Early contractor involvement (ECI)	Alliance	
Typical procurement process							
	<ul style="list-style-type: none"> ■ Generally a single stage process involving a Request for Quotation (RFQ) or Request for Tender (RFT). May involve Expressions of Interest (EOIs) or Registrations of Interest (ROIs) for higher-value contracts. ■ Selection is generally based on an evaluation of price and non-price criteria (weighted heavily toward price), with some project owners taking into account past performance as part of the tender evaluation. 	<ul style="list-style-type: none"> ■ Generally a two-stage process: <ul style="list-style-type: none"> – Stage 1 - EOIs or ROIs from the open market. – Stage 2 – RFT stage, during which short-listed applicants are invited to prepare and cost designs to approx. 20% completion. ■ A mixture of price and non-price criteria is typically evaluated at both stages. ■ Costs of tendering may be high – reimbursement may occasionally be offered. 	<p>Generally a single stage process involving RFT based on evaluation of price and non-price criteria (including the sum or percentage payable to the construction manager).</p>	<ul style="list-style-type: none"> ■ Selection is generally based on an evaluation of price and non-price criteria (including the fees payable to the managing contractor). ■ This is generally followed by a two-stage contractual arrangement – Stage 1 involves the managing contractor working with the project owner and designers to refine the project documentation and progress the design, then submitting a price (usually a GCS) for the construction and delivery of the project under Stage 2. 	<ul style="list-style-type: none"> ■ Generally a two-stage process involving RFPs from the open market, unless approval has been obtained under the <i>National alliance contracting policy and guidelines</i> (Department of Infrastructure and Transport 2011) to use a single-stage process. ■ Selection workshops are held, price and non-price criteria are evaluated and, in ‘competitive’ ECIs, two or more teams are selected and work independently of each other (with project owner input) to develop a preliminary design and risk adjusted price for the works. Only the successful team will proceed to Stage 1. 	<ul style="list-style-type: none"> ■ Generally a two-stage process involving RFPs from the open market, unless approval has been obtained under the <i>National alliance contracting policy and guidelines</i> (Department of Infrastructure and Transport 2011) to use a single-stage process. ■ Short-listed applicants are invited to participate in selection workshops and the project owner selects two proponents to compete on targets for cost schedule and other key parameters. ■ Through collaboration, the project owner takes the lead in providing understanding and guidance on project objectives in the scope and risk development undertaken by the proponents through the target outturn cost (TOC) development process. 	<ul style="list-style-type: none"> ■ May be a two-stage process: <ul style="list-style-type: none"> – Stage 1 – EOIs or ROIs from the open market. – Stage 2 - RFP process which includes interactive workshops. ■ A range of technical and financial criteria are used in the evaluation and selection process ■ Procurement costs for all parties are generally high due to the need for expert advisers and lengthy contract negotiations. Some project owners may offer to reimburse short-listed respondents’ costs²².

²² Evans & Peck report a figure up to \$40M for large-scale projects) primarily due to design and legal costs (Forward & Aldis 2010). However, these costs (said to be 0.5 – 1.2% of project capital value depending on project size) are said to compare favourably with other countries such as the UK (KPMG 2010).

	Construct only	Design and construct (D&C) & variants	Managed		Relationship		PPP
			Construction management	Managing contractor	Early contractor involvement (ECI)	Alliance	
Typical procurement process (cont.)							
						<ul style="list-style-type: none"> ■ The project owner’s decision in selecting its preferred proponent to deliver the project is based on a balanced judgement of the price and non-price attributes of the TOC development outcome (including the proponent’s proposed project solution) and the team capability it offers. This includes the commercial and legal arrangements, etc. which have a significant implication on the final actual price paid. ■ If the TOC is agreed a ‘Project Alliance Agreement’ will be entered into by the owner and the preferred proponent, which governs the remainder of the alliance period. 	
Risk allocation							
Design risks	The risk of any design-related matters rests with the project owner, which must seek recourse from external design consultants re: design-related errors or omissions.	The contractor bears the risk of design, including warranting the design’s fitness-for-purpose.	The project owner generally bears the design risk.	Typically, the managing contractor assumes responsibility for the designers, and will therefore bear design risks, including design development and documentation process risks.	Design risks are negotiated and allocated to the party best placed to control each aspect of the risk – generally the contractor.	Design risk is shared – but the NOPs’ exposure may be capped as part of the ‘pain share, gain share’ arrangement.	The private sector partner(s) generally assumes the financing and cost risks of the design, and is required to warrant the design’s fitness-for-purpose.

	Construct only	Design and construct (D&C) & variants	Managed		Relationship		PPP
			Construction management	Managing contractor	Early contractor involvement (ECI)	Alliance	
Risk allocation (cont.)							
Construction – Cost risks	<ul style="list-style-type: none"> The contractor bears the risk under a lump sum, with the risk partially borne by the project owner under a schedule of rates, for items outside specified limits of accuracy. The project owner generally assumes some cost risk around latent conditions and permits/ approvals. 	<ul style="list-style-type: none"> The contractor generally bears the risk, except for some latent condition and permit-related risks. Project owners may seek prices based on certain risks being priced 'in' or 'out' of the tenderer's final offer. 	<ul style="list-style-type: none"> Individual trade contractors bear the risk under lump sum arrangements, with the risk partially borne by the project owner, where there is a schedule of rates, for items outside the specified limits of accuracy. The project owner generally assumes some cost risk around latent conditions and permits/approvals. 	<ul style="list-style-type: none"> The managing contractor usually takes all construction cost risks over the GCS. The project owner generally assumes some cost risk around latent conditions and permits/ approval. 	<ul style="list-style-type: none"> The construction cost risk is negotiated, but largely borne by the contractor, given the time allowed in Stage 1 to investigate project risks, including constructability. As with D&C, project owners may seek prices based on certain risks being priced 'in' or 'out' of the Stage 2 offer. 	Risk is shared (including for force majeure events), but the NOPs' exposure may be capped as part of the 'pain share, gain share' arrangement.	<ul style="list-style-type: none"> The private sector partner(s) generally assumes the majority of the risk, except for sovereign risk and changes to the regulatory environment, which may be retained by the project owner. The sponsor will typically allocate significant risk to the construction contractor under a D&C, with residual risk borne by the sponsor and financiers.
Construction – Quality risks	The contractor must construct the works in accordance with the design and specifications.	The contractor must construct the works in accordance with the approved design and the specifications.	Quality-related risks generally rest with the individual trade contractors engaged to deliver specific portions of the works.	<ul style="list-style-type: none"> The managing contractor must construct the works in accordance with the approved design and the specifications. The managing contractor warrants the quality of the works. 	The contractor must construct the works in accordance with the agreed design and specifications.	Construction must meet the quality standards outlined in any agreed key result areas. The quality risk is shared between the alliance participants.	The private sector partner(s) must construct the works in accordance with the agreed design and specifications.

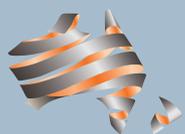
	Construct only	Design and construct (D&C) & variants	Managed		Relationship		PPP
			Construction management	Managing contractor	Early contractor involvement (ECI)	Alliance	
Risk allocation (cont.)							
Construction – Time risks	<ul style="list-style-type: none"> Each party bears the risk of delays caused by it or on its behalf. Liquidated damages provisions may apply if the contractor fails to achieve practical completion by the nominated date. The contractor may receive an extension of time (EOT) for particular delays specified in the contract. 	<ul style="list-style-type: none"> Each party bears the risk of delays caused by it or on its behalf. Liquidated damages provisions may apply if the contractor fails to achieve practical completion by the nominated date. The contractor may receive an EOT for particular delays specified in the contract. 	Time-related risks generally rest with the individual trade contractors engaged to deliver certain portions of the works, as per standard construct only arrangements.	The managing contractor takes on all construction time risks on the basis of dates agreed at the end of Stage 1 which, if not met, may result in the reduction of incentives and additional time-related costs.	<ul style="list-style-type: none"> Each party bears the risk of delays caused by it or on its behalf. Some risks that are difficult to allocate may be shared, including 'neutral' risks like force majeure, with an ability to seek time (but not costs) under the contract. Liquidated damages may apply, and the contractor risks any early finish incentives if timeframes are not met. 	All risks are shared – but the NOPs' exposure to risk may be capped as part of the 'pain share, gain share' arrangement.	<ul style="list-style-type: none"> Some risks that are difficult to allocate, including 'neutral' risks like force majeure, may be shared with an ability for the contractor to seek time (but not costs) under the contract. The remainder of the risks are allocated amongst the private sector partners, with the construction contractor bearing much of the construction time risk.
Maintenance and/or operations risks	Borne by the project owner.	Borne by the project owner, unless a maintenance or operations component is included in the contract.	Borne by the project owner.	Borne by the project owner, unless a maintenance or operations component is included in the contract.	Borne by the project owner.	Borne by the project owner, unless the alliance includes a maintenance/operations component.	The private sector entity assumes all maintenance, operating and demand risk.

	Construct only	Design and construct (D&C) & variants	Managed		Relationship		PPP
			Construction management	Managing contractor	Early contractor involvement (ECI)	Alliance	
Contract administration							
	<ul style="list-style-type: none"> ■ Construction works commonly overseen by a superintendent, principal's representative (PR) or principal's authorised person (PAP). ■ Resource commitment for project owners may be high depending on the degree of testing, auditing and general surveillance required. 	<ul style="list-style-type: none"> ■ Construction works commonly overseen by a superintendent, PR or PAP. ■ Independent verifiers may be required for particular aspects of the design or construction. ■ Resource commitment for project owners may be high depending on the degree of testing, auditing and general surveillance required. 	<p>Construction works are overseen by the construction manager, who generally administers all individual trade contracts, with broad oversight from the project owner.</p>	<ul style="list-style-type: none"> ■ The construction works are overseen by the managing contractor, with broad oversight by the project owner. ■ Resource commitment for project owners and stakeholders may be high Stage 1 due to involvement in the managing contractor's design development and procurement processes, after which the resources required to administer the works are lessened. 	<ul style="list-style-type: none"> ■ Stage 1 is governed by the ECI agreement and Stage 2 is governed by a D&C agreement. ■ In the civil (road and bridge) sector, the following are typically included as part of the administration arrangements: <ul style="list-style-type: none"> — A leadership team, whose role is to monitor performance, help resolve disputes and provide general direction and leadership. — A management team, which includes the PR/PAP and contractor's project manager, which manages day-to-day project activities. ■ In some circumstances, independent verifiers may be engaged for particular aspects of the design or construction. 	<ul style="list-style-type: none"> ■ The alliance arrangement is governed by an alliance leadership team (ALT) and alliance management team (AMT): <ul style="list-style-type: none"> — The ALT performs a similar role to the ECI leadership team. — The AMT performs a similar role to the ECI management team. ■ Independent verifiers may be engaged for particular aspects of the design or construction. ■ Facilitators are commonly engaged to build relationships within and across the ALT and AMT for the life of the project. ■ A dispute resolution board may also be established to help resolve any disputes that cannot be managed at AMT or ALT level. ■ The time commitment required to effectively resource an alliance, including the level of commitment from senior executives, is significant. 	<ul style="list-style-type: none"> ■ The governance arrangements in a PPP delivery model may be complex. Typically, the arrangement includes the project owner, project sponsor which may be a syndicate of banks and/or other financiers, construction contractor and/or asset operator. ■ The complexity of the arrangement means that project owner resources required at the front end of the project are very high but the degree of resourcing required to oversee the contractual arrangements is not generally significant once the project works are complete.

	Construct only	Design and construct (D&C) & variants	Managed		Relationship		PPP
			Construction management	Managing contractor	Early contractor involvement (ECI)	Alliance	
Contract administration (cont.)							
					<ul style="list-style-type: none"> ■ A facilitator may be required to help build relationships across the team(s). ■ The level of resourcing is significant for all parties during Stage 1 due to the integrated nature of the project team and time commitments required to be made by senior personnel. 		
Potential for innovation							
	<p>Consideration of alternative tenders can result in some degree of innovation. However, under some standard forms of contract there is no significant potential for innovation during the construction phase.</p>	<ul style="list-style-type: none"> ■ Strong designer/contractor relationship can result in innovative outcomes. ■ Where a maintenance or operations component is included, there is an incentive to develop innovative solutions to meet durability and other whole-of-life requirements. 	<p>The involvement of the construction manager at an early stage can result in strong constructability input into the design.</p>	<p>The project owner, contractor and designer generally work together in an integrated project team during Stage 1, which generally results in a high degree of innovation into the design and its constructability.</p>	<p>The project owner, contractors and designer generally work together in an integrated project team during Stage 1, which generally results in a high degree of innovation into the design and its constructability.</p>	<ul style="list-style-type: none"> ■ The competition between the two suppliers in the TOC development stage and the input from the owner drives early innovation capture and a robust tender price for the construction phase. ■ There is very high potential for innovation, with input from the project owner, throughout the construction stage. 	<p>The long-term level of risk transfer to the private sector partner results in a very high potential for innovation, particularly at the design stage as there is a strong incentive for innovative solutions to meet durability and other whole-of-life requirements.</p>

The Building and Construction Procurement Guide consolidates Australian government approaches to procuring and contracting civil (road and bridge) and non-residential building works and services into a single overarching framework.

The Guide defines methods, processes and principles designed to reduce inconsistency in approaches to procurement and contracting, and responds to issues raised by industry.



Austroads

Austroads is the association of Australian and New Zealand road transport and traffic authorities.



The Australasian Procurement and Construction Council (APCC) is the peak body for government building and construction policy in Australia and New Zealand.