



New South Wales
Government

Procurement Methodology Guidelines for Construction

Version 1 - February 2005

Procurement Methodology Guidelines for Construction

Establishes common terminology used to describe various options and provides guidance for the selection of the most appropriate procurement methodology, allowing for a range of management, delivery and contract system options and project types, as part of the procurement strategy for construction works (including ancillary maintenance and operation).

This document was developed by the Construction Agency Coordination Committee (CACC).

The CACC membership includes representation of:

- Department of Housing
- Department of Commerce
- Hunter Water Corporation
- Rail Infrastructure Corporation
- Roads and Traffic Authority
- Rail Corporation New South Wales
- Sydney Catchment Authority
- Sydney Olympic Park Authority
- Sydney Water
- TransGrid
- Transport Infrastructure Development Corporation

June 2005

DC Report no. 05011

NSW Department Commerce
Cataloguing-in-Publication data

New South Wales. Dept. of Commerce

Quality management systems guidelines for construction.

Electronic version is available from <http://www.commerce.nsw.gov.au>
ISBN 0 7347 4334 8 (electronic version)

1. Construction industry –New South Wales – Quality control.
2. Title. II. Series (Capital Project Procurement Manual).
3. Public contracts –Government policy – New South Wales

354.944

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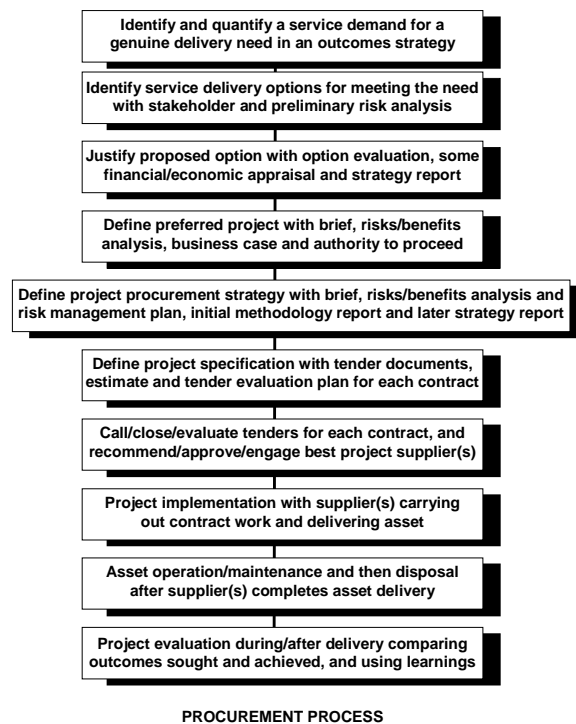
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1. INTRODUCTION

1.1 General

The ten stages in a procurement process for Government projects outlined in the NSW Government Procurement Policy include the definition and approval of a project procurement strategy, which provides a strategy for seeking tenders from the market and managing the project. The strategy follows the earlier service demand identification, service delivery option analysis, preferred delivery option identification and justification, and project definition and approval (with a business case) stages. Producing tender documents and inviting/evaluating tenders, selecting/engaging a service provider(s)/supplier(s) (or contractors/consultants), delivering the procured asset, operating (and where applicable, disposing of) the procured asset and evaluating the success of the procurement follow the procurement strategy stage. The ten stages are summarised below.



For projects valued at over \$10M and high risk projects, the methodology for seeking tenders from the market and managing the project is subject to Treasury NSW approval. Under the Procurement Policy, agencies not accredited under the Agency Accreditation Scheme are required to obtain expert procurement support in project planning and delivery with the procurement of built assets valued at over \$1M. Details of the Policy and additional guidance on procurement generally are available at <http://www.treasury.nsw.gov.au/procurement/procure-intro.htm>.

These Guidelines are designed to assist NSW Government agencies seeking to procure construction works (including ancillary maintenance and operation) to select a suitable procurement methodology for management and tenders/contracting, as part of the procurement strategy, in accordance with the Procurement Policy. This methodology is required for particular projects but should be identified for all projects.

A procurement methodology outlines the key means by which the objectives of a project are to be achieved. The Guidelines describe the systems that constitute such a methodology that are commonly available and in use in project procurement, with their risks, benefits, advantages and disadvantages, and suggestions as to the systems that suit particular types of projects and project risks.

No fail-safe selection process automatically deals with all projects, given the variations in project characteristics, circumstances and risks. The selection requires judgment, experience and expertise. Expert advisors may be required to assist with the selection.

An agency's structure and in-house resource levels/mix will influence and may constrain the procurement options selected as the best for the agency and the project.

A methodology description of the delivery/contract/management systems selected, with the project brief and a risk management plan, would document this part of the procurement strategy for approval in an initial methodology report. The remainder of the strategy would be progressively documented in a strategy report with a project procurement plan or project plan dealing with the strategy implementation processes, more detailed programs and budgets, any development and other approvals required, the management team authorities proposed, project governance and proposed tender processes.

1.2 Definitions

The following definitions apply in the Guidelines:

Agency or Government agency: NSW Government department, authority, corporation or other entity established by an Act of the NSW Parliament. The terms "Government agencies", "agency" or "agencies" may be used interchangeably. An agency may act for a client or be the client for a project.

Brief: A statement of the end user, functional and operational requirements for the proposed project, and project quality, performance, function and scope objectives, known also as the project or functional brief. A design brief covers this and design requirements.

Client: The owner of the asset to be procured or project works, and representative of the end users of the asset.

Concept design: A representation of (and process of developing) the adopted design solution responding to the requirements of the brief in a form understood by the stakeholders, where the functional relationships are resolved and the asset form, envelope and fabric are described in line drawings.

Construction: Includes all organised activities concerned with demolition, building, landscaping, maintenance, civil engineering, process engineering, heavy engineering and mining.

Construction Agency Coordination Committee or CACC: Consists of representatives of key agencies involved in construction procurement.

Consultant: Profession person or organisation that contracts to provide design, management or other services.

Contractor: The organisation that contracts with the Principal and is responsible for the performance of the work under the contract.

Design: The process (and product) of converting a functional and design brief into design details ready for documentation. Design involves concept design and design development. Design development being the part of the process after concept design. The term design may also be used to mean design and documentation.

Design and documentation: Design and the process (and product) of detailing the technical and other requirements for the project in a written form that details the project works sufficiently for them to be constructed.

Management: The planning and interactive controlling of human and material resources to achieve time, cost, quality, performance, functional and scope requirements. It involves the

anticipation of changes due to changing circumstances and the making of other changes to minimise adverse effects.

Principal: The Minister for a departmental agency, or the agency where it is a state owned corporation or authority, that awards and enters a contract, and for whom the contract work is done under the terms of a contract (and who's agent invites, receives and processes tenders and otherwise acts for them).

Principal's representative or authorised person: A person appointed by the Principal to exercise some or all of the functions of the Principal under a contract.

Procurement: The collection of activities performed by and for an agency to acquire services, products and other assets, beginning with the identification/detailing of requirements and concluding with the acceptance (and where applicable, disposal) of the products and other assets.

Project: An undertaking with a defined beginning and objective by which completion is identified. Project delivery may be completed using one contract or a number of contracts.

Service providers: Includes contractors, subcontractors, consultants (including agencies) and sub-consultants, and their service providers, that contract to provide products, other assets and/or services.

2. COMPONENTS OF A PROCUREMENT METHODOLOGY

2.1 Options

The selection of a procurement methodology involves establishing:

- a. the most appropriate overall arrangements (or **delivery system**) for the procurement;
- b. a **contract system** for each of the contract or work packages involved as the components of the chosen delivery system; and
- c. how the procurement will be managed by the agency (or **management system**), to suit the delivery system and contract system(s) selected.

The following **delivery systems** are addressed in these Guidelines:

- *Single contract* - where the agency awards one contract with one contractor to undertake all or the majority of the project works, usually also involving consultant engagements to provide management and design services;
- *Multiple contract* - where the agency divides the project into and awards a number of contract packages, possibly for trades (such as the provision of all the steelwork or concrete) or discrete parts of a project (such as the construction of a single building or section of a building or supply of major equipment), usually also involving consultant engagements;
- *Managing contractor* - where one contractor is engaged very early in the life of the project by the agency, after competitive tendering for management fees and other payment arrangements, to manage and undertake the scope definition, design, documentation and construction of the project works using consultants and subcontractors, under a contract involving incentives for achieving agreeing target price limits and other performance when the scope is defined;
- *Alliance contract* - involving an agreement between an agency and other entities to undertake work cooperatively, reaching decisions jointly by consensus, using an integrated management team and intensive relationship facilitation, where the entities each cover some project risks and potentially gain some rewards, to achieve agreed outcomes relying on "good faith" and trust, and using an open-book approach in determining costs and payments;
- *Privately financed project* - where the agency arranges asset procurement under an agreement with a private sector entity, involving entity financing, development, ownership/control (possibly operation) and provision of the asset for a concession period;
- *Direct labour* - where the agency directly hires and supervises trades-persons, labourers and/or plant, and directly purchases materials or equipment to carry out the project works, and possibly also uses some trade or small work packages, usually also involving consultant engagements; and
- *Period contract* - where an existing standing offer contract for a particular type of work, such as goods, services or product supply, is used to deliver the project works or part thereof.

The following **contract systems** are addressed in these Guidelines:

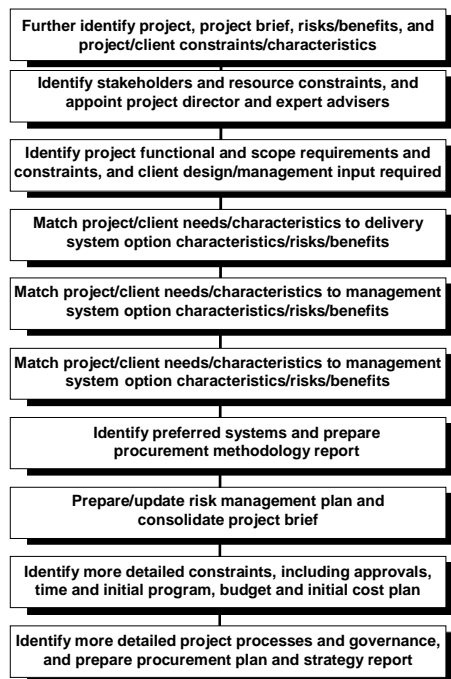
- *Construct only* (CO - contract for construction and a minimum of design);

- *Design development and construct* (DD&C - contract for construction and design based on at least a concept design by the Principal)
- *Design and construct* (D&C - contract for construction and design based on at least a project/functional brief);
- *Design, novate and construct* (DN&C - contract for construction and design where the previously engaged designer is novated to the contractor);
- *Design development construct and maintain* (DDC&M - contract for construction, design based on at least a concept design by the Principal, and then maintenance of the constructed asset);
- *Design construct and maintain* (DC&M - contract for construction, design based on at least a project/functional brief, and then maintenance of the constructed asset);
- *Design development construct and operate* (DDCO - contract for construction, design based on at least a concept design by the Principal, and then maintenance and operation of the constructed asset);
- *Design construct and operate* (DCO - contract for construction, design based on at least a project/functional brief, and then maintenance and operation of the constructed asset); and
- *Guaranteed maximum price* (GMP - design (or design development) and construct contract with conditions restricting the price/time for the work).

The following **management systems** are addressed in these Guidelines. Each system also involves a project director and support personnel to act for the agency:

- Project management - where the overall management of the whole project is the responsibility of consultant, in-house or another agency personnel (a person or team) engaged as a project manager;
- Project/construction management - involving project management and a more intense approach to managing the construction phase of the project, where direct labour or many small work/contract packages are involved; and
- Project/contract management - involving project management, but for the management of the agency interface with only one main contract for the remainder of the project work, such as a D&C contract or managing contractor contract, by consultant, in-house or another agency personnel (a person or team) engaged as a contract manager.

The selected delivery, contract and management systems and methodology would be described in an initial methodology report also describing the project risks, constraints and characteristics, with the characteristics, risks, advantages and disadvantages of the various systems considered. The report would be submitted with the brief and a risk management plan for the required approval. The management system description would cover the nature, roles and responsibilities of the management team proposed. The methodology selection process involved after the defining and authorising of the preferred project is outlined below.



PROCUREMENT METHODOLOGY/STRATEGY SELECTION PROCESS

If, for example, a single contract delivery system was adopted, then one of the available contract systems would be chosen, such as DD&C. A project manager (and probably a design consultant to help prepare the design brief/concept design with the other tender/contract documents) would then also be involved. A PFP, alliance contract or managing contractor system could also be the single contract. They would require a project/contract management system, and sufficient management and agency support to prepare a brief and award and manage a contract.

If a multiple contract system was adopted for the project, then various combinations of the listed contract systems would be available for the procurement. A project manager and probably a design consultant would then also be involved.

The decisions on contract packaging should consider the advantages of bundling together the delivery of several contracts or projects into a single (larger) contract, even where they involve separate sites. The advantages could include economies of scale and an improved risk profile for packages with compatible timing, funding to suit, common or compatible stakeholders, and compatible relationships with other work.

A standard form GC21 General Conditions of Contract template developed by the CACC for the contract systems outlined above is available at www.construction.nsw.gov.au/publications. It is also available, with additions for DN&C and DC&M/DDC&M options, and templates for conditions of tendering and special contract conditions, and consultant and project/contract manager form templates, through a helpdesk, on (02) 9372 8600, which is provided to assist with procurement implementation enquiries. Information regarding current period contracts and information communication technology (ICT) procurement is available at www.supply.dpws.nsw.gov.au. ICT procurement is not included in this Guideline, but ICT related guidelines are available at www.oict.nsw.gov.au.

2.2 Characteristics, Constraints and Risks

It is essential that the management and delivery systems are selected very early in the life of a project. The contract system selection may occur at the same time, but could occur or be confirmed later and progressively as the project is clarified.

The risks, advantages and disadvantages with each of the delivery, contract and management systems and their characteristics are described in the Guidelines to assist the selection of appropriate procurement strategies. These should be considered in the selection process with the identified project risks, constraints and characteristics. The agency may need external expert advice to assist with the decisions involved. The decisions may be assisted by workshops involving the relevant stakeholders and experienced facilitators.

Project financial, physical, geographical, time, functional and design constraints and characteristics are usually involved. Systems should be selected that will best suit the project and maximise the benefits obtained from the expertise, initiative and innovation of the private sector. Some risks that may be higher for a particular system may not be critical for the project and therefore could be accepted by the agency. Some systems deal better with some project risks and characteristics than others.

Agency related project constraints and characteristics could include the available budget, budget flexibility and contingencies, funding source, cashflow restrictions, time available for completion and its flexibility, staging needs, completeness and clarity of project brief, influence required with design, design standards available, technology, project stakeholders, availability of appropriate in-house resources (including for planning, design and management), and agency objectives and preferences in maximising the project benefits achieved.

Physical project constraints and characteristics usually include the type of work (new work, refurbishment or maintenance), type of asset (building or civil engineering), site characteristics ("green field" or in occupied premises or existing assets), work and design complexity, location of work site and size of project.

2.3 Risk Management

The selection of the delivery and contract systems determines or affects the allocation of risks (whether to the agency, consultants, contractors or others), types and levels of risk, and the likelihood they will be realised. The selection should therefore include risk management to ensure the best outcome. Each of the systems includes a particular risk allocation regime. Some systems include incentives to encourage better performance.

For example under a single contract system, risks associated with the coordination of component work packages are with the contractor. Some contract coordination risks are with the Principal (for the agency) under a multiple contract system. Managing contractor, alliance contract and PFP systems cover all the project design and construction in a single contract that also covers work package coordination, and allow for performance incentives.

Where late brief or design changes are required by the agency this generally increases the risk for the agency. A well-defined brief/design reduces the likelihood of late changes being required. Both the single and multiple contract delivery systems could involve similar risk with design changes, depending on the extent of the design involved under a contract. A multiple contract delivery system allows more flexibility with change, with parts of the project generally being contracted as they are sufficiently well defined. If however the brief/design is ill defined for a contract with any delivery system, particularly with a D&C contract, there is a greater risk to the Principal of design/construction not meeting expectations or more costly post contract design changes being needed to address shortcomings. Construct only contracts allow the agency to fully develop the scope/design and reduce these contract risks. Managing contractor and alliance contract systems can also reduce such risks, with projects where the scope needs to be resolved and developed as part of the contract work.

Questions that should be considered in the allocation of risk include:

- Who has the greater degree of control over the risk eventuality?
- Who is best placed to identify, assess, evaluate and manage the risk?
- What allocation of risks to each party is best for the project?
- Who can best allocate the risk to another party (such as an insurer) that can cover, control or manage the risk?

A risk to a contractor that cannot be realistically priced in a competitive tendering environment may force the contractor to under allow for the risk, and then seek compensation through the contract or at law if the risk event occurs, or alternatively the contractor may allow a premium in the tender price that may not be required. This risk allocation would not generally give the best outcome for the project. The agency taking the risk and providing for it to be addressed if it eventuated could avoid unnecessary agency cost.

Where project scope is unclear and requires development with a contractor, delivery and contract systems that allow the development risk to be allocated progressively should be considered.

Further guidance on risk management and preparing risk management plans is in the *Total Asset Management Risk Management Guideline* (TAM 04-12) available at <http://www.treasury.nsw.gov.au/tam/tam-assess.htm>. Guidance on risk management and determining risk levels is also included in AS 4360, *Risk Management*.

A Ranking Schedule is included an [Appendix 1](#) to assist as a guide, with [Section 3](#), in the identification of the relative qualitative merits of, and possible risks with, delivery and contract systems as part of a project risk management and procurement methodology selection process. The Schedule lists typical and other risk issues that may be involved, and rates the ability of various delivery and contract systems to deal with these issues in typical circumstances. Other ratings may apply, and these and the applicable higher risk or more significant issues with their relative weightings would need to be determined, for the particular project, agency and circumstances involved.

For more complex projects a quantitative evaluation of the relative costs with possible systems may be used. With this approach, each system could be modelled using risk-based cost estimating, possibly with the assistance of an expert advisor such as a quantity surveyor.

3. DELIVERY, CONTRACT AND MANAGEMENT SYSTEMS

3.1 Features of Delivery Systems

3.1.1 Single Contract Delivery System

Characteristics

With a single contract delivery system, one major contract is used to carry out the majority of the project works and usually determines most of the cost of the project. Some pre-contract management/coordination and brief/design preparation are required, usually involving consultant engagements, the amount of which will depend upon the contract system adopted. A project or contract manager and agency project director would normally provide the pre and post contract management required for the agency.

Any contract system may be used with this delivery system. A managing contractor, alliance contract and a PFP scheme may also be used, to allow for more scope development and other special project needs under the contract. They are considered separately as delivery systems below.

When Used

A single contract delivery system is the most appropriate choice where:

- there is no advantage to be gained in using several contract packages;
- enough time is available, and there is no need for fast tracking using more packages;
- one contractor can most efficiently manage the mix and scale of work, particularly where a more conventional contract form is appropriate;
- the project budget needs to be evaluated/validated prior to construction starting;
- the whole scope of work can be agreed, readily defined and documented early in the life of the project; and
- the agency is seeking, and the project suits, the simplest system to coordinate.

As a general rule the single contract is the most common system adopted. Being the simplest form to coordinate, it should always be considered. It is particularly suitable for smaller projects.

Advantages

The Principal is only required to award one main contract at an appropriate time to achieve the desired completion date.

Most of the project coordination risk is with the contractor, and the management for the agency is minimised.

A better overall market-based contract/project cost estimate can be obtained early in the life of the project.

Disadvantages

Not as suitable for fast tracking by overlapping design and construction as a multiple contract delivery system.

The brief and/or design and specification must be clear for the full project to avoid changes that are usually more costly after a contract award.

Not as flexible as other delivery systems for special projects, if the scope needs development or changes are likely after the contract award.

3.1.2 Multiple Contract Delivery System

Characteristics

With a multiple contract delivery system, the project is delivered through several work packages that are initiated progressively, each involving a contract system. The work packages selection must be well planned and structured to suit the project implementation

required. The system involves agency risks with the coordination of the contract packages, but offers more timing and work flexibility.

The system allows some contract work to begin before all contract documentation is complete for the project. It allows contracts to be let as documents for each package are prepared to suit a staged program for the project. Risks can then be addressed, as they are understood, in the various contract packages as they are awarded progressively

The system allows project/program time compression with the staging, and can provide more time for the agency to control or influence the design process. Any later changes to design requirements in later packages can then be more economically and readily accommodated. It allows for design, construction, commissioning and occupation of some project works components to progress ahead of others (possibly at some cost risk). There is then a greater ability to react progressively to technological changes and new opportunities as the project proceeds. Cash flow can be more readily managed with the staging allowed. Separate supply contracts for major items of specialised equipment that have a long lead-time may be used.

A multiple contract delivery system requires decisions to be made on the contract system for each of the contract packages involved, and whether they will be independent or related work packages or interdependent trade packages, or a combination of these.

Trade packages are usually highly interrelated to each other with each being highly dependent on performance under the others. Such packaging requires a highly developed and detailed trade based construction program, a tight schedule for the design and documentation to support the construction timing, and more detailed expert management. Generally using trade packages is not the best option, and they are only used where absolutely necessary because of the detailed agency control needed of the parts of the project involved.

More management for the agency, sometimes including more intense construction management with many small or trade packages, is generally needed for the multiple contract system, with the extent depending on the number and type of contracts and consultant engagements involved. A project manager and agency project director would normally provide the management required.

For suitable projects where the early involvement of a key contractor(s) and other special features are required, the flexibility and other advantages (with less management and coordination for the agency) of this delivery system may also be obtained with managing contractor delivery system. The alliance contract delivery system may also offer flexibility in early participant involvement advantages for extraordinary projects and circumstances.

When Used

The multiple contract delivery system is suitable for projects where:

- separate components of the construction are spatially independent and should be completed separately for this and other reasons, where the extra flexibility, staging and separate packaging are necessary or advantageous;
- risk management requires some components to be completed earlier to identify or resolve issues, such as where there are potential foundation problems and an initial contract is awarded for foundation preparation to address the risks ahead of, and to help define, the subsequent work; and
- separate work package contracts are required to deal separately with particular complexities or specialist work associated with parts of the project.

Advantages

Allows time compression with the early commencement of some construction ahead of complete design/contract documentation for all project components, when preparation and tendering for only one contract would not be possible in time.

Enables the direct early engagement of some specialist contractors (product or trade or with design input) and direct early purchases of major plant items and materials from suppliers.

Allows staging with the opportunity to bring forward or postpone packages or accelerate or decelerate some work more economically, including to meet cash flow requirements.

Allows more control with the direct selection of particular work or trade contractors and hence the quality of the finished product.

Allows more flexibility in controlling costs within budget with less certain initial briefs and conditions, as standards may be reduced or work omitted where a cost or time overrun with early work is expected, or alternatively, work and standards may be increased where funds and time permit.

Allows more flexibility in dealing with the potential impacts of brief, design or work changes, including in the construction phase.

Allows more choice with the quality and size of particular construction/contract teams.

Disadvantages

Later identification of overall market based project cost estimate, more uncertainty with the end cost, and more cost risks than with a single contract, particularly with trade packages.

More uncertainty with the overall project completion time and more time risks than with a single contract.

More discipline is needed to minimise avoidable changes, made possible with the extra flexibility with the system, and to expedite design and thereby decrease avoidable project costs.

Increased disruption, delay and cost potential with discrepancies and interfaces between contract packages.

More agency management resources and costs are required in the preparation of tender and contract documents, tender process management, and in contract administration and coordination.

A commitment to all contracts and some construction is needed prior to knowing contract prices for the whole project.

The agency carries greater contract coordination and interface risks generally.

3.1.3 Managing Contractor Delivery System

Characteristics

The managing contractor system is for projects where the scope of work requires substantial development to suit a basic project brief, and there are advantages in involving a contractor early to manage and help with this development and then design and construct the project works. The managing contractor is engaged early to commission, manage and accept responsibility for a team of consultants that develops the brief and designs the project works, and a team of subcontractors that constructs the project works.

Only projects with special needs suit or require this approach, and for these the managing contractor system provides unique advantages.

A number of managing contractor system approaches are available. The contract initially involves a design and project management agreement, and then usually provides guaranteed lump sum ceiling priced DD&C/D&C agreements, negotiated after the scope is sufficiently developed under the contract. Some provisions for price changes and the sharing of savings with incentive fees are included. Mechanisms are usually included to assist relationship management and the removal of barriers. Further characteristics are described in [Appendix 2](#).

A managing contractor contract is not a lump sum contract. It involves the payment of actual reasonable costs (up to the ceiling priced or guaranteed construction sum(s) for

construction work, or up to a guaranteed total price for all the work to suit a target set by the agency) plus fees, plus the incentive fees where targets are bettered.

The managing contractor confirms the project brief, and develops the design brief, concept design and design. During this, the agency has the opportunity to influence or change design with a minimum of risk of unreasonable additional design and construction costs. Reasonable actual costs are identified or agreed and paid with the fee percentage.

This agency input into design, and greater potential to influence both the design and construction processes allowed, involves less agency cost/time risks with changes than would be involved with D&C and DD&C contracts, with their greater potential for related disruption and higher contractor claims. The potential for late changes is less, because the managing contractor is not asked to offer lump sum ceiling prices until the design is sufficiently advanced and resolved with the agency.

The system allows flexibility with subcontract times for completion and staging with the subcontract work packages identified and developed with the managing contractor, before subcontracts are awarded, reducing the scope for disruption or delay costs with changes that are passed on to the agency.

The managing contractor is selected as an expert in the management of large design and construction projects. At the same time, the agency/Principal can have a say in the managing contractor's early selection of the best design consultants and the most efficient construction subcontractors. Both design and construction are competitively tendered with the engagement of consultants and subcontractors, giving assurances about the value for money achieved.

More agency influence and involvement in selecting and monitoring consultants and subcontractors is usually involved to verify value for money. Open-book approaches may also be used to verify costs. This extra involvement entails more administration, but the system requires less overall management for the agency than would be required with full design and construction management with a project manager, as more is contracted to the managing contractor.

The additional administration includes monitoring the tender process for the selection of design consultants and subcontractors, obtaining and negotiating the guaranteed construction sum(s), verifying consultant and subcontractor costs, and a more complicated process of verifying the progress and final payments. Approaches can be used that allow for less involvement in these processes, with some increased risks with demonstrating value for money.

A contract manager would normally also be engaged and/or an agency project director appointed to manage the managing contractor contract and support the agency. Less management is required of them relative to other systems with difficult projects (e.g. a single D&C/DD&C contract may involve less generally, but would not suit such projects).

When Used

The special types of projects that need the managing contractor approach, would have many or all of the following characteristics that mean they would not be delivered as well by other means:

- project threats and opportunities that are best managed collectively by the key participants, including more involvement by the agency in delivery;
- significant/many unknown factors that are complex to resolve in the time available, including unclear or uncertain scope, uncertain and unpredictable risks, changeable project criteria and/or changeable scope throughout the initial delivery;

- delivery times that are early/tight and fixed;
- funding that is fixed;
- early key participant input and industry innovation are required, such as special technology input and/or progressive technical updates;
- project risks and their management are more complex generally;
- more conventional risk allocation, to suit the participant that would normally best manage the risk, would be unrealistic at the time the participants need to be engaged;
- the various diverse interests of the key participants need to be brought together early/expeditiously to allow the project to proceed;
- stakeholder interfaces and relationships are substantial, complex and/or difficult to manage, particularly in the time available; and
- the agency accepts that risk management requires a special delivery approach.

For difficult projects with special needs the advantages of the system include the following. There are then potential disadvantages because of the inherent uncertainties with such difficult projects and the methodologies needed to deal with them such as the system. These system disadvantages are generally only involved, relative to other more conventional delivery/contract systems, until a guaranteed construction sum(s) or guaranteed total price, with agreed contractual dates for completion, are in place.

Advantages

Allows collective stakeholder resolution of early scope issues, with fuller agency and expert initial input into design with less cost risk and more control of scope/value.

Allows earlier completions with the overlap of design and construction, and staging, and allows the early start to construction without waiting for full design completion.

Provides more flexibility and is better able to deal with complexity in developing the scope and design, giving better outcomes, for suitable projects.

Gives greater flexibility to accommodate design influences/changes during early design with less cost risk.

Allows the early involvement of all key project participants in developing responses to the project objectives.

Encourages the early involvement of hard dollar contractor management in project management with incentives, for special projects, and reduces the need for separate overall project management support for the agency.

Gives management advantages, for special projects, relative to other delivery systems because of the type of managers/management more likely to be provided.

Disadvantages

Early "cost plus" arrangement (within tendered fee and subcontract package limits) with more early risks to the agency of exceeding cost targets.

Early target rather than fixed time periods (within tendered subcontract package limits) with more early risks to agency of exceeding time targets/limits.

Greater early dependence on good relationships and contractor efficiency, with managing project risks, and achieving targets and outcomes.

Early risks to the agency of not achieving best value for money outcomes, with inappropriate contractor management.

More contract administration, but less overall management for the agency than with other options for special projects.

Less early incentive to expedite design, and greater early risk with having late design decisions and design changes, requiring greater discipline and prudent management by the agency and contractor.

Difficulty with setting appropriate target prices early to suit the expected work scope based only on a project brief and possibly some concept design details.

Advantages

Provides greater potential for more efficiencies/optimum design and savings that are shared with the agency with incentive payments.

Provides many of the other advantages of “relationship contracting” with its mechanisms for resolving issues and sharing benefits for special projects.

Disadvantages

Potential for the agency to have expectations exceeding the brief and targets set, reducing the incentive for the contractor to agree guaranteed construction sums and/or work within the targets.

Number of competent and willing potential tenderers is more limited, and higher margins for the management provided and different profit potential involved may be expected.

3.1.4 Alliance Contract Delivery System

Characteristics

An alliance contract (or project alliance or alliance) is an agreement between two or more entities that undertake to work cooperatively, reaching decisions jointly by consensus, using an integrated management team and intensive relationship facilitation. These entities each cover some project risks and potentially gain some rewards in achieving the agreed outcomes, relying on good faith and trust, and using an open-book approach to identifying costs and payments. Further characteristics are described in [Appendix 3](#).

Alliance contracts are part of a range of delivery and contract systems that involve “relationship contracting” that include processes to manage relationships, remove barriers, and maximise the contributions made and successes achieved by all the participants. Other relationship contracting models include the managing contractor system and GC21 General Conditions of Contract based contracts (in part).

Alliance participants are selected early in the project on the basis of factors other than price, including the alignment expected with, and the relationships expected between, the participants. The agency chooses the entities it regards as most able to deliver the required project outcomes, including value for money. Time is spent in the selection of participants, involving discussion, alignment, senior executive meetings and workshops, to establish trust, explore relationships and identify the right personnel and participants.

The participants in alliances vary to suit the project. All the key participants in a project could be parties to the alliance contract. As a minimum the agency (and client if another entity), the designer and key construction contractor(s) would normally be involved.

Typically, the project participants could also include, consultants, expert advisors (could also be engaged separately, particularly relationship/alliance facilitation, time, cost and KPI experts), key management providers and specialist contractors/suppliers. Participants may be identified as consortium teams, individual organisation or persons. Some organisations, including contractors and subcontractors, could be involved in a project through more conventional contracts.

The participants are represented equally (say up to 2 people each) on a management “board” with an equal say in decisions that are made by consensus (except with changed project scope and funding, that are determined by the agency or client).

The people provided by the participants form an integrated management team (headed by one person as project manager) in a single office with positions filled on a “best for project” basis (not necessarily to suit their employer’s role). The people are given clearly defined roles and responsibilities and are required to make decisions on a “best for project” basis. A project director and agency/client personnel would normally represent the agency/client on the “board” and management team.

The agency would normally agree to pay participants for their base costs, as confirmed by open-book audit and/or negotiation, plus pre-determined corporate overhead and profit margins, so long as the target costs for the project are not exceeded and target performance is achieved. These margins would be reduced or not paid if the target costs were exceeded or target performance was not achieved. The proportion at risk would be determined by agreed risk/reward curves or formulae. Other incentives may also be involved, linked to performance targets, such as the payment of agreed shares of cost savings or the deduction from payments of agreed shares of cost overruns, adjusted to suit other performance (using KPI) and shared in proportion to each non-client/agency participant's pre-agreed involvement.

The liability and pain of the non-client/agency participants is capped (and the agency/client has the remaining liability), with the participants agreeing they have no recourse to litigation except for wilful default, failure to maintain insurance, non-payment, failure to honour an indemnity or failure to give audit access. PI insurance does not cover areas where the insured's liability is waived, so special agency liability provisions and insurance cover are required where professional risks are high and the consequences are substantial.

When Used

Alliance contracts may be more effective and beneficial than other alternatives, and be the best approach, when most of the following project constraints and characteristics exist for large and complex (probably high profile) projects:

- improved and extraordinary outcomes are sought under extraordinary circumstances, through the extra relationship facilitation and motivation possible through an alliance, including with project location and/or complexities that are exceptionally challenging;
- threats and opportunities are involved that are best managed collectively by the key participants, including more involvement by the agency/client in delivery;
- budget is fixed and limited and requires a special or extraordinary effort to achieve the outcomes expected;
- time and the other challenges with the project do not allow other alternatives, and require a special or extraordinary effort, including where more conventional contracts would not be possible when the participants need to be engaged;
- project scope is unclear or uncertain, and is very difficult to properly define in the time available with significant/many unknown factors involved;
- project risks are uncertain or unpredictable, and project criteria may be changeable;
- considerable complexity is involved, with little time to resolve the issues, such as environmental issues, and those that require special and complex key stakeholder involvement;
- there is a need for early advice from a range of key stakeholder experts to help together to define the scope and resolve the issues involved;
- there are various diverse key stakeholder interests to be brought together early and expeditiously;
- key stakeholder interfaces and relationships are complex and/or particularly difficult and require a special approach, such as complex agency/client, consultant and contractor interaction and management with large design and construct projects; and
- community interests are complex and require a special approach.

With other delivery and contract systems, for applicable projects the constraints would lead to greater risks to outcomes and more potential for problems. Under an alliance contract extraordinary issues and problems are able to be dealt with on the best for the project basis, facilitated by the non-adversarial alliance approach and mechanisms, including the cooperative and collaborative behaviour encouraged, the collective decision-making and integrated management involved.

An alliance contract will not be suitable, where:

- the agency/client, consultant, contractor other participant personnel to be involved are not experienced at (to some degree), or suited to, successfully working, or not able to work, as a team with the attitudes and approaches needed for an alliance;
- the agency/client is not convinced the risk management needed requires this special delivery approach;
- the non-client/agency participants required do not have the attitude, capacity, expertise, or corporate cultures needed for an alliance;
- the project is relatively small, and the additional tender process and alliance implementation costs are not consistent with the project value and the benefits to be gained; or
- more conventional delivery and contract systems will achieve the outcomes required, such as where the project is not as complex, there is little room for improving outcomes with such an effort, the outcomes can be achieved more readily by other means with less intensive relationship facilitation, and time is available to resolve complexity/issues and complete design without alliances.

There is usually an inherent early uncertainty about project outcomes because of the special nature of applicable projects, and not just the system, that would be the same or worse with other systems. The system also involves inherent risks and benefits as follows.

Advantages

Lower industry tendering costs and reduced, but more intense, tender evaluation period(s).

More reasonable risk allocation for non-agency/client participants (but greater potential risk to agency/client).

Better potential for maximising innovation and product efficiencies with special projects.

Better incentives for safer working conditions with special projects.

No dispute culture and better potential for win/win outcomes with special projects.

Potential for reduced project costs, earlier completion and better outcomes generally with special projects under extraordinary circumstances, and with the incentives for cost savings and cost transparency available.

Disadvantages

Less tender price competition and related certainty with value for money.

Higher costs and more effort involved facilitating relationships and determining costs.

Responsibility with risks may not be as clear, and more is with the agency/client outside that allocated and where liability is not specifically allocated.

More risks with controlling the direct costs to participants paid by the agency/client, mitigated by cost targets and more client involvement.

More potential for quality to be compromised to meet cost targets, mitigated by quality targets and more client involvement.

High level of dependence on relationships, teamwork and the adaptability and performance of individuals, more demanding on all the personnel involved, and difficult culture and attitude shifts/changes required of many.

Advantages

More project management efficiencies with integrated management for special projects.

Allows early key participant input and involvement, allowing better development of the responses to the project objectives with special projects.

Improved design and quality outcomes with special projects.

Better potential for job satisfaction and skill enhancement for the people involved.

Advantages for the non-client/agency participants with more certainty with cost recovery and better potential for returns; capped liability and risk; better potential for win/win outcomes; and better potential for enhanced corporate reputation, satisfaction and skill development, particularly with achieving enhanced goals, and making culture and attitude changes.

Disadvantages

Extra direct agency/client involvement, cost and input required, though probably less than other systems for special projects.

The non-client/agency participants could expect and receive a higher margin (including profit) than with other systems for the additional resource intensive and demanding input and commitment required.

Higher consultant costs are more likely (but lower construction costs potential greater).

Much lower liability cap for non-client/agency participants and loss of agency/client litigation/legal rights, and reduced PI cover to suit lower limits to the liability of professionals.

Disadvantages for the non-client/agency participants with the extra effort required to provide a return (possibly due to the project demands as much as the system), particularly with stretch goals, extra people management, and culture and attitude shift/change required; opening of "books" to public scrutiny and having accounts to suit; more demands on people; and requirement to provide the best people, expertise, resources and skills available to the one project.

3.1.5 Privately Financed Project

Characteristics

The procurement of capital works may involve the use of private sector funding with "privately financed project" (PFP) delivery, such as "build own operate transfer" (BOOT) and "build own transfer" (BOT) schemes.

Privately financed projects involve the private sector financing and developing an asset, with developer ownership/control (possibly operation) and provision of the asset for a concession period. The Government may contribute through land, capital works, risk acceptance, revenue diversion or the purchase of agreed services related to the asset, such as their operation and maintenance. The approach is generally used to cover economic and social infrastructure, and typically includes both a capital works component and an ongoing service delivery component.

The complexity of these schemes means some specific tailoring and suitability analysis for individual projects would be considered initially before the project procurement strategy was fully explored, and this is not covered in detail in this Guideline.

The November 2001 *Working with Government - Guidelines for Privately Financed Projects* document (available at <http://www.treasury.nsw.gov.au/www/pdf/wwwguidelines.pdf> with other documents) addresses the involvement of the private sector in the procurement of the State's infrastructure using PFP options such as BOT and BOOT schemes, and provides further information on such schemes.

Suitable projects are usually initiated by seeking expressions of interest, and then a request for detailed proposals from a short listed panel of respondents, and the selection of a developer from the proponents. The invitation for expressions of interest and request for

detailed proposals would define the scope of work/options being sought from the private sector and the basis/criteria for the evaluation of responses and proposals.

The specific criteria used and their weightings will vary on a case-by-case basis, however the generic criteria that would generally to be included are outlined in the *Working with Government - Guidelines for Privately Financed Projects* document.

Arranging a PFP agreement requires more effort, expert advice, management and support for the agency than other systems. A contract manager would normally be engaged and/or agency project director appointed to manage the agreement and support the agency. Less management may be required than for other systems after the agreement is in place, as more is contracted to the developer.

The following are some general PFP agreement characteristics:

- risk management processes would be used to ensure that all project risks are properly assessed, valued (where appropriate) and allocated to the party best able to manage them in any agreement;
- the Government would not guarantee private sector borrowing's or take an equity share holding;
- the return to a developer and, where applicable, to the Government, would only reflect the risk(s) borne;
- local council guideline compliance would be required;
- adverse affects on consumer rights would be prohibited;
- assets would be developed (and operated) in accordance with appropriate Australian and international standards, and the developer would be required to obtain and conform with appropriate Development Approval conditions and regulations, including those covering the protection of the environment; and
- core services related to the asset would be delivered by the public sector, and non-core services would be delivered by the private sector where this provides better value for money.

When Used

Projects requiring private sector financing that are able to provide a return to a private sector developer, with long concession/service delivery periods, possibly up to 25 years or more for some assets, and with a total contract value of \$20 million or more may suit this delivery system.

Such projects must meet the same standards of economic, social and environmental evaluation set for publicly funded projects, and a PFP option must be shown to give a better overall outcome for the Government in these areas relative to other delivery systems (using comparator model assessments).

Advantages

Enables much of the impact of obtaining capital funding to be either totally or partially absorbed by the private sector or spread over a much longer period than for other systems.

For applicable projects, the asset management risk rests with the private sector developer, not only during construction but also during part or all of the life of the asset.

Disadvantages

Possible public misconceptions about the benefits and nature of the project as a private sector initiative rather than, and in comparison with, a Government initiative.

The need for officers and advisors/consultants with the right level of less common contract experience necessary to thoroughly assess financial/technical proposals, to manage the

Advantages

Provides more economic asset development and, where applicable, associated service provision for special projects.

Where the responsibility for the day-to-day operation of the asset rests with the developer after the asset is provided, less is required of the agency, maybe only management of the asset lease, monitoring of asset maintenance and probably some operation/use of the asset.

Lower overall agency asset delivery and management cost, offset to some extent by higher agency tender process costs.

Disadvantages

tender process and negotiations with potential developers, and to document and manage the PFP agreement.

More agency cost/time with the efforts of the above advisors/consultant and other resources, and developing the comparator model/assessments required, and much higher industry tendering cost.

Potential for asset/service quality to be compromised, and the real relative cost/benefits to be unclear, unless there is complete and appropriate documentation of asset and service quality requirements, proper comparator model and allowance for the proper confirmation of outcomes.

Less Government/agency control over the asset/service quality and operation of the asset upon its creation.

3.1.6 Period Contract System

Characteristics

A period contract system or a standing offer contract (with a price list/schedule of rates) allows for specific types of work, possibly trade based, that may be required over a given time period. A contract is entered, based on the period contract, when applicable work arises for a particular project, at the tendered (for the period contract) or better prices/rates and conditions negotiated to suit the work.

There are usually several contractors identified under each period contract. One can be selected from the pool for particular project work to suit the prices/rates and conditions offered and negotiated, the work type, locations and times involved, and contractor availability and approach.

When Used

The period contract system is particularly used for ongoing programs of work, including product supply, and is not initiated for particular projects. The Government particularly uses such contracts for goods and services (and information communication technology) procurement with State Contracts Control Board contracts.

Period contracts may be used for the supply of construction work elements, and the supply or hire of plant, equipment, and other goods and services.

Advantages

Pre-arranged contracts, with competitive conditions, are available for use with a minimum of effort where needed for the project.

Additional and better conditions to suit the project may be negotiated with the contractors.

Tender process time/cost savings for the work involved, offset by any cost/time with negotiations required with the contractors.

Disadvantages

Agency supply risks are involved with any other project contracts depending on the work provided under the period contract.

The existing contract conditions may not cover all that is required.

Offers for additional conditions may need to be sought from, and negotiated with, several contractors.

3.1.7 Direct Labour Delivery System

Characteristics

With direct labour delivery, the project works (or a part thereof) such as a building may be divided into trade packages, and trades-persons and labourers employed and/or plant hired and supervised, and materials or equipment directly purchased to carry out the project works. Trade and small work package contracts may also be used. The system may also be used in conjunction with other delivery systems.

All direct labour work is usually interrelated with each part being highly dependent on performance with the other parts. The system relies on a highly developed and detailed work program for construction, requires a tight schedule for the design and documentation to support the construction timing, and needs more detailed expert construction management.

With the system, the agency is directly responsible for carrying out the work involved using its own or hired resources. Much more management, particularly intensive construction management, is needed with the system. A project/construction manager would normally be engaged and an agency project director appointed to manage the work.

When Used

The direct labour delivery system is particularly used where:

- smaller projects are involved and 'in-house' resources have the required capacity;
- direct control with extra flexibility is required where the work cannot be accurately defined for a contract;
- uncertain and complex interface works between contracts are involved, where it is inappropriate to use another contract;
- the required speed of implementation and coordination with other dependent activities prohibits using a single contract or other work packages;
- there is a potential for the rapid development of technology or other change in a work/trade/special equipment area, that must be addressed independently of other concurrent work;
- more time is required for design and to confirmed details, requiring some work areas to be addressed earlier and separately; and
- the work in a trade/equipment/other area is an experiment or a trial for new processes or technologies.

Advantages

Where absolutely essential for compelling reasons, helps to resolve special coordination, scope uncertainty, interface or other problems, and address special procurement needs, not able to be met otherwise.

More certain quality outcomes where direct agency control is needed.

More agency control of design and construction outcomes.

Disadvantages

The agency carries all the work coordination and interface risks, and risks with possible work gang, hired plant or trade/small contractor inefficiencies.

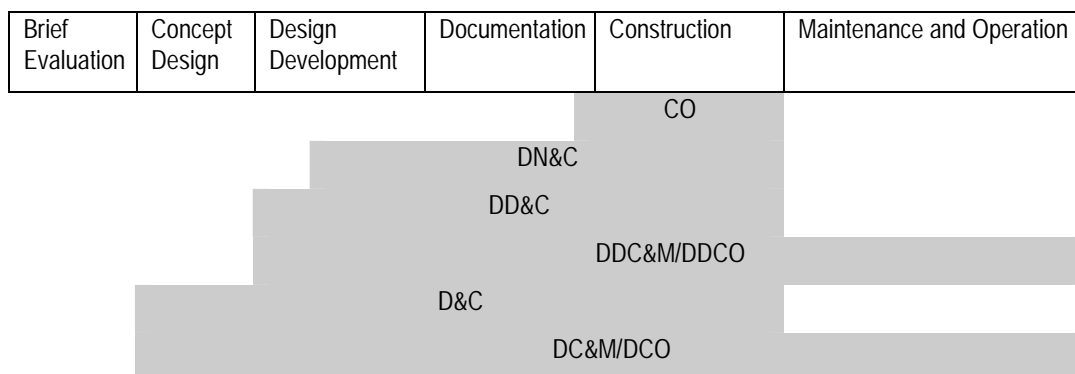
No tender price competition, and less certainty with cost/time outcomes and value for money.

More agency design and management risks, and greater extra related cost risk.

3.2 Features of Contract Systems

3.2.1 Coverage of Project Phases

The project delivery (with timing not to scale) phases and where they are covered by the various contract systems are shown below. Less design by the contractor than indicated below may also be allowed with the DD&C and D&C based contracts.



3.2.2 Construct Only

Characteristics

With a construct only contract, the agency prepares the detailed design for the whole of the works (except for some detailing such as workshop drawings). This preparation can either be done in-house or by using another agency or consultants. It is essential then, because of the later involvement of the contractor, that the design team has or uses people with sufficient knowledge and experience of buildability issues, material and resource availability, relevant industrial relations issues, and construction health and safety hazards/risks.

A contract, based on a lump sum price or a schedule of rates (where the quantities are uncertain), is awarded for the completion of the remaining design/documentation and construction of the works.

When Used

A construct only contract may be appropriate for projects where the following requirements are substantially satisfied:

- the optimum design can be developed without involving the prospective contractor or specialist subcontractors;
- the agency prefers and is able to manage the interface between the detailed design and construction, and select and engage, and be directly responsible for, the design consultants;
- there is enough time available for the detailed design to be completed before construction must commence to complete the project on or within time; and
- the agency prefers to have the design fixed prior to construction contract award.

Advantages

A detailed design is available before construction contract award, potentially allowing the highest level of agency control and satisfaction with product detail and quality.

Risks to the agency are reduced with the design essentially completed to suit agency requirements prior to construction, and with the resulting simpler contract management.

More likely to obtain appropriate and better tenders/prices for fully defined contract works where they are well defined.

There are lower tenderer tendering costs, and agency tender process costs.

There is a larger pool of suitable tenderers, which increases the scope for competitive prices/tenders for some contracts.

Disadvantages

Increased project duration with the longer lead-time to prepare the design and tender documents.

Little cash flow control after letting contract.

The greater document complexity and volume with the agency design may lead to more errors and omissions, and increase the potential for contract claims and extra costs.

Less opportunity for contractor innovation.

Not necessarily least end cost.

Greater potential for design and construction coordination and buildability problems.

The agency's directly arranged design and project management resources, effort and costs are greater.

3.2.3 Design Development and Construct

Characteristics

With a design development & construct contract, the agency prepares a concept design (and possibly does some design development) and performance specifications, using in-house or external consultant resources.

A contract is awarded for the design development/documentation and construction of the works. The contract often involves a lump sum price, but may be based on a schedule of rates where some quantities are uncertain.

When Used

Projects suited to the DD&C system will be those where:

- the concept design and design brief can be clearly and well defined;
- there are well established standards for design development, such as standards for details and finishes;
- there would be some design and construction coordination and buildability risks with the construct only system that are to be avoided;
- the agency seeks to retain more control over concept design and/or does not have the resources or time available, or need, to complete the design;
- the requisite specifications for the developed design, including the product and material standards/performance to be used, can be clearly described, or some proprietary designs and/or construction processes are available in the marketplace and may be more economical than using special designs; and
- the contractor is not required to perform extensive investigation work and interact extensively with outside authorities in completing design.

Advantages

The agency can substantially determine the concept design and need only nominate the performance criteria required to regulate design development.

Disadvantages

The cost to tenderers of preparing tenders is higher, potentially reducing tenderer interest and competition.

Advantages

The agency's risk is reduced with the contractor being responsible for, and best able to manage, detailed design and its coordination with construction.

Reduced agency risk of design related changes being needed, and resulting contractor cost/time claims, because the concept design is set.

Fewer agency arranged resources are required for design than with construct only, and with contract management than with D&C.

Greater potential for cost and time savings with faster and more efficient construction, with the contractor better able to tailor design detail to preferred construction methods, and the overlapping of design and construction.

Disadvantages

With less agency design there is risk to that contract design documents may not be specific enough or may be ambiguous, increasing quality, outcome and cost risks.

The tender prices may carry a higher risk premium, as the contractor bears more design risk than with the construct only system.

Agency initiated variations are more costly if the contractor's design/construction is disrupted.

The numbers of competent potential tenderers is less than for some construct only contracts, especially for smaller projects.

More contract management for the agency than for construct only contracts

3.2.4 Design, Novate and Construct

Characteristics

The design novate & construct contract system is similar to the DD&C system, though usually requiring less design development by the contractor. It has the distinguishing feature of allowing the use of the same designer/design team from design conception to completion.

When the DN&C contract is let there is also a novation of the Principal's design agreement with the designer to the contractor. Novation involves signing over the contractual relationship between the designer and the Principal to create a contractual relationship on exactly the same terms between the designer and the contractor. The contractor then assumes full and unambiguous responsibility for the whole design as well as for the construction. The contractor takes over responsibility for paying the designer's fees for work done to complete the design from the time of novation. The contract usually involves a lump sum price, but may be based on a schedule of rates where some quantities are uncertain.

When Used

This system is best selected where:

- the agency needs full control in producing the concept design and the design continuity achievable with the same designer completing design development;
- the project involves large, one-off unusual works with special design needs;
- the design brief/concept design and Principal's design agreement with the designer are clear and well defined;
- details of the required design development, including the product and material standards required, to satisfy the design brief, can be clearly described;
- appropriate alternative design resources may not be available to the contractor; and
- there is a significant extra benefit to the agency with having the contractor responsible for all design and documentation, and the contractor having full access to the original designer and its knowledge of the design issues.

Advantages

Disadvantages

The continuity with the designer's involvement in all design and documentation reduces some of the risk with special designs of the intent not being understood and quality not meeting the agency's needs and expectations.

The contractor is able to improve design buildability in developing the concept design, which should lead to more efficient and effective construction.

Functional/concept design planning and some design details are developed to fully meet the agency's requirements before contract award, as for DD&C, giving an advantage over the D&C system.

The other advantages of the DD&C system.

The contractor and designer may be disadvantaged by having to enter an engagement on terms predetermined by others, thus increasing costs. It is possible the designer/contractor may not ratify the novation.

There is potential for complex litigious problems if the relationship between designer and contractor deteriorates. If parties have not worked together well before, and are not matched carefully there is a "forced marriage" risk.

There may be a premium in the tender prices for uncertainties and additional risks such as latent conditions, designer relationships and design errors, which may or may not eventuate.

The other disadvantages of DD&C, with some possible reduction in the Principal's design document risks.

3.2.5 Design and Construct

Characteristics

Under a design & construct contract, the agency prepares a project brief, and performance and quality requirement specifications (and possibly does part of a concept design). A contract is awarded to prepare or complete the concept design, and for design development/documentation and construction of the works. The contract usually involves a lump sum price or is based on a schedule of rates. A "supply and install" contract can be a form of D&C contract.

When Used

D&C contracts are suitable for projects where:

- there are well established standards for works component details, finishes and other design, and the agency wishes to avoid many of the risks with design born with some other contract systems;
- a straightforward, more precise, properly defined and concise brief can be prepared, and there are few complex issues to resolve, and little likelihood of changes after the contract award;
- the agency has insufficient time or resources, or no need, to use the construct only or DD&C contract systems;
- encouraging tenderers to offer alternative design concepts and/or details may result in cost savings and other benefits for the agency;
- the agency's requirements and required outcomes can be identified clearly at the time of entering into a contract; and
- using specialist firms, proprietary designs and construction processes available in the marketplace may be more economical than using special project specific designs.

With the system, post contract design changes are likely to be more costly as there is greater potential to disrupt the contractor's design dependent work program. Uncertainty in

the project brief could result in a need for contract variations and/or in disputes over interpretations.

The system would not be the most suitable where the requirements and required outcomes cannot be properly identified at the time of entering into a contract, and there are possible latent conditions and uncertainties involved. Then the tenders may be qualified or include contingency sums, removing time and cost advantages with the system.

Advantages

Project time can be reduced by starting construction prior to the finalisation of all detailed design, at the contractor's risk.

For suitable contracts, the full benefit may be obtained of applicable proprietary designs and products, and related construction processes, available in the marketplace.

The contractor assumes total responsibility for the project works.

Fewer directly arranged agency resources are required for design, offset to some extent by more complicated contract management.

There is wider scope for innovation by the contractor.

Disadvantages

Agency initiated design changes or other variations may be more costly where design/construction is disrupted.

If the project brief is uncertain, there is more risk the contractor will justify claims for the rectification of work, or produce work below the anticipated quality/standard, where the requirements are unclear. This and the greater design quality risk generally means ensuring design quality may be more difficult, and contract management more complicated.

Tender prices may be higher to compensate for the additional contractor risks involved.

More costly for tenderers to prepare tenders.

If fewer tenderers are invited to reduce tendering costs this may reduce competition.

Number of competent potential tenderers is more limited, especially for smaller projects.

3.2.6 Design Construct and Maintain/Operate

Characteristics

Under a design construct & maintain/operate contract, the agency prepares a project brief, performance and quality requirement specifications, and possibly part of the concept design (a concept design and possibly more design is completed for DDC&M and DDCO). The specifications include asset condition monitoring indicators and maintenance conditions to ensure the finished works/assets continue to perform during the maintenance phase. Operating conditions are also included for DCO/DDCO contracts. Typically, a contract is awarded for the concept design (for DC&M/DCO), design development/documentation, construction of the works involving a lump sum price, with maintenance/operation (for say up to 10 or 12 years) of the works based on a schedule of rates.

When Used

DC&M and DDC&M contracts are suitable for projects where maintenance of the constructed asset is required, with the advantages this provides with contractor responsibility/incentives for designing and constructing to optimise asset quality and maintenance needs, and where D&C and DD&C contract systems, respectively, would also be preferred. Where also required, including operation further enhances the incentives for optimising asset quality.

The issues with design changes with DC&M/DCO and DDC&M/DDCO contracts are the same as for D&C and DD&C contracts respectively. Uncertainty in the maintenance specification would produce contract variation risks and/or disputes over interpretations. Changes to the design or construction that change the asset, impact on maintenance/operation as well, and also involve related variation risks.

The systems are inappropriate if the requirements and required outcomes cannot be properly identified at the time of entering into a contract. As for D&C/DD&C contracts, without sufficient certainty, the tenders may be qualified or include contingency sums that would negate time and cost advantages with the systems. Certainty with maintenance and operating conditions is also required to avoid the risks involved.

Advantages

The contractor is more likely to deliver a better product at the end of the construction phase to optimise asset quality, and better address maintenance and operating needs.

The contractor's liability for defective works is extended beyond what is normally the limit by law (6 years in NSW without a Deed).

Project time can be reduced by starting construction prior to the finalisation of all detailed design, at the contractor's risk.

There is wider scope for innovation in design, construction and maintenance/operation by the contractor.

The contractor assumes total responsibility for the works and their maintenance/operation.

Fewer directly arranged agency resources are required for design than with construct only, offset to some extent by more complicated contract management.

The other advantages of the D&C and DD&C systems, as applicable.

Fewer directly arranged agency resources and less effort are required for maintenance/operation, offset by the extra contract administration required over the maintenance/operating period.

More potential for better and more coordinated maintenance than if it was done by other means.

Disadvantages

The agency must be able to define what it wants during the maintenance/operating period.

More costly to tenderers to prepare tenders, and to agency/client for the tender process, with the design and maintenance/operation involved.

The other disadvantages of D&C/DD&C, as applicable, with some reduction possible in design quality risks, but increases in contract management costs with maintenance and operation.

Tender prices may be higher for design and construction to compensate for the additional risks involved.

Higher tendering costs involved, potentially reduce competition.

Agency initiated design and other variations may be more costly where design/construction is disrupted and/or maintenance/operation is affected.

The number of competent potential tenderers is more limited with design and maintenance/operation being involved, potentially reducing competition.

System is not suitable for smaller projects.

Most likely building contractors do not have a maintenance/operating arm and could subcontract the maintenance/operating activities, which may involve more risks with ensuring the constructor and maintainer/operator synergies and asset/maintenance/operating optimisation sought with the system.

More risks with contractor maintenance activities because end users occupy the site, requiring better coordination and cooperation between the various parties involved.

3.2.7 Guaranteed Maximum Price

Characteristics

The guaranteed maximum price contract system is designed to provide greater certainty with the contract end cost and completion date. The GMP system can be applied with the DD&C and D&C systems, to include the key additional features they provide.

The system is designed to reduce the scope for changes to the contract price and completion date, and to reduce the agency's direct management effort, by:

- having the contractor take the risks associated with ambiguities or discrepancies in the tender/contract documents, with no claims being allowed for variations or otherwise with such ambiguities or discrepancies;
- allowing no subcontractors to be nominated or selected by the agency;
- having the contractor take the risks associated with, and allowing no claims for, latent conditions;
- having no cost adjustment for inflation;
- reducing the grounds for extensions of time, such as limiting those due for delays with inclement weather and industrial disputes; and
- allowing a bonus for early completion (as a possible option).

With the system, where the agency/Principal directs a variation increasing the work, the contractor is required to propose offsets with reduced quality, less design and/or a reduction in scope, where this it is needed to maintain the original contract price. There is also provision for the quick resolution of disputes over the value of such offsets/variations using an independent expert for a prompt, binding decision.

When Used

The system is suitable when quality and scope reductions can be accepted to achieve greater certainty with the cost/time outcomes required. It is suitable for contracts where DD&C or D&C systems are preferred, and the additional certainty potentially available with the system is also required.

Advantages

Greater potential for the end cost to approximate the original contract price, if tender price competition does not result in an unrealistically low contract price and related disputes.

Greater potential for on time completion (possibly with extra cost) through reduced opportunity to claim extensions of time and optional bonus provisions.

Lower level of contract management required by the agency with reduced potential for claims where other issues and disputes are minimised.

Restricted right of contractor to claim with less complicated contract provisions, provided the contractor is not inclined to raise issues to cover costs and disputes are minimised.

Discouragement of agency variations that increase the scope.

The other advantages of the D&C and DD&C systems, as applicable.

Disadvantages

Potential for higher tender prices and higher end cost, as tenderers need to price additional cost/time risks that may not eventuate, or take risks and possibly make claims and raise disputes to cover costs.

Further restriction to the field of capable and willing tenderers.

More prone to Principal/contractor disputes.

Agency expectations may not be met where the scope/quality is reduced to meet cost/time targets.

Some industry resistance to contracts involving such risks to contractors, and issues with the inequity and problems with the system that mean it is not used often.

Risks with disputed claims with particular events being successful where they are supposed to be barred with the system.

The other disadvantages of D&C/DD&C, as applicable.

3.2.8 Contract System Risks

As outlined above there are advantages and disadvantages with each contract system. The most significant differences are the amounts and types of risks to the contractor and agency with the various systems. There is less risk to the contractor involved with CO and more with D&C contracts. However, the risk to the agency of design quality not meeting expectations increases with more design being done by the contractor. This risk is less where the design expected is well understood, such as for a proprietary product or when reproducing a well defined asset. Also, with managing contractor and alliance contract systems this risk can be reduced for special projects.

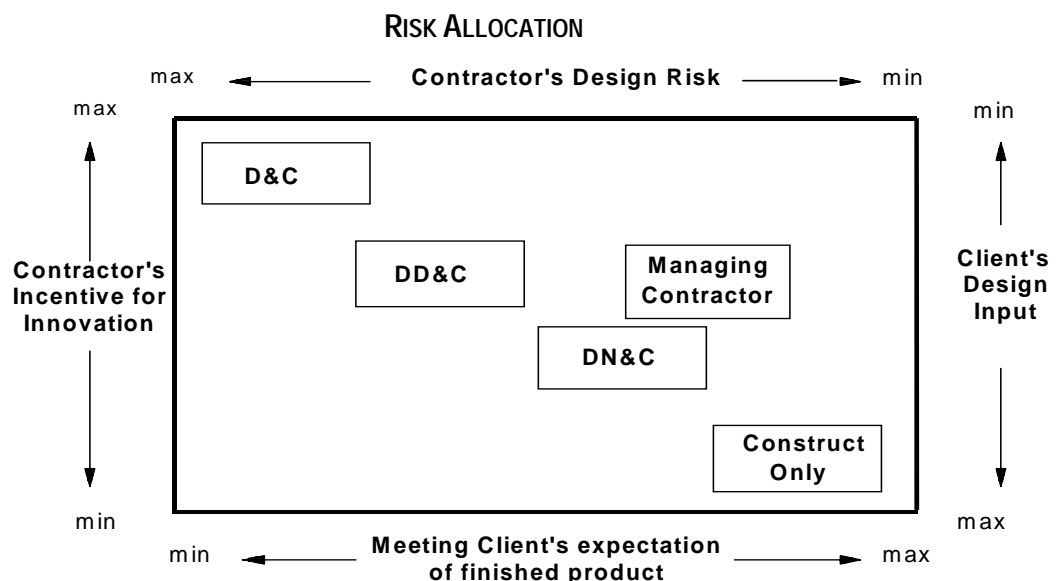
Including maintenance in a contract can reduce the design and quality risks to the agency, as there is more incentive for the contractor to optimise asset quality and maintenance needs, which may mean improved design and construction quality to optimise construction and maintenance costs.

Other risks to the agency increase with D&C/DC&M and DD&C/DDC&M (though less so) relative to CO contracts with:

- longer tender and evaluation periods being needed and greater related costs being involved, where more design and other services are required of the contractor;
- cost and time impacts of agency generated design changes being greater where the contractor does more design; and
- larger contingencies in tender prices being likely to allow for risks to the contractor where the design is less developed at the tender stage.

Conversely, where the contractor does more design, risk to the agency diminishes with less potential for costs due to the agency's design documentation errors and consequent contractor claims. Some of the risk relativities with the various contract systems are illustrated below.

The D&C system gives a greater ability to fast track a contract by allowing the greatest potential to overlap design and construction. Construct only does not allow this overlap. D&C also involves a greater cost to tenderers with tender preparation. Construct only involves the least cost to tenderers. Managing contractor and alliance contracts allow overlapping and fast tracking with less cost to tenderers.



D&C contracts may reduce the overall project costs and/or time for some but not all projects. Generally it is likely that the overall project time will be reduced with this system because of the greater potential to overlap design and construction. There is also generally some potential with D&C/DD&C based contracts for cost savings due to the contractor's ability to better match design to existing design/products and preferred/efficient construction methods, though in some cases the allowances made for design risks may offset some or all of these savings.

Because less design information is included in a D&C contract and the contractor's planning and work depends more on how this is interpreted, the potential is greater for costs and time to increase with any changes needed to clarify or alter requirements. Also, there is more risk with a D&C contract, where requirements and expectations are not made clear, of the quality of the final product not achieving the level of agency satisfaction likely with a CO contract that specifies the design. Where there are difficulties with covering all the functional/performance requirements and product purposes in preparing the specifications for a D&C contract, the risks are greater with achieving the design and construction outcomes sought.

It is extremely important that the relative design and other project/contract risks of the project and system(s) are taken into account when considering the best contract system(s) for the project.

3.3 Features of Management Systems

3.3.1 General

An agency would normally engage/appoint a project/contract manager (a person or team) and/or a project director (with expert advisor support) for the overall management of a project. The project/contract manager (other agency or private sector) and the project director would then be responsible for the overall management of the project, including anything from several (project manager) to only a few contracts (project/contract manager). The project/contract manager would normally be engaged early in the life of the project subsequent to the project director's (and advisors') assessment and confirmation of agency needs and their early identification of project scope. The management approach proposed with the procurement methodology would be determined and any related engagement arranged prior to the finalisation of the procurement strategy, to allow the project/contract manager to assist with its finalisation and project initiation.

An in-house project director would normally be appointed supported by in-house/other agency personnel and possibly other advisors. An expert advisor may also be used as a project director. If insufficient agency personnel are available to undertake, or they are not accustomed to undertaking, the required project/contract management responsibilities, the agency would normally engage an external project/contract manager (as a person or team). This would require a management agreement between the Principal and the external project/contract manager. The personnel of another agency may be engaged as the project/contract manager resource and/or expert advisors.

In general, the role of a project/contract manager and/or project director (with expert advisor support) is to assist the agency to ensure the successful completion of the project, through planning, programming, organisation, coordination, monitoring, management and surveillance of the work required, including through the agency's other consultants and contractor(s) involved.

The management engagement would be based on a project brief and standard commercial conditions; and follow agency/Government approval of the project and at least the management system principles in the procurement methodology, as determined by the agency. The project director, with some expert support, administers the project/contract manager agreement.

The project/contract manager assists the agency to manage its risks and achieve project objectives by the management of the activities and contract package(s) identified in the procurement methodology.

3.3.2 Project Management

The project manager manages the engagement of appropriate consultants to carry out any design/documentation involved and other activities for the project. The consultants may be engaged either:

- under a contract/agreement with the Principal, with a project manager providing the Principal's representative or acting as an agent of the Principal; or
- with the agency's approval, as sub-consultants to the project manager.

With the separate contract with the Principal, the contractual relationship is between the consultant and the Principal. The project manager is responsible for the coordination and management of each contract with a consultant, and for ensuring that contract work complies with the contract. The project manager is not directly responsible for the adequacy of the consultants' work.

With a sub-consultant there is no contractual relationship between the sub-consultant and the Principal. The project manager is responsible for the adequacy of all sub-consultants' work.

Following sufficient documentation of the project design, the project manager manages the engagement of building/construction contractors for the agency. The project manager manages the contracts between the Principal and building/construction contractors, and provides a person to act as the Principal's authorised person (or representative) under the contracts.

A multiple contract delivery system requires additional management by the project manager, outside the building/construction contracts, of the interface between contracts, and the time and other performance of all contractors. CO/DD&C contracts require some pre-contract design management by the project manager.

3.3.3 Project/Construction Management

If the construction component of the project includes multiple contract delivery and multiple trade or many small contracts, the project manager may be required to use more of its personnel for the more intense construction management involved, or the agency may engage a construction manager (as a person or team) with a project and/or design manager (person or team) (agency or private sector). A construction manager could manage the trade or many small contracts as a "head contractor" responsible for project construction, and direct the day-to-day activities of the trades/small contractors. The intense construction management may only be involved with some parts of project construction.

Any such construction manager would not normally undertake construction work, but may arrange preliminaries and common services under separate small contracts. A construction manager would help to identify the specific contract packages, document tender requirements, manage contract awards and manage the contracts. A construction manager would work closely with the design management before and during construction to help address programming, coordination and any buildability issues before contractors are engaged.

3.3.4 Project/Contract Management

With a single contract delivery system, a project may not require as much management or ongoing coordination for or on behalf of the agency. The one contract will then determine the project completion date. The level of pre and post contract management/coordination required for the agency will vary and depend upon the contract system adopted. Construct only contracts require more pre-contract management and coordination, in completing pre-contract design, than D&C contracts, which require more post-contract management for the agency to achieve the design outcomes required through the contract.

Managing contractor and PFP delivery, and possibly a single D&C (and DD&C in some cases) contract, require less management for the agency. Where less is required, only the smaller contract manager (person or team) and/or the project director (and advisors) may be needed to manage the agency's interests before and under the contract. With an alliance contract, a separate project or contract manager would not be needed and the project director (and probably expert advisors) would be included and work in the alliance management team for the agency/client.

3.3.5 Project Director Role

The project director, in-house support personnel and and/or other advisors:

- ensure that a satisfactory project scope description in a brief and tender documents are prepared to call tenders for a project/contract manager, or to negotiate an agreement with another agency and/or to brief/identify other in-house personnel for the role;
- call tenders for a private sector project/contract manager, or negotiate an agreement with another agency and/or identify other in-house personnel for the role ;
- ensure the people involved with handling tenders have no actual or perceived conflicts of interest;
- ensure the tender evaluation, selection and review of recommendations are completed following the receipt of tenders, make a submissions to any expert reviewers involved, and obtain approval to award a contract and issue a letter of award to engage a project/contract manager;
- appoint/engage a project/contract manager (other agency or private sector or some/all in-house personnel, including interim personnel where needed early);
- brief the appointed/engaged project/contract manager (and interim personnel on early processes) on the required practice and procedures, tender/contract documentation, and operation and administration of contracts and use of commercial conditions;
- provide the project/contract manager with guidance on the required tender process practice and procedures;
- review the project/contract manager's tender documents before calling tenders, and recommendations following the receipt of tenders, for contracts/consultancies;
- ensure the main contractor on the work site is appointed as the principal contractor and controller of the work site under the OHS Regulation 2001;
- administer the project/contract management agreement and monitor the activities of the project/contract manager and its ability to satisfactorily complete the project, report on a regular basis on the project/contract manger's performance and take any necessary corrective action;
- maintain effective separation of any other conflicting agency activities (such as when both a tenderer and assessor with a project tender process where the agency is tendering against others); and
- plan and document all tender evaluation and probity assurance processes prior to their implementation.

3.3.6 Project Manager Role

The project manager is responsible for organising appropriate resources and ensuring the completion of some or all of the following activities, depending on the procurement strategy adopted and the role required. A contract manager would only be responsible for those activities related to setting up the contract (and any consultancies needed), contract management/administration and coordinating agency input to design and other contract activities.

- Documenting, arranging and administering consultancy agreements with design consultants and other specialist consultants on behalf of the agency.
- Developing a project brief (where not completed by project director), concept designs/design briefs, design and specifications (as applicable) for the project and contract packages using the consultants.

- Preparing, monitoring and controlling an overall program for the project, setting out the times within which the main parts of the project are to be executed, including all relevant on site and off site activities. The program would include the dates by which actions, information and decisions are required from the agency, design consultants, specialist consultants, authorities and others involved in the project.
- Examining options for resolving problems, delays and bottlenecks, and taking appropriate action to mitigate delays and resolve problems.
- Ensuring all the necessary skilled personnel/contractors/consultants, materials and equipment are available when required.
- Preparing, updating and reporting on overall cost plan/statements setting out all relevant elemental cost estimates and budgets, and providing all necessary project cost control systems.
- Developing and implementing, usually through the main construction contractor(s), industrial relations and health and safety management for the project dealing with such matters as:
 - the location and type of amenities for the project workforce;
 - the communication framework with contractor, union, and health and safety representatives; and
 - dispute resolution and other project wide procedures and the like.
- Developing and implementing a quality and other management plans for the project manager's involvement in both design and construction for the project.
- Preparing documentation for tender processes and contracts, incorporating the designs and technical specifications prepared by the design consultants, and required commercial conditions.
- Organising the awarding of contracts between the agency/Principal and contractors, allowing for the pre-qualification of appropriate potential contractors.
- Administering contracts with contractors on behalf of the agency.
- Undertaking the necessary liaison with, and managing the involvement of, external persons, organisations and other project stakeholders, as required.
- Arranging some common site user facilities where appropriate, such as ablutions, craneage, scaffolding and the like, through contractors.
- Reporting regularly to the agency on all aspects of the project relevant to the project management agreement.

APPENDIX 1 - RANKING SCHEDULE

Using this Schedule may assist the selection of the best delivery and contract systems for a project. The comparison and qualitative analysis of options and selection may not need such a scoring process.

The ratings used below are as follows: 1 – High, 2 – Above average, 3 – Medium, 4 – Low. Other rating numbering may be used.

R = Rating of system, WR = Weighted rating of system

The lowest rating number (R) in this case indicates the preferred system. The rating numbers given are indicative only, and may vary for different projects and agency circumstances. Select the issues listed and add others, and identify their ratings, to suit the project, agency and circumstances involved.

Identify weightings for the issues involved to suit the project and their importance to the agency (say for example 1 to 5 with the lowest having the highest weight). For each issue, multiply the weightings by the identified relative rating of the system, and add the products to give the Total Weighted Ratings for each system to identify the system ranking. With the ratings/weighting numbering used, the lowest Total will indicate the highest ranking. Using the Schedule will only be a guide to the best options.

With a multiple contract system, various contract system configurations would usually be considered to identify the system rating numbers for comparisons with single contract systems.

Issue	Identified Weighting	Multi Contract		Managing Contract.		Alliance Contract		Single DC&M/O		Single DN&C		Single D&C		Single CO		Single DD&C	
		R	WR	R	WR	R	WR	R	WR	R	WR	R	WR	R	WR	R	WR
Design development flexibility		1		1		1		4		3		4		1		3	
Extent of design input by agency allowed		1/2		1		1		4		2		4		1		2	
Agency/user design input efficiency/ flexibility		2		1		1		4		3		4		2		3	
Flexibility for scope resolution		2		1		1		4		4		4		2		4	
Ability to address complexity		2		1		1		4		4		4		2		4	
Ability to address uncertainty		3		1		1		4		4		4		4		4	
Ability to address the extraordinary		3		2		1		4		4		4		4		4	
Cost/time risk with brief quality		1/2		1		1		4		2		4		1		2	
Impact of agency design errors		2		2		1		1		2		1		4		2	
Flexibility with brief change		2		1		1		4		4		4		1		4	
Flexibility with scope, agency design and technology change		1		1		1		4		3		4		3		3	
Impact of design change		2		2		2		4		2		4		2		2	
Brief/design realisation risk/cost		2		2		2		3		2		4		1		2	
Package coord./interface risks		4		3		2		1		1		1		1		1	
Buildability and/or design and construction coordination risks		2		1		1		1		2		1		4		2	
Risk with design extras costs		2		2		2		4		3		4		2		3	
Designer continuity		1/2		1		1		1		1		1		1		2/3	
Contractor design responsibility		2/3		1		1		1		1		1		4		2	
Optimising life cycle cost		1/2		1		1		1		1		3		1		2	
Optimising maintenance and design and defects minimisation				1		1		1									
Contr. maintenance responsibility				1		1		1									
Completion timing certainty		3		2		2		1		1		1		1		1	
Completion timing minimised		1/2		1		2		2		2		2		4		2	
Min. time pre- contract		1		1		2		2		3		1		4		2	
Flexibility with timing changes		1		1		2		4		4		4		4		4	
Flexibility with cashflow control		1		1		1		4		4		4		4		4	
Early start to design		1		1/2		2		2		1		2		1		1	

Issue	Identified Weighting	Multi Contract		Managing Contract.		Alliance Contract		Single DC&M/O		Single DN&C		Single D&C		Single CO		Single DD&C	
		R	WR	R	WR	R	WR	R	WR	R	WR	R	WR	R	WR	R	WR
Staged design allowed		1		1		1		3		3		3		4		3	
Early start to construction		1		1		1		2		2		2		3		2	
Early engagement of key contractors		2		1		1		2		3		2		4		3	
Staging flexibility		1		1		1		3		3		3		3		3	
Delay effect of one contract on others		3		2		2		1		1		1		1		1	
Capital cost minimised		4		2		3		3		2		3		2		2	
End cost versus budget certainty		4		1		1		3		2		3		2		2	
Flexibility to adjust scope to suit budget		1		1		1		1		1		1		1		1	
Value for money certainty for general projects		1		2		4		2		2		2		1		2	
Value for money certainty for special projects		2		2		2		3		3		3		3		3	
Risk of contract claims		2		2		2		3		3		3		1		2	
Extent of management cost/effort for agency for general projects		3		1		4		3		3		3		3		2	
Extent of management cost/effort for agency for special projects		3		1		2		3		3		3		3		3	
Risk contingency in tender prices		1		2		3		4		4		4		1		2	
Minimising tendering costs		2		2		2		4		2		4		1		2	
Minimising tender process costs		3		2		4		2		2		1		1		1	
Quality certainty/outcomes/risks		2		2		2		3		3		4		2		2	
Quality of management		2		1		2		2		2		2		1		1	
Choice of contractors		1		1		1		4		3		3		1		2	
Availability of contractors		1		3		4		4		3		3		1		2	
Innovation possible		2		1		1		3		2		3		3		2	
Simplicity of contract conditions (even simpler with GMP option)		3		3		3		4		4		3		1		2	
Industry acceptance of approach		1		2		3		3		4		3		1		2	
Reliance on relationships		2		3		4		3		3		2		1		1	
Novation/relationship complexity		2		2		4		2		3		1		1		1	
Total Weighted Rating																	
Ranking																	

The following is an example for a particular project where the selected issues shown have been determined as the most important with the weightings indicated.

Issue	Identified Weighting	Multi Contract		Managing Contract.		Alliance Contract		Single DC&M/O		Single DN&C		Single D&C		Single CO		Single DD&C	
		R	WR	R	WR	R	WR	R	WR	R	WR	R	WR	R	WR	R	WR
Extent of design input by agency allowed	1	1/2	1.5	1	1	1	1	4	4	2	2	4	4	1	1	2	2
Brief/design realisation risk/cost	1	2	2	2	2	2	2	3	3	2	2	4	4	1	1	2	2
Package coord./interface risks	5	4	20	3	15	2	10	1	5	1	5	1	5	1	5	1	5
Contractor design responsibility	3	2/3	7.5	1	3	1	3	1	3	1	3	1	3	4	12	2	6
Completion timing certainty	1	3	3	2	2	2	2	1	1	1	1	1	1	1	1	1	1
Completion timing minimised	2	1	3	1	2	2	4	2	4	2	4	2	4	4	8	2	8
Capital cost minimised	1	4	4	2	2	3	3	3	3	2	2	3	3	2	2	2	2
End cost versus budget certainty	2	4	8	1	2	1	2	3	6	2	4	3	6	2	4	2	4
Value for money certainty	1	1	1	2	2	4	4	2	2	2	2	2	2	1	1	2	2

Issue	Identified Weighting	Multi Contract		Managing Contract.		Alliance Contract		Single DC&M/O		Single DN&C		Single D&C		Single CO		Single DD&C	
		R	WR	R	WR	R	WR	R	WR	R	WR	R	WR	R	WR	R	WR
Risk of claims	2	2	4	2	4	2	4	3	6	3	6	3	6	1	2	2	2
Extent of management cost/effort for agency	3	3	9	1	3	4	12	3	9	3	9	3	9	3	9	2	6
Quality certainty/outcomes/risks	1	2	2	2	2	2	2	3	3	3	3	4	4	2	2	2	2
Reliance on relationships	2	2	4	3	6	4	8	3	6	3	6	2	4	1	2	1	2
Total Weighted Rating		69		46		57		55		49		55		49		44	
Ranking for single contract				2		5		4		3		4		3		1	

The total weighted ratings indicate a single DD&C contract is preferred. Ratings for other issues and weightings would be checked for the project to confirm all were covered. The next ranked managing contractor option would only be attractive if special conditions applied. Novation and maintenance/operation options would only be considered if they were particularly needed for the project. Other multiple contract system ratings may apply for other contract system configurations and may need to be considered.

APPENDIX 2 - FURTHER MANAGING CONTRACTOR CHARACTERISTICS

The managing contractor is selected using non-price criteria, and possibly tendered management fee (a lump sum price or based on a schedule of rates, for "preliminaries" such as site security and induction management, and possibly common site services and some defined design and construction) and management fee percentage(s) (for design and construction management). These fees may also be addressed by paying pre-agreed margins for profit and overheads on the reasonable direct costs incurred. Some incentive fee arrangements, (with the proportions of savings to be shared normally set by the agency) may also be tendered and included in the selection criteria. The work done for the management fee and percentages fee(s) (or margins and costs) must be specified in the tender/contract documents.

Reimbursable sub-consultant or subcontract costs are paid for other work. Percentage fees are then paid as the tendered percentage(s) of the actual reasonable consultant costs and subcontractor costs incurred. Where the reasonable costs incurred with margins for profit and overheads are paid as the management fees and reimbursables, the costs and payments due may be determined using an open-book approach.

Before the request for tenders, the agency establishes a budget and specifies a target price, a target construction sum(s) and target date(s). More than one target price may be used and just a target price(s) could be used instead of target construction sums.

The target price is the maximum amount that the agency proposes to spend on the project for design, construction and management by the managing contractor. The target construction sum is the maximum amount that the agency proposes to spend on construction work alone. The targets may be subject to change under specified circumstances.

One approach is that, when the design is sufficiently advanced, the managing contractor offers, and the parties negotiate and agree, a guaranteed construction sum(s) to suit the target construction sum(s). The guaranteed construction sum(s) is then the maximum price (subject to some changes) that the Principal will pay to complete the related construction work. The managing contractor meets any costs that exceed the target construction sum(s), including the actual amounts payable to subcontractors. Another possible approach is for the target price(s) set by the agency to act as a guaranteed maximum price(s) or a ceiling on all payments by the Principal and the final actual cost. This requires more certainty with, or flexibility to change, the scope required, but would provide a more certain limit to agency costs within some allowance for cost contingencies.

If the guaranteed construction sum is less than the target construction sum, the managing contractor is paid a percentage of the saving as an incentive fee. If the final actual cost of the project is less than the target price, the managing contractor is paid a percentage of the saving as another incentive fee. The potential for the managing contractor to earn worthwhile incentive fees is an important aspect of the delivery system. The proportion of savings shared must be sufficiently generous to provide a real incentive for the managing contractor to make savings. Other incentives linking performance with other indicators (KPI) to payments to the managing contractor, or other incentive arrangements, may also be used.

If the guaranteed construction sum offered exceeds the target construction sum there will be no related incentive fee paid and other sanctions may apply. If the final actual cost of the project exceeds the target price there will be no related incentive fee paid.

If the final actual cost of the project exceeds or is under (by a defined proportion such as $\pm 25\%$) of the original target price for reasons beyond the managing contractor's control, allowance may be made for a proportional increase or decrease in any lump sum management fee.

The managing contractor must use acceptable tender process/documentation procedures and forms that comply with Government policy, in engaging consultants and subcontractors.

With guaranteed construction sums, the Principal does not ask the managing contractor for a guarantee on all costs, but only on construction costs, and will only ask for the guarantee when the design is sufficiently advanced, thereby minimising the risk with variations. The incentive for the managing contractor to give the best possible guaranteed price (consistent with the scope/quality developed and identified) is the prospect of a substantial and better incentive fee. If the target price(s) is all that is "guaranteed", there is incentive for all costs to be optimised to suit the scope/quality developed and identified. The price paid is essentially "cost plus" under the contract, limited by any agreed guaranteed construction sums or a specified guaranteed target price.

Because the managing contractor is not actually paid the guaranteed construction sum, but is paid the actual cost of construction up to that sum, the managing contractor does not make another profit by offering a higher guaranteed construction sum.

Initially there are target dates but not contractual times for completion. The competitive tenders invited by the managing contractor for all construction work allow for, and the construction subcontracts have, contractual times for completion. These give some control over time performance.

Without the managing contractor necessarily being in breach of contract, the target price (if not guaranteed initially) and the target dates can be exceeded, though termination of the contract (or other sanctions) are generally allowed if a guaranteed construction sum (with contractual times for completion) is not offered or the offer exceeds the target construction sum. If no guaranteed construction sum(s) was required, the target price(s) (and possibly other intermediate cost performance targets as agreed or set) would be set as a ceiling with sanctions and/or reduced incentives for missed targets. Other means of identifying contractual times for completion would then be needed, and progressively agreed by the parties, with this approach.

It is possible that the agency could seek a design, or have a project brief or scope expectations, which could not be constructed for the target construction sum or within the target price. If the managing contractor is not prepared to guarantee to construct the works for the target construction sum or less, the Principal may adjust the target and seeking a new guarantee, or waive the target and simply paying "cost plus" for construction, or terminate the contract, pay for the work done, and complete it by other means. Other sanctions may also apply. As indicated above, if no guaranteed construction sum were required other default approaches would also be used.

If, at the time the managing contractor obtains subcontract tenders for construction work, the cost of construction appears to be higher than the agency is prepared to pay, it is possible even then to change the design and not incur the liability for extra delay costs which would be likely with changes under, say, a lump sum D&C contract. If such a change in the design is required, the managing contractor is entitled to a variation to any guaranteed construction sum agreed before the change, the related target construction sum and the target price. The fees paid to design consultants may increase with changes to the design, but the managing contractor is only paid for reasonable design consultant costs and the related management fee percentage.

APPENDIX 3 - FURTHER ALLIANCE CONTRACT CHARACTERISTICS

An alliance agreement is developed to suit the conditions identified by the agency/client, and others developed by the participants (generally initially under interim cost plus consultancy agreements between the agency and each of the other participants) based on key primary agency parameters.

The alliance agreement would usually provide for:

- early identification of target costs for the whole of the project, with actual project costs to be within the target costs;
- a commitment to common identified objectives and outcomes, and action for the good of the project, with collective performance obligations (with some possibly assigned to a particular participant) and responsibilities for achieving outcomes;
- a full sharing of all participants' information, knowledge and skills;
- a cooperative fulfilment of obligations through integrated management and collective decision making by consensus;
- cooperation, good faith, mutual trust and respect, and mutual support in dealings (going to extraordinary lengths and "the extra mile") between participants and their people;
- collective ownership of most risks (subject to caps and the agency/client covering residual risks) to suit the agreed/equitable risk and reward allocation;
- agreement and willingness to share, with an agreed/equitable allocation of, pain (risks and losses) and gain (rewards and profits) (with all win or all lose outcomes);
- a pursuit and encouragement of innovation and innovative thinking;
- a non-adversarial attitude and processes, including intensive facilitation of relationships;
- full access to the expertise, resources and skills of all participants, with an efficient use of expertise on a best for the project basis;
- open-book transactions, with independent open-book auditing of participants' financial records to help identify their base costs, overheads and margins for payment purposes;
- identification and use of indicator (KPI) targets in key result areas, to measure performance, such as OHS management, environmental management, training/ industrial relations management, community involvement, continuous improvement, work quality, time and stakeholder outcomes; and
- an expedited completion of work.

The agency/client has the right to change project parameters, with the participants then being responsible for changing the alliance agreement to suit.

The agency/client has the right to terminate the alliance for convenience, and termination could follow if no consensus is reached with a decision.

The agency/client, with the support of the other alliance participants, or the alliance participants could arrange for any Development Approvals and other project approvals required.

Intense people management is involved to address:

- any culture and attitude shift/change required in the participants and their people;

- the reliance on relationships and greater demand on people involved;
- the extra effort needed with the more ambitious goals involved, while maintaining a reasonable lifestyle for the people involved; and
- the preparing and guiding of people needed.

The intense people management may involve extra time, cost and people, including additional agency/client support/input/people, and the early/continuing involvement of experienced expert facilitator(s). This would normally be mitigated by selecting the right experienced managers and people for the management team, thereby reducing the need for facilitators and an extra range of extraordinary initiatives. For special projects that suit and require the system, less agency/client input would be required than with more traditional contracts (that would not be able to address the special challenges normally involved as efficiently or successfully or in the same time), especially with supervision, auditing, and managing and resolving conflict.

As well this, under alliance agreements usually:

- the project manager and facilitator(s) drive and encourage the delivery processes, and achievement of targets and outcomes;
- "board" members also facilitate processes and the achievement of outcomes;
- "expert" service providers are used and relied on with cost estimates for target cost components;
- "expert" service providers are relied on for some KPI identification, target setting and measurement;
- "expert" service providers are used and relied on for setting time targets;
- the particular probity and confidentiality issues involved are identified and managed;
- visible and unconditional participant senior management support is required;
- transmission of an alliance culture to subcontractors and workers is encouraged; and
- industrial relations management is coordination by key contractor(s) (including entering project agreements where applicable), with alliance participant support, to suit the contract structure involved.