Manual

Transport Infrastructure Project Delivery System
Volume 1 (Selection of Delivery Options)

February 2014
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1 Preliminary

The Transport Infrastructure Project Delivery System (TIPDS) has been prepared for use by those in the Department of Transport and Main Roads (the Department) who have the responsibility for ensuring that value for money is obtained in the achievement of project objectives. The aim of TIPDS is to provide guidance in regard to:

- Developing the best delivery strategy
- How tenders should be developed, invited, processed and evaluated, and
- Who should be eligible to tender.

TIPDS consists of three volumes. The general content of the three volumes is set out below.

Volume 1 – provides guidance in developing an appropriate delivery strategy for the implementation of transport infrastructure projects. It describes the various delivery types and provides a means to narrow the range of options. It also provides guidance in the partnering process.

Volume 2 – addresses the question of how tenders can be developed, invited, processed, assessed and evaluated for different delivery options.

Volume 3 – deals with who is eligible to bid on departmental tenders. This volume is based on the National Prequalification System (NPS) and sets out details of the prequalification system for contractors and the registration system for subcontractors for specialised products.

2 When to use this volume – its relationship with delivery of the Queensland Transport Roads Implementation Program

The Transport Infrastructure Management Guideline (TIM) outlines a framework, divided into six phases of operation, for the delivery of the Queensland Transport Roads Implementation Program (QTRIP). TIPDS relates to Phase 4 (Program Delivery) and focuses on project delivery. The Department strives to reliably deliver its QTRIP projects in a no surprises environment. This environment has been established through the adoption of the project management framework OnQ. This is itself divided into four phases:

- Concept
- Development
- Implementation, and
- Finalisation.

The TIPDS has an integral role in the Department’s project management framework, as broadly defined in the Preconstruction Processes Manual (or the Road Planning and Design Manual as applicable). Figure 2.1 describes when TIPDS is to be used during the delivery of QTRIP projects.

Volume 1 of TIPDS assists in developing project delivery strategies in the Concept phase for consideration during business case development. It also mandates certain delivery strategy options for various sizes of projects.

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1 Refer TMR website > Business and industry > OnQ Project Management Framework
2 Refer TMR website > Business and industry > Technical publications > Preconstruction processes manual
Some aspects of Volume 1, such as client leadership and partnering, are applicable across all phases of project delivery.

This manual is intended for use on projects utilising the Transport Infrastructure Construction Contract but the general principles that it is based upon can be applied to other forms of contract as well. Where any doubt exists as to the applicability of the principles, Assistant Director (Contracts) can advise. Where the term RCC is used in this document, the term may be interchanged with Transport Infrastructure Construction Contract (TICC).

Figure 2.1 – Application of TIPDS in the phases of QTRIP project delivery

<table>
<thead>
<tr>
<th>PROJECT MANAGEMENT PHASES FOR DELIVERY OF QTRIP PROJECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept</td>
</tr>
<tr>
<td>TIPDS Volume 1</td>
</tr>
</tbody>
</table>

Explore project delivery options. Determine project delivery method.

Review chosen project delivery method. Plan, develop, implement tendering process and choose Contractor.

3 Client leadership

The Department is a significant client in the delivery of transport infrastructure and aims to be a ‘Customer of Choice’. Recognising that where the client (the Department) leads, the supplier will follow, makes it imperative that the Department as a client understands what it wants so that it can shape its behaviours, relationships, organisation and supply chain to achieve desired outcomes.

‘Supplier’ refers to the complex network of those who provide the Department with goods or services. In the broad sense, this consists of three sectors:

1) Private Industry
2) Local Government, and
3) RoadTek.

Figure 3.1 depicts how the Department and its suppliers’ work relate.

The basic principles underpinning the relationships between the Department and those suppliers are:

a) Risks are allocated to the party best able to manage those risks. If a risk does not eventuate, the party bearing that risk receives the benefits.
b) The price agreed should enable the organisation involved to do the work required and make a reasonable profit plus sufficient to allow for development of the industry as a whole.

c) The time allocated to perform the work is sufficient to allow the quality required to be achieved whilst undertaking business as usual.

d) Above expected achievements are appropriately rewarded, and

e) Concerns or issues that may arise are dealt with appropriately and expediently.

These principles should generate an environment of mutual respect essential for effective working relationships.

3.1 Client leadership

The Department has the ability to influence the behaviours of its supply chain and the achievement of desired outcomes. Client leadership is one of the most significant drivers of change. By adopting the practices in this manual, the Department can demonstrate that it has actively managed the performance of procurement expenditure.

Integration of the supply chain for any project can be beneficial. For example, operational considerations, such as future maintenance requirements, are inputs during the concept and development phases of a project to determine best value for money over the project lifecycle. The client needs to drive this integration of the supply chain towards gaining common and acceptable outcomes and adding value at all phases of the project lifecycle. It can achieve this through facilitating increased participation by downstream and upstream participants. A tool for achieving this is via such processes as Group Problem Solving. Correctly used, Group Problem Solving processes can provide the Department with better whole of life outcomes, from concept through to finalisation and into operations. For more information on Group Problem Solving refer TIPDS Volume 1 – Appendix D.

Client leadership is a proactive process which can involve the following:

- Integration of the supply chain towards achievement of total project goals and objectives. That is, getting clients, planners, designers, Constructors and operators to work together in the development of the project and not in isolation,

- Providing appropriate delivery mechanisms and packaging of projects which encourage achievement of best outcomes,

- Providing appropriate risk sharing and appropriate reward,

- Using and encouraging group problem solving techniques, and

- Providing a collaborative environment through effective management of relations between all parties to the project.
Partnering

Partnering is a form of relationship highly valued by most industry participants and presents an ideal opportunity to enhance professional relationships.

The process of partnering should become a ‘culture’, regardless of the form of contract, although it is particularly suited to some delivery methods.

Partnering is a process applied outside the contract (in most contracts) to align goals and objectives and to facilitate good communication, teamwork and joint problem solving. Partnering can be used in conjunction with most forms of contract. The partnering charter will ‘sit behind’ the contract proper, without generally being legally binding.

Partnering is simply a way of conducting business in which two or more organisations make long-term commitments to achieve mutual goals through the development of effective relationships.

Partnering focuses on the relationship with the following benefits:

- Trust and open communications are encouraged and expected from all,
- Issues and problems are resolved promptly and at the lowest possible level,
- Solutions are developed that strive to be agreeable and meet the needs of everyone involved (win-win approach),
- Common goals are identified for the project, and
- All seek input from each other in an effort to find better solutions to the problems and issues at hand.
More detailed information on partnering is contained in Appendix A.

4 Fundamental requirements

Development of a delivery strategy for a project is required in the Business Case by both the TIM and OnQ frameworks with the Preconstruction Processes Manual providing the details during the Concept phase.

The delivery strategy is reviewed a number of times. In acknowledgement of the time lapse between Business Case and a project appearing on the QTRIP, there is also a requirement during the Preliminary Design stage of the Development phase to review the delivery strategy while developing the Project Plan. In the Detailed Design stage of the Development phase the specific contract type must be confirmed prior to formation of tender documents. Section 5 of this Volume 1 (TIPDS) is focused on the steps undertaken in developing a delivery strategy.

To ensure that project management is undertaken effectively across the Queensland public sector and that the government achieves value for money from its investment in project activity, the Project Assurance Framework has been developed.

The framework defines generic project stages. The Value for Money Framework supports existing project management processes in each stage. It includes a Gateway Review Process that promotes independent reviews at the completion of key project stages providing assurance that projects are positioned to successfully progress to the next stage.

The framework and its associated guidance material provide general guidance on project management and set the high-level parameters that may be evaluated in Gateway and other project management quality assurance processes.

When completed, the Project Assurance and Value for Money frameworks, complemented by any existing departmental project management processes, will represent the minimum standards for project management and assurance across the Queensland public sector.

The Queensland Government requires that for public infrastructure projects where the expected capital value will exceed $100 million or the Net Present Value (NPV) of the strategic priority will exceed $100 million during the term of the contractual relationship, the project must be considered under the whole of government Public Private Partnership (PPP) Policy and Value for Money (VFM) Framework.

TIPDS itself also has some fundamental requirements relating to value for money, partnering, and extended partnering. As an indication these are:

- For projects with an expected value greater than $100 million, a Value Management Workshop as per Appendix D must be carried out. The Contract Selection Tool (outlined in this manual) may be used as a guide, but consideration must be given to the Queensland Government PPP and VFM framework.

3 Refer Preconstruction Processes Manual > Chapter 4: Planning and Design Process > Figure 4.5
For projects with an expected value greater than $20 million, extended partnering and non-price criteria (related to management of relationships) must be included in the selection criteria. This does not apply if an alliance contract is the preferred delivery method, and

For projects with an expected value greater than $5 million, partnering must be offered to the successful tenderer.

The above values are indicative only. Projects with values lower than the above may also require the application of partnering, extended partnering, and/or Value Management Workshop. Individual project characteristics and risk assessment will determine the need of that. For more information, please contact Assistant Director (Contracts) of State Program Office.

In addition to the above fundamental requirements, the Queensland Government requires contractors engaged on construction projects to comply with the 10% Training Policy and/or 20% Indigenous Employment Policy. It is anticipated that as of 1st July 2014, there will be a new Queensland Government policy that replaces these two policies. For more information, please contact Assistant Director (Contracts) of the State Program Office.

5 The process of developing a delivery strategy

In general, there are five steps involved in developing a project delivery strategy:

1. Identification of the Project Objectives
2. Selecting the Delivery Model
3. Setting a Prequalification Level
4. Selecting the Contract Type, and
5. Supplier Selection.

Although each step is distinct, they are interactive and there will be some iteration before a final strategy is derived for any one project or program of projects. Essentially, the five steps have been distilled from three basic concepts:

1. Which is the best delivery model?
2. Which standard contract form should be used to achieve the desired strategy?
3. How is the preferred supplier selected?

The following sections describe each of the five steps that make up the development of a project delivery strategy.

5.1 Identification of project objectives

It is important to have a clear grasp of the project objectives before developing a delivery strategy. The project objectives need to look beyond the end of construction through to the 'end of life' of the project. The project objectives will eventually tie together the need for the project and the tender evaluation methodology through the use of targeted selection criteria. The project objectives need to include both the design requirements and construction objectives.
The risk analysis undertaken in the early part of the preconstruction phase should be used to help define the prime objectives for the project. Once each objective has been identified it needs to be analysed such that success or failure of each objective can be measured. For example, a stated objective may be to reduce peak hour travel time through the site during construction. In order to judge success or failure, parameters will need to be determined to measure performance, along with the details on how the assessment is to be concluded.

In addition to project specific objectives, consideration should be given to broader issues. These might be related, for example, to industry capacity or government priorities.

The following offer a guide to the general headings under which project objectives may fall:

- Reduction in travel time
- Reduction in risk to the environment
- Stakeholder satisfactions
- Designed for future capacity requirements
- Accident risk reduced
- Temporary works carried out in a safe manner
- Uninterrupted traffic flow during construction
- Safe work zones
- Construction completed in set time
- Community employment
- Current markets conditions
- Low cost, straightforward maintenance
- Sustainable design, construction and disposal
- Engagement and consultation with affected communities
- Enhancing community safety, and
- Professional skills development.

### 5.2 Selecting the delivery model

Conceptually, there are in general, four possible delivery models:

1. Design and then Construct
2. Design and then Document and Construct
3. Design and Construct
4. Design, Construct and Maintain (for a period of time).

All of the above delivery model options involve a risk transfer approach. In these models the risks involved in the construction of the project (and in some models the design and maintenance risk also) are transferred to the Constructor. A Risk Embrace approach can result in better outcomes and advice should be sought from the Assistant Director (Contracts) if you are considering this approach.
There are four overlapping key considerations in deciding which of the four delivery models is most appropriate. Figure 5.1 below illustrates the considerations to be made.

**Figure 5.1 – Delivery model considerations**

5.2.1 Risk profile

Fundamentally, the process of developing Delivery Strategies is about achieving value for money, which in turn requires an identification and evaluation of risks and uncertainty and how these might be treated. In order to make decisions about delivery methods, it is essential that the basic characteristics of a project are documented and an assessment made of the project risk profile. Risk consideration should not only look at the obvious physical risks associated with construction, but also those which may eventuate in any phase of the project lifecycle and in operations. Risk analysis is undertaken continuously across the project lifecycle.

Such project characteristics, generally available at the time of inclusion in the QTRIP, include:

- Estimated cost
- Road classification/location
- Site conditions (geology, topography)
- Planning layout
- Timing considerations (wet season, environmental constraints), and
Specific Works elements.

The project risk profile at this time relates to the risk to the Department that the project will not be completed:

- Within budget
- On time
- Satisfying all regulatory bodies and stakeholders, and
- In accordance with standards, drawings and specifications.

Based on the project characteristics and knowledge of similar completed projects, different risks for the project can be identified and classified, thus forming the first step in producing a project risk profile. A typical list of risks for roadworks is shown in Table 5.1.

Identified risks can be assessed using Table 5.2, which is based on the methods described in Australian Standard AS/NZ 4360 (2004) – Risk Management. For more information, please contact Assistant Director (RISE) of the State Program Office.

**Table 5.1 – Typical risks in a roadworks project**

<table>
<thead>
<tr>
<th>Areas of risk</th>
<th>Risk description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical</strong></td>
<td></td>
</tr>
<tr>
<td>Site Conditions</td>
<td>Uncertainty leading to delays, variations, flood damage.</td>
</tr>
<tr>
<td>Materials</td>
<td>Lack of local knowledge.</td>
</tr>
<tr>
<td>Road Users</td>
<td>Unknown quantities or quality of materials affecting quality, delays and variations.</td>
</tr>
<tr>
<td>Workers</td>
<td>Lack of local knowledge, possible damage to adjacent buildings.</td>
</tr>
<tr>
<td>Adjoining land owners</td>
<td>Traffic disruption and delays, crashes causing disruptions.</td>
</tr>
<tr>
<td>Timing/sequencing</td>
<td>Poor traffic management affects MR reputation. Safety during construction activities.</td>
</tr>
<tr>
<td>Innovative/Complex Designs / Public Utilities</td>
<td>Noise, vibration, dust nuisance causes additional cost.</td>
</tr>
<tr>
<td></td>
<td>Strict requirements may affect quality, delays and variations.</td>
</tr>
<tr>
<td></td>
<td>Lack of experience on new and complex methods may have an effect on quality, delays and variations.</td>
</tr>
<tr>
<td><strong>Financial</strong></td>
<td></td>
</tr>
<tr>
<td>Cash Flow</td>
<td>Periods of high cash flow may limit performance of the Constructor.</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
</tr>
<tr>
<td>Special environmental Cultural heritage issues</td>
<td>Strict environment requirements may cause delays and variations.</td>
</tr>
<tr>
<td></td>
<td>Presence of cultural items may delay construction.</td>
</tr>
</tbody>
</table>

The assessment looks at the likelihood of occurrence of the risk (in the form of a frequency) and the consequences of each occurrence (additional costs related to the contract amount). For each risk the intersection of likelihood and consequences on the table gives a qualitative measure of the risk to the Department associated with the work. This is then represented on the project risk profile.
Table 5.2 – Qualitative measure of risk

<table>
<thead>
<tr>
<th>Likelihood of occurrence</th>
<th>Consequence of occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.1 x ECV*</td>
</tr>
<tr>
<td>Extremely rare</td>
<td>Low</td>
</tr>
<tr>
<td>1 in 10⁶ (0.0001%)</td>
<td></td>
</tr>
<tr>
<td>Rare</td>
<td>Low</td>
</tr>
<tr>
<td>1 in 10⁴ (0.01%)</td>
<td></td>
</tr>
<tr>
<td>Unlikely</td>
<td>Moderate</td>
</tr>
<tr>
<td>1 in 10² (1%)</td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td>Significant</td>
</tr>
<tr>
<td>1 in 10 (10%)</td>
<td></td>
</tr>
<tr>
<td>Certain</td>
<td>High</td>
</tr>
<tr>
<td>1 in 1 (100%)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Significant and High risks would generally indicate design changes or other appropriate actions are needed prior to tendering.

* ECV = Estimated Contract Value

Table 5.3 shows an example risk profile. Each box represents the number of risks of a particular consequence and likelihood combination. Using the template from Table 5.2 and matching the colour coding, the example risk profile in Table 5.3 indicates there is one high risk in the project and four significant risks. A summary of the risk profile is shown in Figure 5.2. The profile, together with the supporting material (for example, risk register, treatment strategies) can be used as an aid in determining an appropriate Delivery Model.

Table 5.3 – Example of risk profile

<table>
<thead>
<tr>
<th>Likelihood of occurrence</th>
<th>Consequence of occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.1 x ECV</td>
</tr>
<tr>
<td>Extremely rare</td>
<td>4</td>
</tr>
<tr>
<td>Rare</td>
<td>3</td>
</tr>
<tr>
<td>Unlikely</td>
<td>2</td>
</tr>
<tr>
<td>Likely</td>
<td>1</td>
</tr>
<tr>
<td>Certain</td>
<td></td>
</tr>
</tbody>
</table>

Where there are more than 2 significant or higher risks in a project risk profile (refer Figure 5.2), care should be taken in selecting project packaging and works delivery methods (see Section 5.2.2).
Having identified project risks, the next step is to decide who is in the best position to manage the risks, particularly the significant and high risks. Where it becomes apparent that project risks are best managed by the supplier, a Delivery Model should be chosen that allows transfer of risks to the contractor. Figure 5.3 shows a general relationship between design risk transfer and Delivery Model.

**Figure 5.3 – General relationships between delivery model and design risk transfer**

It is important that any areas that are rated as ‘significant or high’ are confirmed by experienced senior officers involved in planning, design and construction of the project. It is important to identify when in
the project cycle that the risk occurs as this will have a large influence on where acceptance of the risk should lie.

5.2.2 Packaging

Decisions on how to package and deliver a project encompass a number of differing issues such as:

- How the delivery method of the project can assist government's broader priorities
- The size and number of packages
- Horizontal or vertical, or product separation of the packages
- The most appropriate tendering or selection processes
- The most appropriate remuneration method, and
- Departmental and government policy regarding support for local communities.

In some highly complex projects, Group Problem Solving workshops may be appropriate in determining the packaging and delivery method to be used. Appendix D of this volume further details Group Problem Solving.

Government priorities

Transport infrastructure contributes significantly to the government's broader priorities. That the strategy through which the project is delivered can add value to some of the broader priorities of government, both in the physical packaging of the project and the Delivery Model used, is not often considered in the planning of a project. However, there are a number of government policies that the delivery of a project may impact, for example, the local industry policy, indigenous reconciliation and training. Additional value can be added through more skills and innovation, quality of life and building Queensland's regions.

Examples of this are:

- Growing local consultant services to increase competition
- Packaging projects into say one large project for efficiency and a smaller project to encourage the local construction industry
- Sequencing smaller works to encourage the local industry
- Utilising some varied Delivery Models such as Design and Construct on smaller projects to encourage additional skills and possibly reduce some effort and documentation, and
- Sequencing and packaging works to minimise the impact to the community.

Government Priorities change as governments change and therefore all projects need to be reviewed with the current government’s priorities in mind.

Economy of scale

By bulking up projects into larger projects, economies of scale should be realised. An argument against having the largest possible contract is that increased competition may occur if several smaller contracts are called. The potential pool of competitors is increased for the smaller packages. Smaller contractors also tend to have lower overheads.

Figure 5.4 indicates that for a given set of circumstances there will be an optimum project size.
While economies of scale can be achieved by increasing the size of projects, consideration should also be given to the negative effect that this may have on the community and smaller contractors particularly in regional areas.

**Bulking up like works**

It has been established that savings can be gained through grouping like projects into one contract. An example of this is the District’s reseal programs, in which a number of reseals have been bulked together in the one contract. Another example successfully used, is a number of minor pavement stabilisation contracts grouped under the one contract.

**Sequencing/scheduling/programming of the works**

Often when similar works are bulked up into larger value contracts, benefit can be gained by allowing a high degree of flexibility in the timing of the works. An example of this is the District reseal program. By allowing a six to nine month period for the contractor to undertake the works, it allows resource scheduling by the contractor and provides for certain economies in the purchase and supply of materials.

Spacing out the timing of projects can lead to greater competition for the project and enable the tenderer to place more time to construction planning and pricing of the work.

Aspects of public access, thoroughfare, delay and physical restraints are also factors that need to be considered in determining the physical size of a project.

*Figure 5.4 – Optimum project size*
Specialisation

In some projects, it may be appropriate to split up the works into specialised components to increase competitiveness. For example, it may be appropriate in some cases to split the earthworks from the pavement works if a specialised pavement is being considered – for example, a concrete pavement.

When considering the splitting out of specialised components, care should be taken in identifying the risks at the interface of different contracts. For example, when splitting road and bridge construction from a project, the construction of bridge abutments and road embankments may need careful co-ordination. Conversely, having all elements of a project under one contract gives the contractor greater control over the co-ordination of activities.

Supply of materials

To assist in the timing of the project or the proven quality of materials, it may be appropriate in some projects to provide separate contracts for the provision of materials, for example, gravel or precast concrete products. This may be a particular concern in remote areas where longer order/lead times are required to ensure materials are delivered to site in a timely manner. In such cases, risks associated with non-conforming pavements are more likely to lie with the Principal. The major risk associated with Principal supplied materials is that the supplier/product may not perform as expected. This can lead to Principal caused delay claims.

Industry liaison and large complex projects

For large complex projects, physical packaging may be determined with input from industry at a value management style workshop using Group Problem Solving – see Appendix D. For larger projects of expected contract value greater than $100million, an appropriate Value Management Workshop must be conducted. The workshop can also be combined with the determination of the appropriate contract type(s). Although certain recommendations or strategies may be determined at these workshops, the final decision still rests with the Department.

5.2.3 Market environment

The choice of Delivery Model needs to take into account market conditions. There may be many contracts being put to the market at a particular time across a number of government/non-government bodies. This could result in an over-heated market with scarcity of resources, less competition and an increase in contract prices, thus reducing value for money. Conversely, a lack of contract work may lead to a very competitive market.

From an industry perspective, it is desirable for the Department to plan project delivery to provide a regular stream of contract work to the market. This prevents the highs and lows allowing better resource management and development by the private sector. The Department should also be conscious of the need to maintain a competitive market differentiated by appropriate size of contractors and locations. The need to foster contract capability is important in maintaining an efficient and effective on-going contract industry.

Where all firms likely to bid have a lot of work in front of them, the bids submitted tend to reflect that fact and a heated market exists. All bids received are relatively higher than what would normally be expected. Where a heated market does exist, a Risk Embrace approach may result in a more favourable outcome to the Department. In Risk Embrace forms of contract, actual costs incurred by the contractor are reimbursed, and if performance is good, a bonus to the contractor could also be applicable. Forms of contract which involve a Risk Embrace approach include Relational Incentive
Contracts, Alliances and Performance Incentive Cost Reimbursable contracts. All of these forms of contract involve payment to the Contractor using the three limbs concept. Where a Risk Embrace approach is adopted there is also opportunity for negotiation surrounding the allocation of risk to the party best able to deal with the risk. Once again this negotiation process can lead to significant savings to the Department - together with a good result for the Contractor. These forms of contract are not dealt with in detail in this Manual. Contact Assistant Director (Contracts) for further information regarding Risk Embrace forms of contract.

In a less heated market environment where resources out-number projects, generally risk transfer models, where the competitive nature of the market determines the cost of the project, would provide the best outcome.

As market environment can be a rather volatile factor, decisions regarding the contract type based on market environment, should be left until as late as possible in the development phase.

5.2.4 Contract mechanism

The contract mechanism describes the level of relationship management adopted in the delivery model. The general relationship between project complexity and relationship management is illustrated in Figure 5.5.

All contracts, irrespective of the contract mechanism will benefit from proactive management of the relationship and improved communication with the contractor.

Where the project is complex, or there is a significant level of risk, it is desirable to enter into a contract with the supplier that integrates a high degree of relationship management. This then facilitates good interaction between the Department, contractor, and where applicable, designer and subcontractors. Where interaction and communication is open and free flowing, the project has a greater chance of success despite the degree of complexity and risk. The Design and Construct Delivery Model offers the best fit for these complex projects. Contract types within this model, such as the Alliance and Early Contractor Improvement, generally involve a high degree of relationship management.

Both the Alliance and Early Contractor Involvement (ECI) have relationship management written into the 'conditions of contract'. The entire premise of the Alliance is based on sharing of risk between parties and all parties working together as a team for the good of the project.

In an ECI, partnering is a contractual requirement facilitating a good working relationship between the Department, contractor and designer.

Projects which are not considered complex, nor carry a high degree of risk to the Department, may not require intense relationship management. A more distant relationship may be adequate and still result in a successful outcome. In these cases, Design and then Contract or Design and Document Delivery Models may be appropriate. The exception to this is the Relational Incentive Contract (RIC). Conceptually this contract type suits a complex project and involves a high degree of relationship management. However, the current version of the RIC is best suited to simple projects and where the Department has an existing exceptional relationship with the contractor and/or designer (that is, Local Government and RoadTek).

Irrespective of Delivery Model chosen, relationship management should be considered for all delivery models on the basis that the better the working relationships between contracted parties, the easier it is to work through issues, whether they be contractual or technical.
5.3 Setting a prequalification level

In accordance with the requirements of the Queensland Procurement Policy for high risk projects, the Department has implemented a system for prequalification of organisations which seek to tender for road transport infrastructure projects in order to minimise the risk of not meeting the project objectives.

Volume 3 of this manual defines the prequalification system (which is based on the National Prequalification System), including the requirements of applicants as well as application, assessment and performance review processes.

Volume 3 may also be used as a basis for limiting registration of interest applications where a two stage selection process is used.

The main aims of the prequalification system are:

a) To expand on the principles of the Queensland Procurement Policy, with direct application to Departmental projects

b) To minimise risks to the Department in dealing with available Contractors

c) To identify suitable tenderers for Departmental projects on broad and generalised non-price criteria relating to the organisation's technical and financial capability, and

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9 Increased relationships from D&C through DCM, ECI to Alliance. Note: It is recognised that some D&C models are quite adversarial.
d) To minimise tendering costs to the industry and the Department by filtering out unsuitable prospective tenderers.

Prequalification with the Department is based on an organisation’s assessed ability to complete transport infrastructure projects, giving consideration to the organisation’s:

a) Financial capability

b) Experience, qualifications and capability of key personnel, and

c) Capability to successfully manage major projects (including management arrangements and management systems).

There are a range of prequalification levels corresponding to varying financial and technical capabilities.

5.3.1 Determining the advertised project level

This process of determining a project prequalification level will be briefly described here. It is important to understand the technical, financial and risk requirements of a project as this could possibly affect what type of delivery is to be chosen. For more information, refer to TIPDS Volumes 2 and 3.

For all projects, the following need to be considered to determine the project level prior to calling tenders for construction of the works:

- Project characteristics
- Project risk profile
- Project financial criteria (see TIPDS Volume 3)
- Technical criteria for road and/or bridge projects as appropriate (see TIPDS Volume 3)
- Consideration for combined road and bridge projects, and
- Requirements for specialist supplier (for example, asphalt contractors, precast concrete) – (See TIPDS Volume 3, Part B).

The estimated contract price does not set the technical level of the project. Project characteristics and the required skill level of the contractor are the determinants. Examples of this are:

- Works involving extremely complex construction methods but with an estimated contract value in the F10 Project Financial Level range. This must be advertised so that only appropriately experienced Contractors should be given tender documents. Examples include bridges within the F10 Project Financial Level but with, say, Super T girder and cast in-situ deck. This would be advertised as B3/F10, and

- A large project, with significant monthly expenditure, that involves simple repetitive work within the capabilities of a Contractor on a prequalified level 1 or less. This may be advertised at R1 or B1 but may require non-price criteria to address the contractor’s ability to finance the contract. Examples would include construction of (a) multiple simple bridges or (b) a long length of simple highway rehabilitation over an extended time period. The Project Financial Level would be fixed by considering the contract value, duration of the contract and the related monthly expenditure. This would be advertised as say R1/F10, and

- A series of smaller projects packaged together will only require the skill of the ‘individual’ projects and not be determined on the total financial level of the combined project, on the
assumption that at the end of each individual project there is a right of review before the contractor progresses to the next individual project.

Example

The following is an example based on the floodplain crossing of a western river where a Transport Infrastructure Construction Contract (TICC) type has been selected.

Project characteristics:

- Departmentally owned design
- Requires construction of 16 bridges across a floodplain
- Includes supply and delivery of approximately 700 precast concrete piles, deck units
- 3 bridges where floating equipment will be necessary to construct the foundations
- Two at grade intersections
- Varying traffic volumes and speed environments throughout the project length, and
- Estimated construction period of 24 months.

Risk factors:

- Cultural heritage issues
- Lack of experienced local Contractors
- Possible flood damage during construction, and
- Possible delays associated with delivery of precast pile, deck units.

Project risk profile (works):

- Significant for cultural heritage issues, and
- Significant for flood damage.

Financial criteria:

- Estimated Contract Value of $20million – above infrastructure works limit for bridges of $15million but within the $30million limit for roads.

Discussion

- Accepted as infrastructure works even though bridgeworks portion value probably above limit
- Adopt F20 financial level because:
  - The estimated contract value is in the $20million to $40million range, and
  - The contract duration of 24 months gives an indicative average monthly expenditure equivalent to a Level F20.
- Adopt R2 road level because:
  - At grade intersections are required, and
  - Traffic volumes and the speed environment varies throughout the project length.
• Adopt B3 bridge level because:
  - The contract includes numerous bridges, and
  - Some of the bridges require floating equipment to construct the foundations.

• Adopt combined B3/R2 level because:
  - Local experienced Contractors with Prequalification Levels of B3/R2 are available, and
  - Project risk profile does not provide any basis to limit eligibility to the major (R4/B3) Contractors.

• Recommendation: Advertise for combined road/bridge project:
  - B3 level for bridgeworks,
  - R2 level for roadworks, and
  - F20 level for finance.

5.3.2 Combined design and construction contract types

Volume 3 of the TIPDS covers prequalification of contractors only. For delivery models involving design and construction, where the Department engages a contractor for design as well as construction, the prequalification level of the designer should also be determined. Prequalification of design consultants is covered in the manual Consultants for Engineering Projects.

5.3.3 Consequences of selecting an inappropriate prequalification level

Undesirable consequences may result if the appropriate Project Prequalification Level is not selected. These include:

**Project prequalification level too high**

• May limit competition.

• Accusations that the principles of the Queensland Procurement Policy have not been adhered to. Local competent suppliers may be excluded from tendering. This restricts the market and limits the potential for local firms to develop. The department may end up paying more for its works because out-of-town companies have to charge higher establishment costs than a local company. It also increases administrative work by the relevant District and the prequalification committee in dealing with the complaints.

• Entry into the prequalification system is discouraged because smaller contractors perceive that they never have the opportunity to tender for departmental works. The department may be accused of being risk averse in not providing small to medium sized or local companies with opportunities to gain experience on departmental works to enable them to increase their prequalification level, and

• On large contracts an undesirably small pool of tenderers may result.

**Project prequalification level too low**

• Tenderers may be found not to have the financial or technical capacity to carry out the work. The P-schedule check should pick this up, but effort may have to be devoted to explaining to a tenderer why its tender has been passed over.
5.3.4 Project with high (greater than 55%) asphalt content by value

For projects that contain asphalt, the following is required:

- A project containing greater than 55% of asphalt (supply and lay) would be subject to open competition by Approved Asphalt Contractors, with any non-asphalt work being subcontracted to Prequalified Contractors at the appropriate prequalification level.
- A project containing less than 45% of asphalt (supply and lay) would be subject to open competition by Prequalified Contractors at the appropriate prequalification level, with any asphalt work being subcontracted to Approved Asphalt Contractors, and
- When the ratio of asphalt (supply and lay) to other activities is close, the Principal's Representatives will use their discretion in making the final decision in calling tenders from either Approved Asphalt Contractors or Prequalified Contractors.

5.4 Selection of the most appropriate contract type

Once a Delivery Model has been determined for a project (or program of projects) and the Prequalification levels are set, a specific contract type can be selected.

In general, as the degree of complexity and unknowns of the finished product or of procuring the finished product increases, the success of the project is influenced more by the relationships between all of the parties involved. In the delivery of any infrastructure project, relationship management will provide benefits to both the Department and the Contractor.

Complexity and unknowns do not necessarily mean complexity and unknowns in the finished product, but may also account for factors such as compressed time frame for delivery, cost implications, quality, environmental and cultural restraints, traffic management, the effect on the community and particularly on abutting businesses and so on. Risk will increase as complexity and the degree of unknowns increase.

Section 5.4.1 outlines the various contract types currently in use by the Department. Section 5.4.2 describes a tool that may be used to help select a contract type for a particular project.

5.4.1 Contract types

As described in Section 5.2 above, there are in general, four different Delivery Models that can be selected for delivery of a project. Within each Delivery Model there are specific Contract Types that can be selected to best address the project objectives and identified risks of the particular project. The contract types currently used by the Department are described below in Table 5.4.
### Table 5.4 – Contract types in the department

<table>
<thead>
<tr>
<th>Delivery model</th>
<th>Contract types</th>
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<td>Design and then Construct</td>
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<td>Design and Construct</td>
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<td></td>
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<td>Design, Construct and Maintain</td>
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<tr>
<td></td>
<td>Public Private Partnerships(^{11})</td>
</tr>
</tbody>
</table>

These contract types may be used to deliver a range of projects. The contract types are described below in general terms. The information has been obtained from a range of sources from within and outside the Department. There is no requirement to accept the contract type exactly as described, as it is, with appropriate approval, possible to develop variants of the contract types listed to suit individual situations. Additionally, some of the past problems experienced with certain contract types may be overcome by applying certain techniques such as partnering.

There are numerous other contract types in use around the state, country and internationally. No attempt has been made to detail any further alternatives on the basis that the Department does not have systems in place to support contract types other than those described in the following section. Where particular project objectives or a specific Project Risk Profile does not lend itself to the suite of contract types currently in use by the Department, there may be scope to research contract types used outside the Department. Assistant Director (Contracts) can provide more detailed advice to suit particular project requirements.

#### 5.4.1.1 Design and then construct delivery model

The contract types that fit within the Design and then Construct Delivery Model are often referred to as Traditional Contracts.

The Traditional Contract is the most common contract type in the Department. Partnering, as a form of relationship management, will continue to be used to enhance this type of contract.

In a Traditional Departmental contract, the contractor is engaged to undertake the construction phase of a project. The method of payment is usually schedule of rates but lump sum can also be used. The Department will have already prepared a design brief, a detailed design and ultimately the project documentation. A Contract Administrator (CA) must be provided by the Principal. Reference should be

\(^{10}\) The Relational Incentive Contract also allows for Design and then Construct.

\(^{11}\) The PPP Policy covers a range of relational contract types but with a focus on those types that place private sector equity at risk. Such as BOOT, DBFO, and so on.
made to the Contract Administration System manual \(^{12}\) for details of the Contract Administration process.

Interested contractors are invited to submit competitive tenders for the work. There is less effort required by bidders responding to this type of proposed delivery structure than for some other methods of delivery, for example where non-price factors are involved. The contractor, once selected, assumes no risk for design or deficiencies in the design documentation.

The contractor employs subcontractors and suppliers for those parts of the work it does not perform directly. The contractor is liable for the work of subcontractors and suppliers. The Department's conditions of contract require the superintendent to approve individual subcontractors where the subcontract amount exceeds $50,000 or $100,000 (depending on the financial level of the project). For certain types of specialist subcontract work, such as precast concrete products and asphalt manufacture and placing, only departmentally registered suppliers may be engaged by the contractor. After project completion (and subject to any defect liability period), the Department is responsible for operation and maintenance.

One of the attractions of a traditional contract for the Department, is that there is generally low risk as the contractor bears the construction risks. The sustainability of the traditional form of contract is conditional upon the Department retaining client leadership and competence in the detail design phase. Hence, the traditional contract form of delivery is dependent on the design and documentation competence of the Department. Design risk remains with the Department.

Given that the design of a project is sound, the ease with which a project is delivered is dependent on a number of factors – two important factors are:

1. **Fair contract price.** A fair contract price is necessary to ensure that the contractor has the potential to make an appropriate profit. A contract price with little or no profit margin may be reflected back down through the supply chain creating economic problems for a number of suppliers. One way to help achieve a fair contract price is to use both price and non-price criteria in the selection of the successful tenderer and correct implementation of the Unusually Low Bid clause. Volume 2 of TIPDS addresses this in more detail, and

2. **Relationship management.** Many of the problems experienced on a project can be traced to poor relationships between the Principal, the superintendent, the contractor and/or subcontractors. One method to overcome these problems is through the partnering process. This is addressed in Appendix A of this volume.

However, it is fair to observe that this method of delivery presents a wider range of tendering options than do the other methods of delivery.

There are four common Traditional Contracts used by the Department:

1. Minor Works Contract
2. Transport Infrastructure Construction Contract
3. Roadworks Performance Contract, and
4. Road Maintenance Performance Contract.

\(^{12}\) Refer TMR website > Business and industry > Technical publications > Contract > Contract administration system.
In general, the Design and then Construct delivery model suits low risk ‘run of the mill’ projects. However, at the limits where other delivery models may be contemplated, design then construct may still be appropriate with the judicious application of extended partnering, non-price criteria, consideration of alternative tenders. The Design and then Construct delivery model may also be used with the Early Tender Involvement process.

**Minor Works Contract**

A Minor Works (MW) Contract may be used for simple minor works\(^{13}\). The MW Contract is equally applicable for:

- all minor road projects including small capital works
- combined capital and maintenance projects
- rehabilitation and programmed maintenance work.

Some sole invitation minor works may also be delivered as part of the Road Maintenance Performance Contract.

Determining when to use MW depends, amongst other things, on the extent of risk involved in the project. Risks vary due to estimated cost/duration as well as variability in the type, scale, complexity and number of construction activities.

Using the following risk assessment method, the selection of either a major or MW Contract is guided primarily by estimated expenditure level with discretion dependent on the level of risk. MW arrangements are definitely not intended for high risk work. For example, projects involving geotechnical work, railway crossings or works in close proximity to railway lines or works with a component of design by the supplier, for example, Reinforced Soil Structures must use other forms of contract.

As a result of a recent review, guidance on the use of MW contracts has been redrafted. The requirements are:

- The use of non-prequalified contractors using a MW contract is acceptable where the works are budgeted up to $1million.
- Where the works are budgeted to be between $1million and $5million, and the risk is low (supported by a documented risk assessment), the use of the MW contract with prequalified contractors is an acceptable alternative to using the Transport Infrastructure Construction Contract TICC (formally known as the Road Construction Contract).
- Where the works are budgeted to exceed $5million, then a TICC should be used unless exempt by GM (PDO) in special circumstances such as emergent or flood damage recovery works.

As stated, geotechnical construction works such as slope stabilisation are considered to be high risk and as such these works should be delivered using the TICC contract with an appropriately prequalified contractor. For more information, please contact Assistant Director (Contracts) of State Program Office.

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\(^{13}\) Refer TMR website > Business and industry > Technical publications > Contract > Standard contract provisions roads (vol 3): minor works contract.
Typical examples of low risk projects (assuming that available contractors are suitable) include:

- Supply and placement of hot mix asphalt
- Cart, heat and spray bitumen and spreading of aggregate for resealing projects
- Minor intersection works including traffic signal installations
- Installation of noise amelioration devices
- Installation of guardrail
- Roadside landscaping, and
- Simple pavement rehabilitation works.

A Risk Assessment process should be undertaken wherever there is doubt. Section 5.2.1 describes the methodology for building a Project Risk Profile. The Project Risk Profile and the strategies to mitigate identified risks should be used to determine the appropriateness of using a Minor Works Contract. Where the consequence and probability of risks to the Department are significant (this would be true for most of the relatively higher cost road projects involving significant excavation or bridgeworks) other appropriate contract types must be used.

Additional factors to be considered where the value of the work is < $250,000 are:

- Under the WHS Act 2011, a Principal Contractor cannot be delegated the duties normally associated with being appointed the Principal Contractor if the value of the work is less than $250,000. If a contractor was appointed to carry out this work, under WHS legislation the Person Conducting a Business or Undertaking (PCBU) becomes responsible for safety on the project. The PCBU is the District or Regional Director.
- The contract may not be automatically covered by PAI insurance. Refer to Appendix F or contact Assistant Director (RISE) of State Program Office.

In these circumstances, consideration may be given to combining this work with other projects in order for the work value to be greater than $250,000 (while still achieving value for money). If in any doubt contact the Assistant Director (Contracts) for advice.

Factors to be considered in assessing the level of risk include:

a) Complexity of design/works

- Extent of innovation in design or techniques
- Technical complexity, and
- Extent of PUP requirements.

b) Failure of the works

- Design issues, for example, difficulty in assessing design loads, unknown properties of materials used and so on
- Chances of consequential damage, and
- Suitability of Construction Specifications.
c) Failure of the contractor

- Minor Works contract documents do not necessarily require pre-qualified contractors to carry out the work under the contract. This represents a significant risk to the Department in that the contractor may not perform up to expectations or, more importantly, may not complete the contract.

- The extent of securities on Minor Works contracts is limited to Retention only.

- Only where the cost and nature of the work indicate a low risk to the Department, should non-prequalified contractors be considered.

d) Construction problems

- Latent conditions situations
- Exposure to variations
- Suitable constructional plant, and
- Working under traffic.

Transport Infrastructure Construction Contract

The TICC (previously called an RCC) is the contract form most used by the Department. Under the TICC, the contractor undertakes to complete the construction phase of a project. The Department will have already prepared a detailed design and project documentation. The systems supporting the use of a TICC are much more mature than they are for other forms of contract.

The TICC is either a schedule of rates, lump sum or part lump sum/part schedule of rates and the General Conditions of Contract are based in part on the Australian Standard Form of Contract AS2124.

Contractors engaged for this type of contract must be prequalified in the prequalification system at or above the prequalification level.

Contractors can employ subcontractors and suppliers for some parts of the work, with the contractor assuming liability for the work of the subcontractors and suppliers. The TICC uses a superintendent to administer the contract and value payment claims. The superintendent is required to implement the contract in a fair and impartial manner. A departmental officer or consultant may be used in this role. A contract administrator, engaged under a Departmental Panel Arrangement such as the State Program Office’s ‘Contract Administrator’s Panel’, would be used only where the a suitably experienced departmental officer is not available.

For relatively straightforward projects, there is less effort required by bidders responding to this type of delivery arrangement than other methods of delivery, such as Design and Construct or Alliancing. Partnering and relationship management have been increasingly used to enhance the TICC.

Where there are time constraints, large numbers of unknowns, opportunities for innovation, or a high degree of complexity, other contract types may be more appropriate.
A proforma tender document for a TICC can be found in the Standard Contract Provisions Roads Volume 1: Transport Infrastructure Construction Contract (TICC)\textsuperscript{14}.

**Early tender involvement**

This process is basically a two-stage TICC. Short-listing occurs in the first stage whereby at least three contractors are short-listed based on non-price submissions and perhaps interview considerations. This is followed by the constructors’ input into the Department’s design through a number of workshops. It should be noted that the Department still retains the Design risk. The short-listed contractors then tender for the works and award of a TICC for construction follows in the second stage based on price.

Benefits of an ETI include:

- a) reduction of overall costs to the Department – as costs of bidding are less to the industry (maximum of three short-listed tenderers) and therefore less to the Department in the long term
- b) accessibility to contractor’s constructability knowledge
- c) understanding by the Constructor of the design risks
- d) the Principal is able to convey important aspects of the project through the non-price criteria selected
- e) the contractor is able to put forward alternative design proposals more readily.

**Roadworks Performance Contract**

A Roadworks Performance Contract (RPC) is similar to the Road Construction Contract but designed specifically for Departmental contracts with RoadTek and local authorities. The tenderer is sole invitee and the price is negotiated.

Under a RPC a contractor’s risk is limited to risks associated with:

- Plant and labour utilisation and efficiencies
- Construction management and supervision deficiencies
- Estimating risk – estimating the true cost of a project is shared by the principal and Contractor, with the outcome of the risk dependent on negotiation
- Risks allocated in the contract documentation – for example, clean up or site decontamination, and
- Wet weather delays (other than abnormal wet weather).

The Department wears the following risks:

- Damage to completed work by wet weather where the contractor takes appropriate precautions
- Delay costs associated with wet weather, but subject to mitigation by the contractor, and
- Latent conditions (physical conditions on site or its surroundings).

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\textsuperscript{14} Refer TMR website > Business and industry > Technical publications > Contract > Standard contract provisions roads (vol 1): road construction contract.
The value obtained from an RPC can be enhanced through constructor input into the design. A proforma tender can be found for the RPC in the Standard Contract Provisions Roads Volume 2: Roadworks Performance Contract (RPC)\textsuperscript{15}.

**Road Maintenance Performance Contract**

The Road Maintenance Performance Contract (RMPC) is similar to the RPC but developed for maintenance activities where works to be undertaken are triggered by application of intervention levels. Prioritisation processes and response times are also significant characteristics of RMPC.

More details relating to RMPC can be found in the RMPC Manual\textsuperscript{16}.

**Road Asset Management Contract**

The Road Asset Management Contract is a term maintenance contract in which the contractor undertakes all maintenance works under the contract including prioritisation of programmed and rehabilitation works. The constructor is responsible for the design and construction of these works.

**5.4.1.2 Design then Document and Construct Delivery Model**

The only contract type used by the Department under the Design and then Document and Construct Delivery Model is the Document and Construct.

**Document and construct**

In this contract type, the Department has developed the design of the project well beyond the concept stage. The design is then novated (transferred) to the contractor. The Document and Construct method accordingly allows the Department greater control over the end product.

There are two possibilities when novating a design:

1. Novate the design only, and
2. Novate the design and the designer.

The contractor is required to expressly take over and be responsible for all design completed prior to entry into the contract. With the second option above, the contractor can retain the advantages of a single line of design throughout the project. The Department's design consultant's terms of engagement are novated to the contractor.

Other than the Department's increased level of control over design, advantages of Document and Construct are:

- Reduced risk of design shortcomings
- The design brief on which tenders are called is more defined than for a Design & Construct, increasing the capacity of the Department to comparatively assess bids
- The Department is able to select and engage design consultants to its liking, and

\textsuperscript{15} Refer TMR website > Business and industry > Technical publications > Contract > Standard contract provisions roads (vol 2): roadworks performance contract.

\textsuperscript{16} Refer TMR website > Business and industry > Technical publications > Contract > Roads maintenance performance contract manual.
• Process still permits the contractor to make certain changes to enable improved constructability.

Particular disadvantages of the Document and Construct option are:

• There may be an extended period to allow prospective contractors to assess the design already completed and to price design risk

• The maturity of the design at the point of entry into the contract detracts from any advantages in overlaps between the design and construction phases of the project

• The opportunity for efficiencies achieved through the contractor’s own undertaking of build ability and value management studies are not present to the same degree and re-design may be required in order for the contractor to increase build ability or utilise its preferred construction methodology

• Contractors may be reluctant to accept the risk of accepting responsibility for a prior design, and

• The process may not encourage innovation.

Contact Assistant Director (Contracts) for further information relating to the Document and Construct contract type.

5.4.1.3 Design and Construct Delivery Model

There are four Design and Construct contract types used by The Department:

1. Design & Construct (D&C)
2. Relational Incentive Contract (RIC)
3. Early Contractor Involvement (ECI), and
4. Alliance.

Under a Design and Construct Delivery Model, the Department enters into a contract with a supplier that is responsible for both design and construction of the project. The primary supplier is usually a contractor who then engages the designer through external consultants.

The general advantages of the Design and Construct contract types are:

• Involvement of the key parties very early in the project’s life maximises the potential for effecting optimum outcomes;

• The reduction of time and cost through the contractor having input into the constructability of the design;

• Relative certainty of the price by having the Contractor prepare and take responsibility for its own quantities, rates and lump sums;

• A single line of responsibility for the design and construction phases, rendering it unnecessary to distinguish between defects in design and defects in construction; and

• A reduction in claims and disputes by eliminating the interface between the Department’s designers and contractors.
To highlight some of the differences between the Design and Construct contract types and the Design and then Construct (Traditional) contract type, a comparison of features has been compiled and can be found in Appendix E.

**Design & Construct (D&C)**

Design & Construct (D&C) is a lump sum contract where a single entity undertakes both the design and the construction. Involvement of the key parties in the earlier stages of the project maximises influence on the final cost or duration of the project. Conversely, the cost to change any aspect of the project while being low at the early stages increases rapidly at the final stages. Therefore, it pays for the Principal to fully examine all alternatives and factors that may be subject to change early in the project process before going to tender.

For traditional packaging, the designer warrants that the design is in accordance with the brief and design standards and is subject to changes under the direction of the Department. The contractor, in turn, warrants that the completed works have been constructed in accordance with the design and to the Department’s construction standards.

In D&C, the Contractor warrants that the design and completed works are ‘fit for purpose’ (which shifts the design risk to the Contractor and may give rise to greater legal consequence to the Contractor). Where the contractor engages a designer, the designer is contracted additionally through a Deed of Covenant signed by the Department, the Designer and the Contractor. This makes it possible for the Department to take legal action, based on contract, against the designer, in situations where the Contractor becomes insolvent, however, problems in the insurance industry are making it very difficult for designers to obtain the necessary professional indemnity insurance to cover potentially large claims.

Long defects liability periods transfer the risk of excessive future costs from the Department to the contractor. This serves to mitigate the risk of under-design and longer term durability issues emanating from the design. The contractor is encouraged to be careful during construction to ensure maintenance costs are minimised during the maintenance period.

**Preparing for D&C**

Success of a D&C may be by three primary measures:

- On budget
- On schedule, and
- Fulfills expectations (envisioned functional goals, effective risk transfer, fitness for purpose, meets specifications, quality and so on).

In order to achieve these goals, the most important task for the Department is to prepare clear performance, technical and quality criteria for the project. The criteria will include objectives for durability, design life, operational criteria, standards of finish and aesthetics, community and environmental standards.

Hence the D&C approach can be quite resource intensive on the Principal. Unlike design and then construct, the Principal cannot control the design development process, which for a D&C is developed to suit the Contractor's programme not the capability or capacity of the Principal.
The next input from the Department is the conditions of contract that appropriately allocate risks and create contractual arrangements that can accommodate a likely range of events and circumstances. In this way, uncertainty and the potential for dispute is minimised.

The contract conditions may include and define the role of 'project verifier'. Where engaged, this is a key role, sometimes called the 'independent certifier'. The definitions should encompass its status under the contract, authority responsibility and accountability, as well as its role in auditing and testing compliance of the contractor’s work with the requirements of the contract. The cost for hiring the project verifier is the responsibility of the contractor.

Intellectual property is another area of particular significance in a D&C project and both tender and contract conditions should address such issues as to who owns the intellectual property rights and at what stage the intellectual property rights transfer to the Department.

**Administration**

A D&C contract imposes some additional requirements on the parties during the post-award construction phase to ensure that the Department's objectives are met and to facilitate scheduled targets.

Communication in design development, approval periods, documentation review and selection of finishes is often best handled through a project review group. This senior group is formed to ensure that any impediments to successful completion of the project are quickly removed and that day-to-day communication is maintained in a professional and constructive manner.

**Advantages of selecting a D&C**

The D&C contract type has a number of specific advantages that include:

- Cost and time may be reduced by the contractor’s capacity to achieve significant efficiencies by its control over the design consultants and its ability to undertake build ability studies and implement value management measures.

- Assess in the tendering phase a number of alternative ways of satisfying 'fit for purpose' within a price competitive context.

- Make a clear allocation of risk supported by appropriate warranties and responsibility for insurance.

- In the case of design defects, the Department is protected to a higher degree than in a traditional contract where the Department owns the design. Under a D&C contract, the contractor owns the design and usually warrants that the design (and construction) is fit for the purpose expressed in the design brief.

- On the other hand, the contractor enjoys a higher degree of control over the project and is better placed to predict, manage and absorb the risk of events impacting on the time and cost such as latent conditions, adverse weather and industrial disputes. The design will be implemented having regard to the most efficient method of construction in respect of both time and cost. This can minimise costs to the Department, maximise the project component of the lump sum for the contractor and generally comprise a goal common to both parties that may serve to reduce the degree of conflict.

- Reduced claims and disputes by eliminating the interface between the Departmentally employed designers and the contractor.
D&C is often used in the building industry when a client knows the functionality required of a building – its purpose and its input to the client's business – but has little knowledge of building technology and construction, and

D&C contracts provide better opportunities for innovation, mainly due to tenderers providing different design solutions at the tendering stage (the Principal may 'purchase' these innovative ideas by paying a tender contribution if expressly written for that purpose).

Disadvantages inherent in the D&C method

In addition to the above advantages there are number of disadvantages to be considered:

While it remains important that the Department monitors the design and quality of the work being executed, monitoring must be done in a way that does not result in design risk being transferred to the Department. If the Department or the contract administrator adopts an active and dominant role in finalising the design, as opposed to merely ensuring the design complies with the design brief, the advantage of shifting design responsibility to the contractor will be diminished. Careful drafting of provisions concerning review of design and approval of workmanship is essential.

Lack of clarity, in respect of the specifications in the design brief, may lead to disputation as to whether the contractor has in fact achieved the product described by the brief.

A considerable investment can be associated with preparing D&C tenders. In certain circumstances the Department may consider offsetting tender preparation costs by reimbursing tenderers a prescribed amount.

There is a high resource cost to the industry in tendering for a D&C. Two or more design teams can be tied up for a couple of months in the tender process.

It can be difficult for the Department to comparatively assess tender proposals submitted by prospective contractors, as proposals may differ significantly.

There is a potential for contractors to effect savings and increase profit within the lump sum contract by under-designing aspects of the project as a result of the design brief inadequately defining performance or quality requirements.

From a practical viewpoint, the Department has significantly less control than it would in a more traditional delivery method, given the potential under D&C for re-transferral of design risk back to the Department.

Design risk is transferred to engineering design consultants who are finding it increasingly difficult to obtain professional indemnity insurance for D&C type contracts. As this is an important issue, the availability of professional indemnity insurance should be investigated at the tender preparation stage, and

The cost for hiring the 'project verifier' is the responsibility of the contractor. This has the potential to undermine the independence of the project verifier.

Tendering

The level of effort required of tenderers and their consultants in the preparation of D&C bids is such that it is inefficient to consider open tendering for these delivery methods. It is usual for a two-stage or select tender process to be used.
One of the very real challenges for the tender process with this contract type, is the conversion of the preferred offer into a signed contract. This arises because of the need for the purchaser to create in negotiation with the bidder, an integrated contract document that marries the original requirements of the brief with the solutions offered by the successful contractor. The challenge is for the Department to achieve a product that meets their performance requirements rather than infrastructure designed to meet lowest cost objectives of the contractor.

Critical to the success of the D&C is the specification in the brief:

- The final project must be fit for purpose, and
- Outcomes must be clearly specified.

It is important to note that ‘fit for purpose’ is being increasingly defined by courts by its common law meaning.

Refer to the Standard Contract Provisions Roads: Volume 4 – Design and Construct Contract for further details relating to this contract type. Alternatively contact Assistant Director (Contracts).

### Relational Incentive Contract

#### Introduction

Many Districts have also utilised Project Alliance Agreements (PAA) to engage with RoadTek and Local Governments in a much more relational manner than our 'traditional' forms of contract would allow. Though useful for these purposes, Alliances were never envisioned for use in these circumstances and some criticism has been directed toward the reward-for-effort attainable when applied to relatively small and simple low risk projects.

For these and other reasons, the Department has developed a contract model for use on a sole-invitation basis, which allows the department to leverage off the excellent working relationships already established in those two sectors of our market. The Relational Incentive Contract effectively replaces the notion of the Cost Reimbursable Performance Incentive (CRPI) and provides the Department with a full working relational model.

A RIC may be used on construction work where there are few substantial risks or unknowns or where proven technology is being utilised. It is anticipated that through the existing alignment of corporate interests, project briefs can be appropriately developed that reflect the adopted risk profile. As a guide only, the RIC should only be used for contract up to a value of $3million. The Assistant Director (Contracts) of State Program Office should be consulted.

#### The RIC in more detail

A RIC is usually offered on a sole invitation basis only to Local Authority or to RoadTek, similar to the current use of the RPC.

For its obvious benefit during the design stage, the RIC allows for constructability input from the contractor on a time basis using agreed rates.

Underpinning the contractual arrangements is a strong relationship between the Department and the Contractor, which has usually been developed over a substantial period of time and a number of projects.

In a RIC, the contractor (and possibly the designer) recovers all costs, including on-costs on wages and salaries together with an agreed percentage to cover off-site overheads. An incentive fee is paid
depending on performance in one or more key performance criteria which are founded in sound project management principles.

It must be noted that there can be some 'pain' for the contractor if performance is well below accepted standards. Equally, better than anticipated performance can result in modest 'gain'.

The RIC has a definite 'risk embrace' aspect for the Principal and there is no guarantee that every project completed using this model will deliver on all expectations. Designed for the lower end of the risk scale, the RIC places an appropriate level of control around contractual arrangements whilst maintaining accountability for and encouraging performance. A commitment to developing robust relationships is necessary to ensure mutually beneficial outcomes over time.

To engender the right attitude toward corporate accountability and consistency, the RIC adopts the same Performance Report used in the TICC. This eliminates duplication of like systems and provides exposure to this mechanism in Districts where the TICC is not widely used.

If the project is not low risk, the RIC may not be suitable; then appropriate advice should be sought.

Contact Assistant Director (Contracts) for guidance on implementing a RIC, or for further information about the concept of the RIC.

**Early Contractor Involvement**

**Introduction**

While drawing heavily from its namesake in the United Kingdom, the Departmental Early Contractor Involvement (ECI) contract type has been specifically developed for Queensland Government requirements, to suit specific market conditions such as, very tight technical skills market and a need to reduce development and delivery time scales.

As the name suggests, the principal aim of an ECI is to have input from the proposed Contractor whilst the design is still at a point where it can be efficiently influenced. This 'constructability' input is essential to the Department having more certainty of project outcomes.

ECI can best be described as a negotiated or interactive Design and Construct contract with significantly more efficient use of resources during the tender phase. Contractors are engaged through a two-envelope non-price selection process that places considerable emphasis on the calibre and experience of the proposed team.

Put simply, an ECI is a single contract with two distinct stages. The first is essentially a services agreement to develop the design to a point where it can be confidently estimated. The second stage is entered into by varying the contract to reflect the risks agreed in stage one and sees the completion of the design through to final construction. Both stages utilise partnering as a specific contract requirement, to ensure the best possible relationships are maintained. The Department has the option to terminate the contract after stage one if it does not believe the offer establishes true value.

**The two stages in more detail**

During stage one, the contractor develops the design to a point where it can be accurately priced and risks (reflected in the price) are identified and apportioned for stage two. Payment for stage one is by agreed rates on a time basis, based on the second envelope. Stage one is fully open book and involves an independent estimator, with probity and financial audits. There is significant input from the Department into the design, risks, scheduling and pricing. Stage one finishes with the contractor submitting a stage two offer.
The stage two offer requirements include a preliminary design report, a Risk Adjusted Price (RAP) or Risk Adjusted Maximum Price (RAMP) for the design and agreed risk allocation, the contractor's schedule and any changes to the contract documents. It can also include the contractor's proposal for incentivising stage two. The Department evaluates the offer and decides whether to continue with or terminate the contract. Should agreement on the stage two offer not be reached, the designer can be retained to complete the design and a construct-only tender can be called. In this instance, the original contractor is not permitted to submit a tender. If this 'opt out' is not taken, the contract is simply amended through a Deed of Novation for the stage two activities.

Stage two of the ECI is based on more traditional D&C contract conditions, though the interwoven partnering inclusions are there to maximise the benefit of relationships developed in stage one. During stage two, the contractor completes the design and constructs the works. The method of payment for stage two can be a lump sum, a schedule of rates with provisional sums or a combination of both depending on risk profile considerations. During this stage, the Department is responsible for contract administration and surveillance.

Figure 5.7 describes the pressures exerted on the RAP throughout both stages of the ECI process.

**Benefits of using ECI**

The ECI process allows the Department a great deal of flexibility. For instance, there is no fixed design maturity milestone to be reached before the contract can be signed. The two-stage nature of the contract caters for wide variance in design detail, though the length and cost of stage one is obviously affected by the work that must be done.

Though not typical, the Department can make novation of their designer to the contractor a condition of the contract. It would be incumbent on the contractor to evidence the value in not accepting this arrangement, in their tender submission.

Other benefits from using ECI include shortened delivery timeframes, reduced tender costs for all parties, fewer variations during construction, no surprises through good communication and understanding of the project and increased opportunity for innovation.

Lastly, and importantly, the ECI model allows for a variable targeted input from the Department, whereby higher resource levels up-front allow for greater influence over the project's direction, with minimal impact on project cost. Conversely, throughout stage two, the Department can confidently rely on its more traditional contract administration and surveillance resources to see the project through to completion.
Variations to the ECI concept

As with any contractual model, ECI has a number of aspects that can be varied to suit individual project or District needs. As described above, there is a degree of flexibility built into the documents to cater for Departmental maturity for any given project, as well as the potential for novation of the designer/s to the contractor.

The other main variation is related to the compensation mechanism. The Department’s ECI allows for the use of a Risk Adjusted Price (RAP) as described earlier, or a Risk Adjusted Maximum Price (RAMP), which is similar to an Alliance Target Outturn Cost (TOC).

For further assistance in understanding the ECI and its appropriateness for a particular project, contact Assistant Director (Contracts).

Double ECI

The double ECI is a variant on the ECI process in which two short-listed contractors are engaged for Stage 1 often under a separate contract agreement. The successful tenderer from Stage 1 is then engaged under a D & C (or similar arrangement) to complete the design and construct the works.

This arrangement provides more robust competition to the ECI model.

Alliancing

In a highly complex project with a high degree of unknowns, it may be appropriate to develop an alliance contract with suppliers. These are ‘one-off’ agreements in which the Department and one or more suppliers align to form a single entity to deliver a project.

A Project Alliance is an agreement between two or more entities that undertake to work co-operatively, on the basis of sharing project risk and reward, for the purpose of achieving agreed outcomes based on principles of good faith and trust and an open book approach towards costs. An Alliance contract is a purpose built contract in which the Department and the contractor form an alliance or ‘one team’ to build the works. Personnel in the project team may come from the Department, contractor and designer organisations. All parties develop a Target Cost Estimate (TCE) for the project and agree on
a Target Outturn Cost (TOC). A board or Alliance Leadership Team (ALT) drawn from these organisations manages the contract.

Because of the essential character of the relationship in this method of delivery, there are a number of unusual features to tendering for them.

A two-stage tender selection process is appropriate. The selection of a preferred party occurs before any price is bid and requires evaluation criteria be developed so that there can be clear justification of value for money in the selection process. A Probity Advisor is an important element of the tendering process. Following the Request for Proposal (RFP) there is an intensive period of development with the preferred party. The Department often agrees to fund this at cost.

The Department has used alliance contracting on a number of projects, including the Tugun Bypass and the Darra to Springfield Transport Corridor. Alliance contracting is at the high relationship end of projects. It may be used on projects that are high cost, technically challenging, difficult to price, high risk and where the Department can add its expertise to the pooled resources of the alliance.

**Project alliancing**

Project Alliancing is characterised by proactive collaboration, whereby all parties work together to achieve optimum outcomes whilst minimising inefficiencies associated with adversarial conduct. The enhanced ability of alliance participants to work together, embrace risk and uncertainty and deal with these factors in an innovative and collaborative fashion, is the key to optimising outcomes for all participants.

The Department and contractors negotiating Alliance contracts will need to step outside the mind set of the adversarial nature of the traditional contract methods in order to provide an alliance agreement which is robust in its ability to resolve issues, but flexible enough to ensure it can address areas of difference and dispute.

Each Alliance participant shares in the success or failure of the project, in decision making and risk management. While all relationship contracting involves some alignment of objectives, the project alliance seeks to formally align the commercial interests of the respective participants and to adopt a 'no blame, no disputes' matrix in the contract. There is no recourse to contract dispute resolution process external to the alliance.

Remuneration is focused on incentive and is made in accordance with a 'gain sharing/pain sharing' mechanism and a performance-based reward structure. This means that any project savings or overruns are shared according to a pre-arranged formula. Early in the project, all participants establish Key Performance Indicators (KPI) and target costs collaboratively. A typical pain/reward graph is shown in Figure 5.8.
On certain projects there may be fixed deadlines where a project must be completed. Rewards are then linked to the ‘must finish’ deadline. An example of this would be the opening of a building or bridge to coincide with a large public event.

A Project Alliance Agreement (PAA) is the document forming the contractual basis of the alliance and includes a ‘no disputes’ clause. Participants agree not to use arbitration or litigation as a dispute resolution process. All differences are to be resolved by the ALT. The ALT is the decision-making and managerial body, comprising representatives of each participant. The participants expressly give up any entitlements to legal or equitable courses of action against any other participant, except in the case of wilful default or insolvency.

The project alliance’s collaborative management structure can facilitate significant cost savings and value for money to the Department and therefore financial reward for the other participants. This is because:

- The contractor gains a better understanding of the Department’s needs from the outset of the project
- The Department is better able to utilise the other participants’ skill in defining its requirements and avoiding wasteful practices
- There is a reduction in the costs associated with each party’s defence of its contractual position
- Problems that arise are met by a creative and collaborative search for solutions, and
- The incentive is to strive for ‘best for project’ practice and outstanding results, rather than to do merely the minimum required to avoid penalty.

Further information about the Alliancing contract type may be obtained from the Assistant Director (Contracts).
5.4.1.4 Design, Construct and Maintain Delivery Model

The Department uses one contract type under the Design, Construct and Maintain Delivery Model:

1. Design, Construct and Maintain (DCM)

Public Private Partnerships (PPP) are mentioned in this section as they generally do cover the three phases of design, construction and maintenance, however, PPP are not a contract type as such.

Design, Construct and Maintain (DCM)

Under Design, Construct and Maintain (DCM) The Department engages the contractor to undertake the design and construction of a project after which the contractor assumes responsibility for maintaining the networks covered by the project for a significant period of time, such as ten years. A major difference between Traditional and DCM packaging relates to maintenance and the defects liability period. Maintenance of the works in a traditional contract becomes the responsibility of the Department during and after the defects liability period. In DCM, the maintenance (both during and after construction) and defects liability of the completed works, remains the responsibility of the Contractor for an extended period (up to ten years) governed by strict performance standards before final hand-over to the Department.

The DCM method was developed in response to dissatisfaction felt by owners (particularly government agencies) with the contractor's lack of responsibility for the 'maintainability' of the facility under traditional and D&C delivery methods. Under Traditional and D&C, the contractor is usually able to absolve itself of the project after the expiry of a (relatively short) defects liability period and has no incentive to execute its design and/or construction tasks so as to ensure maintenance is affordable and easy in the longer term. Instead, there is the reverse incentive to use the cheapest materials available consistent with the quality specifications and other contractual requirements. By contrast, a DCM contract phases to reduce the costs to be incurred during the maintenance phase. Pavement designs under DCM packaging have been found to be more conservative than under traditional packages. There is, therefore, reduced risk of an adverse trade-off between build ability and maintainability.

The Department will usually conduct a competitive bidding process based on a design brief (as for a D&C project). Cost proposals, as to the maintenance component, will form part of the tenders submitted. This will be remunerated via any one or more of a number of methods with provision for rise and fall due to the long-term nature of the contract. Specifically, the contractor must be remunerated on a basis calculated to motivate it to outlay more on the initial capital cost of construction than it otherwise would have, and in so doing, reap savings during the maintenance phase.

The end condition criteria at completion of the maintenance period, prior to hand-over, should be specified. Similarly, the standard of maintenance, impact on traffic, responsiveness to repairs and so on, during the period, should be specified.

Despite the potential advantages to be gained in respect of long-term maintainability under the DCM method, there are possible disadvantages associated with this strategy:

- The DCM method depends on a meaningful transfer of maintenance risk for a long period of time. A practical disadvantage of this is that the pool of contractors capable of committing to a DCM project may be limited, keeping in mind that the Department must be confident that the contractor will be liquid for the entire maintenance period.
The DCM must be of sufficient physical size that investment by the contractor in long term maintenance is viable.

Different skill sets of the operator/maintainer vs Contractor, and

It may be difficult at the time of tendering to specify exactly what the contractor’s maintenance and operating obligations are to be. This may in turn lead to contractors attempting to price unpredictable risks and thus lead to uncompetitive tenders. If it is not possible to specify long term requirements with sufficient clarity, consideration should be given to performance-based remuneration in respect of the maintenance component.

Public Private Partnerships (PPP)

While the PPP policy does include a range of relational contractual arrangements, its focus is on where private sector equity is a risk, that is, where the private sector provides some degree of finance (up to 100%). The private sector party is usually comprised of a number of organisations that carry out the various elements of the contractual arrangement and deliver the infrastructure.

A PPP, in general, is a long term contractual arrangement and involves the private sector party across the full spectrum of the infrastructure's delivery – planning, design, construction, operation and maintenance. The private sector party contributes capital investment and carries risks and in return is given payments by the Government, pays a concession fee to the government for the right to operate, collects fees from public users, or a combination of each.

The Government engages the private sector party through a transparent procurement process and oversees the PPP according to established performance standards. Any Government payment stream to the private sector party is dependent on their success in designing and constructing the facility and their ongoing performance in operating and maintaining the facility. This means that while the private sector party may have an equity-risk stake in the infrastructure, the responsibility and risk of ensuring the facility services the community, ultimately remains with the Government.

The Queensland Government’s PPP Policy

The Queensland Government released its Public Private Partnerships Policy17 – achieving value for money in public infrastructure and service delivery.

The Policy applies to all major infrastructure projects with whole-of-life project costs valued at over $100million. The Policy does not apply to the provision of core services that involve the direct delivery of community services or the exercise of statutory rights.

The objectives of the policy are to:

- deliver improved services and better value for money
- encourage private sector innovation

17 Useful references for government policy on PPP:
optimise asset utilisation, and
achieve an integrated whole-of-life management of public infrastructure.

For more information, please contact Assistant Director (Contracts) of the State Program Office.

5.4.2 Contract selection tool

This section describes a tool that may assist in selecting an appropriate contract type. This must be tempered by common sense and experience.

5.4.2.1 Mandatory

For large projects of expected value greater than $100 million, the Contract Selection Tool may be used as a quick guide, however, it must be followed up with a value management workshop (refer to Appendix D) with representation from relevant industry participants. Additional industry representation, for example, product suppliers, quarries and so on may benefit some projects.

5.4.2.2 Contract selection tool methodology

1. Table 5.5 shows categories that should be taken into account when determining the most appropriate contract type
2. To use the table, examine the proposed project in relation to the various categories. Delete those questions that are not directly applicable. Add other appropriate questions.
3. Set up an analysis sheet containing each of the categories. Assign a weighting factor for each category with the sum of all factors equating to 100%. Table 5.5 is a part example of the Contract Selection Tool Analysis. In this case, only five of the recommended eight categories have been assigned a weighting.

The assignment of weights may be through professional judgement or a system known as Pair Wise comparison. Information on how to use Pair Wise comparison is located on the internet.

**Table 5.5 – Contract assessment tool**

<table>
<thead>
<tr>
<th>Category</th>
<th>Questions</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope</td>
<td>• Is the scope able to be well defined?</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>• Can the scope be fully detailed?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Is the scope likely to change:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>− During detailed design?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>− During construction?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Does the project have multiple objectives beyond the normal time cost, quality and safety?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Is functionality fixed?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Does the scope include operations/maintenance?</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>• Are there seasonal externally imposed constraints on delivery?</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>• Is early completion of value to the Department?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Is it necessary and/or possible to fast track?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Is timetable able to be negotiated?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Will late project delivery produce adverse consequences?</td>
<td></td>
</tr>
<tr>
<td>Risk</td>
<td>• Is risk able to be clearly defined?</td>
<td>20%</td>
</tr>
<tr>
<td>Category</td>
<td>Questions</td>
<td>Weighting</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Constructability</td>
<td>• Is the required technology proven/new?</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>• Is the technology and materials widely practiced / available from a number of sources?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Are construction processes simple or routine?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Is construction input to design imperative to success?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Is design input to construction imperative to success?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Will traffic management be complex?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Will packaging improve constructability?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Does the project have multiple interfaces? (eg services, other projects and so on)</td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>• Is the project politically sensitive?</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>• Is the project environmentally and culturally sensitive?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Are there local stakeholder/business sensitivities?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Are sensitivities able to be clearly defined?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Is the quantum of sensitivities high?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• To what degree can sensitivities be mitigated?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Is the sensitivity profile best shared between owners and contractors?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Is the premium for sensitivity mitigation acceptable?</td>
<td></td>
</tr>
<tr>
<td>Capacity and Capability</td>
<td>• Are sufficient contractor's resources available in the marketplace?</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>• Do we need the resources of a specialised contractor?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Will the project need special contractor capabilities?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Are sufficient owner resources available?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Do we need specific high quality owner resources?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Will the project need special owner capabilities?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Is the Department willing/capable to be part of an integrated team?</td>
<td></td>
</tr>
<tr>
<td>Budget</td>
<td>• Is there a requirement to meet a guaranteed maximum price?</td>
<td>0%</td>
</tr>
<tr>
<td>Location</td>
<td>• Is it a remote location?</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>• Is it green field or brown field project?</td>
<td></td>
</tr>
</tbody>
</table>

In this example, each question within a category is assigned a weighting out of a possible 100%. For example, in the first category Scope, the four questions are weighted as in Table 5.6.

Each question is considered and rated. The rating for each question is adjusted by the weighting for question to give a Weighted Sum of Ratings Out of a possible maximum score of 10 (Refer Table 5.7).
Table 5.6 – Weighted question rating

<table>
<thead>
<tr>
<th>Scope question</th>
<th>Question weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the scope well defined?</td>
<td>25%</td>
</tr>
<tr>
<td>Can the scope be fully detailed?</td>
<td>25%</td>
</tr>
<tr>
<td>Is the scope likely to change during detailed design or construction?</td>
<td>25%</td>
</tr>
<tr>
<td>Does the project have multiple objectives?</td>
<td>0%</td>
</tr>
<tr>
<td>Is the functionality fixed?</td>
<td>25%</td>
</tr>
<tr>
<td>Does the scope include operations/maintenance?</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total questions weightings</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Table 5.7 – Example weighted question rating

<table>
<thead>
<tr>
<th>Scope questions</th>
<th>Question weighting</th>
<th>Rating</th>
<th>Weighted question rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the scope well defined?</td>
<td>25%</td>
<td>6</td>
<td>1.5</td>
</tr>
<tr>
<td>Can the scope be fully detailed?</td>
<td>25%</td>
<td>5</td>
<td>1.25</td>
</tr>
<tr>
<td>Is the scope likely to change during detailed design or construction?</td>
<td>25%</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Does the project have multiple objectives?</td>
<td>0%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Is the functionality fixed?</td>
<td>25%</td>
<td>7</td>
<td>1.75</td>
</tr>
<tr>
<td>Does the scope include operations/maintenance?</td>
<td>0%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>100%</strong></td>
<td></td>
<td><strong>5.5</strong></td>
</tr>
</tbody>
</table>

The Weighted Rating for each category is then the Weighted Sum of Rating adjusted by the % Weight for the Category.

4. Calculate then tally all category results (Table 5.8). After the results of the various categories are summed, the final figure is compared to Figure 5.9. This then gives an indication as to the appropriate forms of contract delivery.

Note that if the final score is the range 3-7, further analysis may be required to determine the final delivery method. This may take the form of a value management style workshop.
Table 5.8 – Example only: contract selection tool analysis

<table>
<thead>
<tr>
<th>Category</th>
<th>Weighting</th>
<th>Question</th>
<th>Description of low rating</th>
<th>Rating (1-10)</th>
<th>Description of high weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope</td>
<td>15%</td>
<td>Is the scope well defined?</td>
<td>Well defined</td>
<td>6.0</td>
<td>Ill defined</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Can the scope be fully detailed?</td>
<td>Full detail</td>
<td>5.0</td>
<td>Nil detail</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the scope likely to change during detailed design or construction?</td>
<td>Low likelihood</td>
<td>4.0</td>
<td>High likelihood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the functionality fixed?</td>
<td>Fixed</td>
<td>7.0</td>
<td>Variable</td>
</tr>
</tbody>
</table>

Weighted sum of ratings for scope (1-10) 5.5

Weighted rating for scope 0.8

<table>
<thead>
<tr>
<th>Time</th>
<th>5%</th>
<th>Is early completion of value to the Department?</th>
<th>No value</th>
<th>8.0</th>
<th>Significant value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Is the time table to be negotiated?</td>
<td>Fixed timetable</td>
<td>6.0</td>
<td>Completely negotiable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is it possible/necessary to fast track?</td>
<td>Fast tracking not possible</td>
<td>6.0</td>
<td>Fast tracking absolutely necessary</td>
</tr>
</tbody>
</table>

Weighted sum of ratings for time (1-10) 6.7

Weighted rating for time 0.3

<table>
<thead>
<tr>
<th>Risk</th>
<th>20%</th>
<th>Is the risk clearly defined?</th>
<th>All risks clearly defined</th>
<th>8.0</th>
<th>Several ill defined risks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>To what degree can risks be mitigated?</td>
<td>High degree</td>
<td>6.0</td>
<td>Low degree</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the risk profile best shared between owners and contractors?</td>
<td>Not at all</td>
<td>7.0</td>
<td>Of great benefit to the project success</td>
</tr>
</tbody>
</table>

Weighted sum of ratings for risk (1-10) 7.0

Weighted rating for risk 1.4

<table>
<thead>
<tr>
<th>Construct ability</th>
<th>30%</th>
<th>Is the required technology proven/new?</th>
<th>Well established technology</th>
<th>9.0</th>
<th>Technology never trailed before</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Is construction input into design imperative or success?</td>
<td>Construction input has no affect on the design</td>
<td>4.0</td>
<td>Construction input into design critical</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Will traffic management be complex?</td>
<td>No traffic management required</td>
<td>3.0</td>
<td>Highly complex traffic management</td>
</tr>
<tr>
<td>Category</td>
<td>Weighting</td>
<td>Question</td>
<td>Description of low rating</td>
<td>Rating (1-10)</td>
<td>Description of high weighting</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------</td>
<td>--------------------------------------------------------------------------</td>
<td>--------------------------------------------</td>
<td>---------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Weighted sum of ratings for constructability (1-10)</td>
<td></td>
<td></td>
<td></td>
<td>5.3</td>
<td></td>
</tr>
<tr>
<td>Weighted rating for constructability</td>
<td></td>
<td></td>
<td></td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Capacity and Capability</td>
<td>30%</td>
<td>Are sufficient contractor’s resources available in the marketplace?</td>
<td>More than enough resources</td>
<td>6.0</td>
<td>Extreme lack of resources</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Do we need resources of a specialised contractor?</td>
<td>No specialised contractor required</td>
<td>7.0</td>
<td>Specialist contractor absolutely necessary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Will the project need special owner capabilities?</td>
<td>No special owner capabilities required</td>
<td>3.0</td>
<td>Specialist owner capabilities absolutely necessary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the Department willing to be part of an integrated team?</td>
<td>Owner not willing</td>
<td>2.0</td>
<td>Mandatory owner is part of the team</td>
</tr>
<tr>
<td>Weighted sum of ratings for capacity and capability (1-10)</td>
<td></td>
<td></td>
<td></td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>Weighted rating for capacity and capability</td>
<td></td>
<td></td>
<td></td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Total weighted rating for project</td>
<td></td>
<td></td>
<td></td>
<td>5.5</td>
<td></td>
</tr>
</tbody>
</table>
5.5 Supplier selection

The last step in forming a Delivery Strategy is determining how the suppliers are going to be selected. The objective in supplier selection is the attainment of value of money in the delivery of the project. As described in the Queensland Procurement Policy, the concept of value for money requires an assessment of both price and non-price factors.

The flowchart shown in Figure 5.10 illustrates the framework in which value for money in roadworks delivery is assessed.

It includes a feedback loop to ensure that the process itself is reviewed and improved. Performance of contractors (and of this process) is to be tested against a set of post-completion value criteria.

The first decision in terms of supplier selection is whether the project will be tendered on the open market (default option) or awarded to the supplier on a sole invitee basis. The following section outlines the supplier selection methods that can be engaged when open market tendering is selected. The last section deals with the rules for letting a contract through a sole invitation and how to evaluate value for money when this is chosen.
5.5.1 Open market contracts

Project size, complexity and uncertainty factors should be taken into account when selecting the method of choosing the project contractor/supplier.

Whatever approach is adopted for choosing the best tender, the underlying principle for assessment of tenders should be achievement of best value for money (Refer Table 5.9 – Comparison of Tender Selection Methods compares four basic, open market tender selection methods).

Table 5.9 – Comparison of tender selection methods

<table>
<thead>
<tr>
<th>Tender selection method</th>
<th>Project characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Price only</td>
<td>Routine or repetitive type work/supply</td>
</tr>
<tr>
<td></td>
<td>• Low level of complexity</td>
</tr>
<tr>
<td></td>
<td>• Low level of uncertainty</td>
</tr>
<tr>
<td>2. Price and non-price – 1-stage process</td>
<td>Works with:</td>
</tr>
<tr>
<td></td>
<td>• Moderate to significant level of complexity</td>
</tr>
<tr>
<td></td>
<td>• Moderate to significant level of uncertainty</td>
</tr>
<tr>
<td></td>
<td>Or:</td>
</tr>
<tr>
<td></td>
<td>• A conscious attempt to raise industry standards</td>
</tr>
<tr>
<td></td>
<td>• To address specific project issues (technical or non-technical)</td>
</tr>
<tr>
<td>3. Price and non-price – 2-stage process</td>
<td>Significant works at the highest level of the Department prequalification with:*</td>
</tr>
<tr>
<td></td>
<td>• Significant level of complexity</td>
</tr>
<tr>
<td></td>
<td>• Significant level of uncertainty</td>
</tr>
</tbody>
</table>
Method 1 – Price only

In price only contracts, the lowest priced conforming tender is accepted. It is generally adopted for works with low levels of complexity and uncertainty and uses ‘traditional’ delivery arrangements and when the work is not associated with other objectives to enhance government priorities, such as encouragement of local supplier participation.

The underlying assumption for this method is that prequalified tenderers have the required management systems and technical and financial capability to undertake the type of work offered.

Method 2 – Price and non-price – single stage

In Method 2, both price and non-price considerations are used to select the best tender. It is more appropriate for works of significant scales:

- For project-specific risk factors and issues
- To address government priorities, and
- To support industry cultural change initiatives that are not sufficiently mature to be incorporated in the prequalification system.

Price and non-price information submitted with each tender is analysed to determine which tender will provide the best value for money by:

- Scoring each tender against the price or non-price selection criteria
- Applying to nominated weightings to each score, and
- Calculating the total value of weightings to find the ‘best’ score.

Generally, tenderers are required to include submissions that address nominated criteria as part of their tender. The tender assessment panel may also arrange to interview tenderers as part of the assessment process.

One version of this method requires tenderers to submit the non-price and price submissions in separate envelopes. Usually the non-price submission is assessed and scored prior to the price envelope being opened and scored. The tenderer's non-price and price scores are then combined and the tender ranked.

Method 3 – Price and non-price – two stage

The Department's policy for the use of multi-stage tendering can be found in the Departmental Purchasing Procedures, Part A, Section 7 – Procedures for Invitations. It is desirable that the
Tendering Manager obtains expert advice whenever consideration is given to using a two-stage selection process. Advice can be obtained from Assistant Director (Contracts), State Program Office.

A two-stage tendering process is appropriate for works of significant scale:

- With a considerable level of complexity and uncertainty, and
- Where ‘non-traditional’ contract types such as Design and Construct (D&C) or Design Construct and Maintain (DCM) may be used.

Two-stage selection processes are usually selected to:

- Ensure a comprehensive process which carefully addresses all project risk factors in depth
- Short-list tenderers with the capability to successfully undertake the contract
- Select from the short-list the tenderer most likely to complete the project effectively and efficiently in all respects, that is, the best value offer
- Enable contractors to determine whether or not they might be eligible to tender, without having to fully price the project, and
- Reduce demands on the construction industry to prepare detailed tenders.

In determining the specific approach to each stage, it is necessary to identify the objectives for each stage in the light of project-specific circumstances and risk factors.

A typical two stage process would consist of the following:

**Stage 1: Expression of interest**

- Identification of prequalified or pre-registered organisations interested in tendering for the work. This is usually through public advertising.
- Interested organisations provide information relevant to the project as requested by the Principal, especially organisational capability, historical information or other information nominated in the non-price selection criteria, and
- Principal typically selects 3 or 4 tenderers to continue through Stage 2.

**Stage 2: Detailed tenders**

- Tenderers short-listed in Stage 1 are invited to submit detailed and fully priced tenders.
- As part of the tendering and/or assessment process, the Principal may request the tenderers to participate in interviews to explain their tender, and
- Additional non-price criteria may be included in this stage (such as traffic management or stakeholder engagement) but the non-price criteria should be project specific and not duplicate any of the previous non-price criteria used in the Expression of Interest or Prequalification. Ideally non-price criteria will reflect project objectives and risks.

**Note the following if using a two stage process:**

- A risk management plan needs to be considered if two or more short-listed tenderers are owned by the same parent company.
- Re-check organisational capabilities if a reasonable amount of time has passed during the tendering process, and
Where multiple organisations are involved in the same tender, then capability checks must be undertaken on all parties to the tender. For example, with design and construct tenders, the designing organisation may need to submit its insurance claims history for the Principal to obtain suitable insurance.

**Method 4 – Project specific**

Project specific tender evaluation methods are required for major projects with significant complexity and/or uncertainty. This includes delivery arrangements such as Design, Construct and Maintain and Alliancing contracts.

Information regarding the use of project-specific tender evaluation methods can be obtained from Assistant Director (Contracts).

**5.5.2 Sole invitation**

Infrastructure projects may be individually considered for exemption from the full tendering process, and if approved, may be awarded by a sole invitation.

Each project is considered in relation to the strength of its match to one or a combination of the criteria listed below. These criteria do not override the requirement to achieve best value for money in delivering the project.

There are three general categories that will be considered: efficiency, urgency and social imperatives.

**Efficiency**

This may apply where the works are of:

- such a minor nature that an invitation to tender for those works would involve undue additional costs
- a kind for which it is not practical to prepare adequate tender specifications, including where specialised expertise is required in the use of non-standard or special materials,
- a nature which involves significant interaction with other projects, where overlap of work would make it impractical or more expensive, and
- a kind for which competitive tenders are unlikely to be received. This includes areas where there are aberrations in the market, resulting in the absence of a competitive market.

**Urgency**

This may apply when the required response time does not allow sufficient time to call and process tenders/quotations, such as:

- Emergency situations, i.e. disasters, accidents and so on, or
- Where, by direction, the Department is required to deliver within a prescribed time frame.

**Social imperatives**

This category addresses social issues and Government policy positions.

Social imperative issues are currently being reviewed under the current Government’s contestability aspects and will be required to be updated following resolution.

Where a sole invitation is the appropriate delivery method, it may be necessary to demonstrate that value for money is being achieved in comparison to tendering the same contract on the open market.
Should the selection of sole invitation require justification, an evaluation process for assessing value for money of a sole invitation contract is available and outlined in Appendix H.

5.5.3 Simplified documents for sole invitee contracts

Simplified documentation for roadworks projects procured under the RPC or MWPC and delivered to the department by Local Government (LG) and RoadTek on a sole invitee basis may be an appropriate method under certain circumstances.

In some instances the volume of paperwork involved in the administration of the project has been out of proportion with the scale of the works. Value may be enhanced by reduced documentation, which in turn provides more funds for the project.

Underlying Principles

It is essential that the following principles be adhered to during the process of simplifying the documents:

- Design standards must be agreed
- Construction standards must be agreed
- The parties must sign a contract/agreement
- As-constructed plans must be completed
- Documentation standards must be linked to the skill levels, standards of supervision and construction skills of RoadTek or LG, and
- Supervision arrangements must be consistent with the requirement to verify construction standards and have documented test results.

Guidelines for simplification

Development of documentation and management of RPC and MWPC with RoadTek and Local Government should consider:

- Minimal use of supplementary specifications by:
  i. Using standard specifications in all but exceptional and difficult circumstances, and
  ii. By writing project specific details directly on the drawings.
- Utilising appropriate environmental plans and site safety plans from other like/adjacent schemes/works to minimise pre-construction costs
- Create standard masters of scheme documents to speed up the design process
- Preparing only those documents which are necessary for construction of a particular project, and
- Maximum use of electronic documentation during design and administration of the contract.

A reduction in documentation should not be used where confidence in the appropriate level of skills are not apparent. Consultation with RoadTek or LG in the early stages of the project planning will also assist to determine the level of documentation required for the project.

Whatever the documentation used for the project, this needs to be archived to establish the contractual arrangements used.
Minimum Documentation Requirements

a) RPC schemes

Archiving

The minimum documentation for archiving of RPC schemes is:

<table>
<thead>
<tr>
<th>Form No</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C6048</td>
<td>Letter of Acceptance (from the Principal)</td>
</tr>
<tr>
<td>C6013</td>
<td>Conditional Agreement (signed by Principal and Offeror)</td>
</tr>
<tr>
<td></td>
<td>Any Offer Correspondence between Offeror and Principal during the Offer and negotiating period.</td>
</tr>
<tr>
<td></td>
<td>All Notices to Offeror (from the Principal and individually numbered) issued during the Offer Period.</td>
</tr>
<tr>
<td>Offer Documents</td>
<td>All Offer documents as listed on Form C6011 of the RPC Manual.</td>
</tr>
</tbody>
</table>

Field use

The minimum documentation for field use is:

- Any correspondence, including notices, that gives construction requirements
- Tender Schedule M1 – Schedule Summary (C6810.M1)
- Tender Schedule M1 A – Schedule Summary (C6810.M1.A)
- Tender Schedule M1 B – Schedule Summary (C6810.M1.B)
- Planned Cash Flow (C6810.M3)
- Offer Program (C6810.4)
- Daywork Schedule – RPC – Other Schedules (C6043, C6055)
- Annexure A of General Conditions of Contract (C6832 RPC)
- Annexure to Supplementary Conditions of Contract (C6839.RPC)
- Standard Specifications Annexure
- Supplementary Specifications
- Drawing List (Project Specific)
- Principal Supplied Materials List
- Precast Pipes and Box Culvert Summary
- Drawings and other Project Specific Documents, eg geotechnical information, reinforcement schedules, etc.

b) MWPC schemes

Archiving

The minimum documentation for archiving of MWPC schemes is:
### Form No Description

<table>
<thead>
<tr>
<th>Form No</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C6995</td>
<td>Acceptance of Tender</td>
</tr>
<tr>
<td>C6013.MWPC</td>
<td>Conditional Agreement (signed by Principal and Offeror)</td>
</tr>
<tr>
<td></td>
<td>Any Offer Correspondence between Tenderer and Principal during the Tender</td>
</tr>
<tr>
<td></td>
<td>and negotiating period.</td>
</tr>
<tr>
<td>Offer</td>
<td>All Offer documents as listed on Form C6992 of the MW Manual.</td>
</tr>
<tr>
<td>Documents</td>
<td></td>
</tr>
</tbody>
</table>

#### Field use

The minimum documentation for field use is:

- Any correspondence, including notices and agreements, that gives construction requirements
- Annexure to Minor Works Conditions of Contract (C6994)
- Standard Specification Annexure
- Supplementary Specifications
- Drawing List (Project Specific)
- Drawings and other Project Specific Documents, eg geotechnical information, reinforcement schedules, etc.
Appendix A – Partnering in more detail

1 Introduction

Partnering can simplify the way business is conducted. This requires organisations making joint commitments to achieve mutual goals and changing adversarial relationships into team-based relationships. Partnering promotes open communication among participants, trust, understanding and teamwork. Partnering is a relationship in which the parties to a contract learn to prevent disputes thereby decreasing or eliminating litigation and thus improve the overall performance of the contract. To date, partnering has been used in many multi-million dollar contracts with great success.

Contract relationships have become increasingly strained in recent years as evidenced by the substantial increase in the use of the courts for the settlement of contractual disagreements. Such methods of dispute resolution consume desperately needed resources on both sides of the contract and are evidence of the growing adversarial attitude that seems to prevail public and private sector contracting.

Project owners believe that the parties should not spend their valuable time arguing over issues that reasonable people ought to be able to resolve. Accordingly, partnering proposes that, for many contracts, the parties can agree to formalised processes and procedures that can reduce the adversarial relationship, enhance conflict resolution and instil recognition that common objectives can override adversarial behaviours.

The most effective means of addressing disputes is to avoid them before they begin. Conflict avoidance and early resolution of issues is what partnering is all about. Yet, as you will see, reduction in litigation is simply one of many benefits partnering will bring about.

Partnering is appropriate between organisations that share the fundamental belief that people are honest, want to do things that are valued and are motivated by challenge. Such organisations trust their people and seek ways to enable them to add value to their business. Utilising this approach enables organisations to set up mutually advantageous commercial arrangements, either for single projects or in long-term strategic relationships that help people to work together more effectively.

Basically, partnering is a sound business philosophy. The process described herein provides a means of implementing the philosophy: a means of changing our actions. Without some change in our actions, we may think differently, but act the same way and receive the same results as always, however, when the partnering process is properly used, the results are dramatically different.

The benefits include:

- Reduced litigation - Partnering has been used on large and small contracts for a number of years. During this time it has been effective in reducing litigation considerably.

- Successful, profitable contracts - Experience within the construction industry has shown that partnering has resulted in completion on schedule, reduction of cost overruns, reduction in paperwork, increased value engineering, reduced lost time injuries and other mutually beneficial performance when compared to the average contract.

- Improved morale - When people can go to work in a good faith atmosphere, when workers can concentrate on their job rather than on potential complaints by the other side, when people can work together rather than against each other, the morale and effectiveness of all involved is improved.
2 What is partnering?

Partnering is a relationship that primarily requires an attitude adjustment; where the parties to the contract form a relationship of teamwork, cooperation, and good faith performance. Partnering requires the parties to look beyond the strict bounds of the contract to formulate actions that promote the overriding common goals of the parties.

This concept is not unique. This may best be understood by considering what happens in a “three-legged race”. Two racers have their legs tied together and know that they must reach the finish line ahead of other competitors. To do this, both competitors must run in the same direction, they must commence running on an agreed leg, they must hold each other up and keep each other out of potholes on the path to the finish line. Teamwork is critical to success.

Similarly in partnering, teamwork is critical. Parties must work together, communicate expectations, agree on common goals and methods of performance and identify and resolve issues early on – otherwise both may crash to the ground.

If the project owner puts a quality contractor out of business or backs them into a corner by creating unnecessary financial hardships, the result becomes increased claims as the contractor strikes back or the inability to gain competition and quality performance on future requirements. Similarly, a “grab what you can get” attitude towards contract performance will not sustain a contractor’s long-term business or reputation. Both parties have a vested interest in mutual cooperation and meeting the needs of their contractual partners. An adversarial relationship may hinder or destroy these overriding interests. Accordingly, it is mutually beneficial to establish a “we” rather than an “us and them” attitude.

Partnering is a relationship in which:

- Trust and open communications are encouraged and expected from all participants;
- All parties address and resolve issues and problems promptly and at the lowest possible level;
- Parties strive to develop solutions that are agreeable and meet the needs of everyone involved (win-win approach); and
- All parties have identified common goals for the partnership and at the same time are aware of and respect each other’s goals and values.

Partners seek input from each other in an effort to find better solutions to the problems and issues at hand. This creates synergy in the relationship that fosters co-operation and improves the productivity of the partnership.

Partnering is a structured management approach to facilitate teamwork across contractual boundaries. Its fundamental components are formalised mutual objectives, agreed problem resolution methods and an active search for continuous measurable improvements.

When parties agree to embrace the partnering process, an outcome of the process is a partnering agreement. The agreement is best seen not as a contract but as a covenant describing the attitudes and consultative processes mutually agreed by the parties. Partnering may be implemented in respect of a range of contracting strategies. The charter will “sit behind” the contract proper, without generally being legally binding. The result is that the partnering agreement (which can often be written on as little as a few sheets of paper), rather than the contract document, drives the relationship between the parties. The critical success factor for partnering is the commitment of all partners at all levels to make the project a success.
Partnering is at the informal end of the relationship spectrum. It does not require the overhauling of conventional contractual mechanisms as to, for instance, remuneration or formalised dispute resolution. This characteristic of partnering provides the benefit of allowing the parties to make a genuine attempt to implement a norm of good faith, while retaining the security and certainty of the allocation of risk and liability under the contract itself.

The benefits are significantly greater if partnering is applied throughout the supply chain, rather than simply between clients and main contractors. It is acknowledged that the extension of partnering down through the supply chain is still in its infancy. The challenge now facing all participants is to understand what true partnering means, how it can benefit all concerned and how to encourage its use on appropriate projects.

### 3 How does partnering work?

Figure A1 characterises the basic features of a partnering arrangement.

*Figure A1 – Basic features of a partnering arrangement*

![Figure A1](image)

**Mutual objectives of partnering:**

- Agreed and committed to at the outset of the project
- Kept under review through meetings and effective communications
- Requires long term goals - sustained reasonable profitability rather than quick profits
- Benefits from open book relationships
- Treated with mutual confidentiality which results in working for each other’s success, and
- Best between businesses with similar cultures and styles.
<table>
<thead>
<tr>
<th>Mutual objective</th>
<th>How to achieve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved efficiency</td>
<td>Co-operation</td>
</tr>
<tr>
<td>Cost reduction</td>
<td>Continuous improvement</td>
</tr>
<tr>
<td>Cost certainty</td>
<td>Early action on danger areas</td>
</tr>
<tr>
<td>Enhanced value</td>
<td>Constructability, value engineering</td>
</tr>
<tr>
<td>Reasonable profits</td>
<td>Predictable progress</td>
</tr>
<tr>
<td>Reliable product quality</td>
<td>Quality assurance/TQM</td>
</tr>
<tr>
<td>Fast construction</td>
<td>No avoidable hold-ups</td>
</tr>
<tr>
<td>Certain completion on time</td>
<td>Critical path programme</td>
</tr>
<tr>
<td>Continuity of workload</td>
<td>Effective programming</td>
</tr>
<tr>
<td>Shared risks</td>
<td>Sensibly agreed</td>
</tr>
<tr>
<td>Reliable flow of design information</td>
<td>Co-operation</td>
</tr>
<tr>
<td>Lower legal costs</td>
<td>Dispute resolution procedure</td>
</tr>
<tr>
<td>Good public relations</td>
<td>By being proactive</td>
</tr>
<tr>
<td>Profit sharing</td>
<td>Prior agreement on sharing of savings</td>
</tr>
</tbody>
</table>

### 4 Problem resolution

Partners have to accept that problems will occur, if only because human endeavour is less than perfect. At the outset there should be an agreed procedure for dealing with all problems as they arise, before they become disputes.

The aim is to understand the problem correctly and then resolve it at the lowest possible level, within a given timescale. Where a solution cannot be found at one level, the problem can be quickly passed to the next higher level for resolution.

The agreed problem resolution procedure is non-contractual and should always be used in a genuine attempt to resolve the problem without recourse to the contractual route. Three levels of problem resolution are recommended - technical, managerial and ‘political’ - each of which should follow an agreed procedure.

If a solution has not been agreed at the end of the procedure, the problem may need to proceed to adjudication. A failure to resolve a problem within the partnering framework is damaging, so every effort should be made by parties to achieve a solution by:

- A systematic approach to problem resolution
- Seeking solutions, not parties to blame
- More and better discussion - less paperwork, more constructive correspondence
- Adopting discussions based on seeking win-win solutions
- Equality of rights between parties
- Requires mutual acceptance of the principle that adversarial attitudes waste time and money.

### Continuous improvement

Continuous improvement should be the concern of all the parties involved in the project, as it is only effective when all parties are motivated to its achievement. The end result is a measurable increase in
value, whilst properly meeting the client’s needs. It has multiple elements, some of which are summarised below.

<table>
<thead>
<tr>
<th>What to improve</th>
<th>How to improve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff development and training</td>
<td>Training program</td>
</tr>
<tr>
<td>Team continuity</td>
<td>Management</td>
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<tr>
<td>Value management</td>
<td>Conceptual</td>
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<tr>
<td>Value engineering</td>
<td>Design process</td>
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<tr>
<td>Get it right first time</td>
<td>Cultural</td>
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<tr>
<td>Quality</td>
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<tr>
<td>Reduction of Waste</td>
<td>Environmental, design, construction</td>
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<tr>
<td>Whole life cost</td>
<td>Design</td>
</tr>
<tr>
<td>Benchmarking</td>
<td>Best Practice – examples</td>
</tr>
<tr>
<td>Looking for Opportunities</td>
<td>Proactive attitude</td>
</tr>
<tr>
<td>Competition</td>
<td>Internal and inter-team</td>
</tr>
<tr>
<td>Measurement</td>
<td>Key performance indicators</td>
</tr>
</tbody>
</table>

Benchmarking should be used to compare with other projects. A wide range of comparators should be used to identify where improvements can be made. To achieve continuous improvement requires individuals and teams who do not quietly accept the status quo, but constantly look for opportunities for improvement. It is important to measure performance at agreed intervals and to feed back the results to the project team. This is not necessarily easy, but is essential. Simple measures can be used as a starting point, developing and refining them as the project proceeds.

5 What partnering is not

Partnering is not mandatory. Partnering is not a contractual requirement. By its very nature, the parties must voluntarily agree to co-operate in a partnering relationship. If the parties are not committed to the program, and agreement is not reached as to such co-operative measures, the concept will not work. Due to the entrenchment of the adversarial attitude by some individuals, the process may take time to work. Partnering experiences have shown that the positive aspects outweigh the cost and effort put into it.

Partnering has no legal effect. Partnering cannot be used to alter the terms of the contract, nor does it affect the legal responsibilities of the parties. While the parties may communicate more and understand the contract requirements better, they cannot use partnering to alter their legal position or use partnering agreements against each other in a court of law.

Partnering is not a cure-all. Reasonable differences will always occur, however, the benefits of partnering will ensure that such differences are honest, good faith differences.

Partnering is not a new buzzword.

Partnering is not a new form of contract. It is a procedure for making relationships work better.

Partnering is not a soft option.

Partnering is not a quick fix for a weak business. Strong players make each other stronger, weak ones destroy each other.
Partnering is not only about systems and methods - it is about people. It enables them to operate more effectively and efficiently.

6 How is it done?

In order to dispel adversarial tendencies, a formalised process is used. Both parties need to continually reinforce the partnering process. Simply conducting a workshop is not what partnering is about, although it is a good start. To gain the full benefits of partnering, the parties must be prepared to make changes, work at the relationship and evaluate the relationship and its successes or failures on a routine basis. Follow-up workshops may be necessary to reinforce the original commitment or to bring new key players into the management philosophy.

Typically, the partnering process would consist of a number of stages:

1) An initial workshop with all key players participating. This would include representatives for the owner, superintendent, contractor and major subcontractors.

2) A follow-up workshop to reinforce the first workshop, build teamwork and give participants the necessary partnering skills to evaluate and reinforce performance. This is typically about one month after the first workshop.

3) Regular meetings, usually held monthly on-site to discuss detailed job issues.

4) Additional partnering workshop where it is felt necessary due to high staff turnover or a breakdown in the partnering process, and

5) Regular discussions and sharing of knowledge both in a work and social environment.

A commitment to partnering by senior management is essential. If the head is not willing to cooperate, the body will not follow. Experience has shown that top management commitment is essential. Workers act in accordance with how management acts, not just in accordance with what management say. Once top management is committed, all participants in the performance of the contract should be brought on-board.

7 Partnering process

Partnering is a relationship aimed at avoiding contractual disputes, reducing litigation, improving trust between contractual partners and building inter-organisational teams. When properly implemented, partnering has proven to reduce the time and cost of contract performance, improve safety and value engineering efforts, reduce administration and oversight, significantly reduce litigation and result in significant improvement in achieving contractual goals.

The following is a general outline of the partnering process and actions that will be necessary to implement.

Select the appropriate contract to employ partnering

- Complex, difficult and high-risk contracts requiring constant communication
- Long term contracts will reap the greatest benefit
- Depth of the partnering effort varies with the complexity of the contract
- Maintenance contracts as well as construction, and
- Contracts important enough to require top management involvement.
Obtain top management commitment

- Workers watch how management walks, not how they talk
- If top management is not committed, it will be difficult to obtain resources or to change the day-to-day way of doing business, and
- Top management should sign the partnering agreement to signify their commitment to the project and to the partnering process.

Obtain necessary resources to partner

- Err on the high side - resources will include cost for workshops, the time commitment to train internal personnel, attend workshops and for communication between both parties.

Select partnering champions from each organisation – one at top level and one at working level

- These people are responsible for promoting the partnering philosophy throughout the organisation and help the key participants change their actions to support the partnering relationship.

Include a partnering clause in the contract

- Let the contractor know that you are offering partnering to improve relationships.

Reinforcement

- Reinforce the commitment to partnering at all meetings, in correspondence and in verbal communications between the client and contractor.

Agree to partner

- All processes must be mutually agreed to by all parties
- Initial contacts should be at the executive level
- Establish an executive level relationship, and
- Ensure mutual high level commitment.

Obtain a facilitator

- Placing the facilitator requirement in the contract to be partnered, and
- Internal personnel familiar with the process (if truly trusted by both sides).

Prepare for the initial workshop

- Get all top management on board so that failure is not intimated at the workshop
- Ensure all attending understand the basics – define partnering
- Identify all participants in the program (and team members), and
- Clarify the roles, responsibilities and authorities of all key players.

Generate a meaningful evaluation process

- To measure success of the parties
- Reinforce the partnering attitude
- Use evaluation sheets, and
• Measure every 6 months or so.

**Celebrate successes**

• Reward or recognise those who took the initiative to partner, whether successful or unsuccessful.

**Communicate regularly with your partner**

• Regular meetings to discuss progress, problems and solutions are recommended, and
• Face to face is recommended (an alternative is video conferencing).

**Other considerations**

• Prepare to address newcomers to the program. Do not assume they will fall into the partnering pattern immediately.
• Conduct follow up workshops as necessary to reinforce – necessary to prevent old bad habits from re-emerging.
• Measure the success rate. Adjust processes as necessary to deal with problem areas.
• Establish a means for regular social interaction at the workplace such as morning teas, lunches, birthdays and so on, and
• Follow through with the management philosophy established at the workshop. Partnering in this manner has proven to produce dramatic improvement in contract success.

8 **The initial partnering workshop**

Key elements of the initial partnering workshop are:

• Establish communication and team building skills – Individuals learn about each other, learn communication skills and learn how conflict arises.
• Craft a joint mission statement – Parties need to agree to general and specific over-riding mutual goals to be achieved in performance of the contract. Accomplishment of these goals will mean success for both parties.
• Identify potential problems, strengths and weaknesses and clarify contract requirements.
• Establish disputes resolution processes – Parties will significantly reduce litigation and paperwork, by establishing clear lines of communication and responsibility, by setting up procedures to resolve problems quickly, by evaluating performances openly and honestly and by promoting continued co-operation, and
• Set up methods of measuring the effectiveness of the relationship.

Conduct the workshop as soon as possible after awarding the contract.

**Define partnering and process expectations**

• Identify all the legal implications (or lack thereof) of the partnering process;
• Pitfalls; and
• Reinforce no change to contract requirements.
Get to know each other

- Introductions
- Personality profiles
- Conduct team building exercises
- Learn empathy and listening skills
- Set forth each individual's authorities and responsibilities to avoid people 'passing the buck' or confusion as to who to talk to
- Delegate responsibilities as low as possible, and
- Identify common goals.

Establish procedures for sound administration to:

- Identify potential problems and a regular problem identification and resolution procedure
- Identify strengths and weaknesses of parties
- Establish fact documentation procedures
- If facts are not in dispute, most disputes are not pursued
- Develop open, honest and regular communication channels, and
- Review the contract requirements and provisions to identify areas of confusion or differences of opinion.

Establish methods of resolving conflict

- Generate a conflict resolution process such as automatic conflict escalation to prevent the festering of problems, and
- Agree to use alternative dispute resolution processes when good faith disputes arise.

Generate a Partnering Agreement (An example of a partnering agreement project charter is shown in Figure A2)

- Intent of the parties to work together towards a successful project
- Commitment
- Common goals (measurable), and
- Have all parties sign and display the partnering agreement

Typical agenda for partnering

Purpose

To initiate a collaborative approach to the delivery of the project. To develop a Partnering Charter and a systematic approach to the management of relationships within the contract.

Objectives

- Define common objectives for the delivery of the project
- Initiate understanding of team members, and
- Organise ongoing relationship management meetings.
Workshop content

- Introduction and welcome
- Ice breakers
- Each member introduces another
- Roles in the project
- Expectations
- Grounding presentation - the context
- Why partner
- Team development theory
- Personality analysis
- Develop the mission statement
- Brainstorm key words individually
- Small groups work to put key words together
- Group and distil the common goals in the project
  - Determine the mission objectives
  - Split into groups by party to the contract to determine key factors for success
  - Bring together groups and view objectives
  - Find commonality and combine objectives
  - Agreement on charter
  - Ongoing assessment of objectives
  - Overview of performance monitoring of the objectives
  - Determination of the administrator of the partnering process
  - Determination of the chair
  - Determination of the attendees
- When
  - Determine frequency
  - How long
- Where
  - Development of a typical agenda
  - Risk assessment
  - Briefing on features of project
  - Brainstorm in mixed groups of four in order
  - What is working well
Volume 1 - Appendix B: The extended partnering process

- What is not working well
- What strategies can we put in place to fix these
- Groups report to whole group
- Opportunity assessment
- Brainstorm opportunities
- Develop strategies to implement
- Develop Issues Resolution Matrix
- Discussion of types of issues
- Big issues dealt with separately
- Everyday issues dealt with by issues resolution matrix
- Explaining the ground rules
- Development of the matrix
- Overview of skills workshop — when, where etc.
- Development of action plans, and
- Signing of charter.

Workshop participants

- Principal’s team, including Principal’s designer
- Contractor’s team, including major subcontractors, and
- Superintendent’s team.

Duration

One and a half days with a dinner session.

Relationship management meetings

Purpose

To monitor, identify and resolve issues regarding the relationships on the project.

Objectives

- To monitor the common objectives developed and agreed for the project
- To raise and air issues relating to relationships on the project, and
- To resolve issues relating to relationships on the project.

Meeting Participants

As agreed at Partnering Foundation Workshop. Typically:

- Contractors project manager and site supervisors
- Representatives from major subcontractors with work currently in progress
- Superintendent, Superintendent’s representatives and inspectors
• Principal’s representative, and  
• Designer (if design is an issue).

**Meeting content**

*Welcome and introduction*

Review of actions arising from last meeting

Current month’s scores relating to key objectives

• Brief discussion regarding each score.

*Trends in the scores regarding objectives*

• Monthly trend
• Comparison with previous month
• Identification of areas where we have improved, and
• Identification of areas which are not meeting our expectations.

*General Comments*

• What’s going well
• What's not going well
• Where to from here, and
• Develop strategies.

*Develop Action plan*

• Next meeting.

**Duration**

Two hours minimum (typically held prior to monthly progress meetings).
PROJECT CHARTER

BRUCE HIGHWAY (AYR - TOWNSVILLE)
COLLINSON'S LAGOON - DIDGERIDOOL LAGOON

Mission:

We will construct the Collinson’s - Didgeridoo project to high quality standards, safely and with minimal impact to the community and to the environment by working co-operatively to achieve value and satisfaction for all parties.

Our Objectives are:

- A safe project (no lost time incidents)
- Open and constructive communication (incl. timely resolution of requests for information)
- Trustful and co-operative working relations
- A quality product (nil NCR’s requiring remove and replace)
- Minimum environmental impact
- High personal satisfaction
- Early identification and timely resolution of issues
- Utilise Integrated Administration/Management Systems where possible
- Completion of the works in line with the construction program
- Use the project as a pilot to develop the concept of relationship contracting

John Holland
Russ Beynon
Jo Ward
Wayne Brigden
Richard Johnson
Robby White
Bryce Simpson
Valerie Mercer-Brown

Main Roads
Larry Mudge
Kandah Sivagnanasasooriya
Warren Roseler
Eric Woolard

6 September 2000
Appendix B – The extended partnering process

1 Introduction

Relationship Contracting is a collaborative or team approach to achieving best for project outcomes. It is not isolated to the construction phase of a project. It is applicable through all phases of a project from initial concept definition to final maintenance and operation. It applies equally in working with planning and design consultants to working with construction contractors.

The relationship management process provides a model in which everyday issues that arise during the project can be resolved quickly. This happens in a collaborative manner and focuses the parties on project rather than individual goals. The model does not waive the requirement of the parties to act in accordance with the contract. But it often provides for earlier identification and resolution of issues as they arise than would have occurred left to the contractual process.

2 Extended partnering

Extended partnering is one such model that has evolved in the learnings from a major project.

Definition

Extended partnering is a formal process used to facilitate greater team participation and communication outside of the contractual process. It is used to develop a co-operative approach between all parties to the contract to achieve best for project outcomes.

It does this by achieving some initial impetuous towards achieving positive relationships and shared goals at the start of the project. It provides appropriate skills to the parties to the contract to achieve and maintain these. It also provides an agreed structure to assist in maintaining and improving these relationships. Various elements of the process are shown in Figure B1.

Scope

It can be applied to various traditional types of contract (for example, AS2124, AS4300), Design and Construct, Design Construct and Maintain, Relational Incentive Contract. It would normally be used more frequently for projects with an element of complexity, for example, time, cost, environmental issues, community issues, size, traffic etc.

Process

The partnering process and agreements formed in the partnering process do not replace the requirements of the contract. There is still a requirement for notices, timelines, directions required by the contract to be complied with.

Partnering provides an overarching umbrella to the contract under which most of the business of getting the job done is conducted. Information flows better and is more comprehensive than that provided for in the contract. Issue resolution times are typically far shorter than provided for in the contract. There is typically more focus on joint objectives rather than the pursuit of the individual goals of the parties.

The partnering process may be included in the tender documents as an option for that particular project. An additional clause is introduced to the Supplementary Conditions of Contract and an item included in the Schedule with a corresponding specification.
The typical extended partnering process is as follows:

- Provision of an intent to proceed with relationship management process either in the invitations for tender or in the contract documents.

- A foundation workshop typically 1½ days in duration early after the award of the contract. This aligns the parties towards common goals, develops performance measures for these goals, develops an issue resolution process, starts positive communication and relationships and develops plans and process for further managing this.

- A series of relationship management meetings of duration approximately 2 hours. These are held at approximately monthly intervals to monitor the common goals, promote communication, raise and discuss issues and develop plans to resolve them.

- A skilling workshop held about 1 to 1½ months after the foundation workshop. This provides team, communication, motivation, problem solving and decision making skills to all parties. The duration of this workshop is approximately 1½ days.

- On larger projects, a mid project review meeting may be required to review the project goals.

- The process may also involve a project completion workshop to identify any learnings from the process to be incorporated into future projects, and

Typical agenda for the various workshops and meetings are provided in Contract Administration System.

3 The boundary rider

It is advisable to nominate a boundary rider to the process. The boundary rider should be independent of the ‘team’ formed to deliver the project. The role of the boundary rider is to observe and comment on the dynamics of the team from time to time, and to be on call as facilitator for more difficult problems as they arise during the delivery of the project. In projects where the team dynamics are good and significant problems do not arise, the boundary rider will not be called upon.
4 Partnering plus

On projects of relatively small duration, it is often not practical to provide a foundation and skilling workshop within the timeframe of the contract. In such cases, certain elements of the skilling workshop can be introduced at the foundation workshop.
Appendix C – Relationship skilling workshop

1 Purpose
To provide the Principal/Superintendent/Contractor/Subcontractor team with team-communication and interpersonal skills to assist in maintaining an ongoing collaborative, ‘best for project’ approach to the delivery of the project.

2 Objectives
- To further develop a project team
- To provide to members of the project team interpersonal skills to utilise in the project
- To develop motivators specific to the project, and
- To develop techniques that can be used in resolving issues that arise during the project.

3 Workshop content

Introductions and icebreakers
- What is going well for each individual – both on the job and personally?

Moments of truth
- The influence of positive and negative experiences
- Levels of learning, and
- Levels of service.

Exercise (levels of service)
- Each party notes down what they are currently doing that they consider delights the other party and what they could do in the future
- What the other party is currently doing that is delighting them and what they could do in the future, and
- Comparison and discussion.

Motivation
- What are the motivators?

Exercise
- What each party is currently doing to motivate the team and what they could do in the future?

Conflict resolution
- What influences behaviour, and
- Assertive, passive, aggressive and aggressive/passive behaviour.

Team dynamics
- Theory, and
- What level the team thinks it has reached?
Team exercise

- Overview and recap on what this process is to achieve.

Problem solving

Exercises in group synergy

- de Bono’s six hats, and
- Creative problem solving techniques.

Exercise

- Exercise in problem solving using de Bono’s six hats
- Fictional
- Issue regarding the project
- Decision making
- Decision making theory
- Exercise in decision making, and
- Ultimate team challenge.

4 Workshop participants

- Typically the participants of the foundation workshop.

5 Duration

- One and a half days with a dinner session.
Appendix D – Group problem solving

1 Introduction

Group problem solving processes provide strong client leadership to gain common and accepted project outcomes. It increases integration of the supply chain and participation by downstream suppliers in upstream processes, upstream suppliers in downstream processes and end users in upstream processes. Correctly used, group problem solving processes will provide better whole of life outcomes across the project.

2 Definition

Group problem solving processes are structured, systematic and analytical. A group of interested parties (decision makers, stakeholders, technical specialists and others) combine to optimise value in systems, processes, products and services.

Value relates not only to price, but also to what is of benefit or importance to the stakeholders in a particular circumstance.

The collaborative output and thinking power of the group is greater than the sum of the outputs and thinking power of the individuals.

Typical group solving processes include Participatory Strategic Planning, Value Management, Value Engineering, Risk Identification & Management, Partnering including Relationship Contracting and Post Construction Reviews.

3 Purpose

The purpose of group problem solving processes is to produce alternative ideas which may be used by the client and those participating in planning, design and construction to make decisions about the project.

4 Benefits

A number of benefits arise from group problem solving processes:

- Shared understanding among a wide range of stakeholders
- Savings in life cycle costs
- A holistic solution to meet particular needs
- Clarity, focus and improved communication
- Savings in design and construction time
- Reduced or well managed risks, and
- Reflections and learning’s transferred to future projects.

5 Appropriate use

Use of group problem solving processes will vary with the project scale and complexity.

Group problem solving processes can be used in various phases of a project and for various reasons:
In the early concept phase to identify the base needs and the functional requirements to be incorporated into the project brief along with other physical characteristics.

In the preliminary design stage to ensure that the design options generated meet the functionality requirements. This can also eliminate factors that do not contribute to the functionality and to optimise the balance between function, cost and worth.

In the detailed design phase to optimise the technical components of the project.

To identify and manage the risks associated with the project.

To identify the optimum delivery process and packaging for the project.

During any contract process that is, consultancy, construction and maintenance to quickly identify and resolve issues that arise during the contract, and

At project completion to identify specific learnings arising from the project.

**Figure D1 – Group problem solving processes**

The most appropriate use of the varying group solving processes is shown in Figure D1.

- Participatory Strategic Planning workshops may be used in the concept phase of a project
- Value Management workshops may be used in the concept, planning and packaging decision phases
- Risk Assessment and Management workshops may be used from planning through to design
- Value Engineering workshops may be used in the design and possibly the construction phase
- A Post Construction Review workshop may be held shortly after project completion
• Partnering workshops including team building and team problem solving techniques may be used at any stage of a project which involves a form of contractual relationship from the planning phase through to maintenance and operation, and

• In general, the participants at group problem solving workshops will come from a more diverse background in the earlier phase of a project rather than the latter phases.

6 The process

Although the process differs slightly for the different techniques, underlying principles are very similar. One of the major differences in the varying workshops is the types of groups or individuals that are requested to participate in the workshops.

The process starts by identifying the base need or project outcome required.

The process is based on analysing the function performed by products or services. This involves clearly identifying what they do and what they must do at a high level to meet the project objectives.

Once these high level project functional objectives have been set, they are listed in priority order and ideas are generated as to how the functional objectives can be met.

7 Collection of information

• Present any project information such as current design proposal and cost estimates:
  – Define any givens
  – Identify the known assumptions, and
  – Define what’s important about the subject of the study.

• Analysis of functions:
  – Define the primary intended purpose, and
  – Identify functions to be performed.

• Generation of alternatives

• Evaluation of alternatives

• Development of selected alternatives, and

• Conclusions, recommendations and action plans.

8 Critical success factors

Certain factors which assist in the success of the process include:

• Dissemination of the information, implementation plans and final decision to the participants of the workshop at the earliest opportunity

• Holding the workshop prior to strong opinions being generated regarding decisions

• If any non negotiables have been decided, stating these up front at the beginning of the process, and

• Limiting the issues to be addressed at a workshop to one key issue. Do not attempt to address say functionality and project packaging in the one workshop.

The process is best facilitated by facilitators trained in group problem solving techniques.
### Appendix E – Design and then construct compared to design and construct

<table>
<thead>
<tr>
<th>No.</th>
<th>Feature</th>
<th>Design and then construct delivery model</th>
<th>Design and construct delivery model</th>
<th>Alliancing</th>
<th>Early contractor involvement</th>
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<tr>
<td></td>
<td></td>
<td>Traditional contract</td>
<td></td>
<td></td>
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<tr>
<td>1</td>
<td>Tender process</td>
<td>Complex projects:</td>
<td>1. Expressions of interest called for pre-qualified Contractors. Selection made to reduce to 2 or 3 tenderers after assessment against pre-set criteria.</td>
<td></td>
<td>1. Expressions of interest called for pre-qualified Contractors and Designers. Selection made to reduce to 2 or 3 tenderers after assessment against pre-set criteria.</td>
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<td></td>
<td></td>
<td></td>
<td>2. Selection of preferred tenderer against price.</td>
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<td>2. Selection of preferred tenderer after further evaluation against pre-set criteria.</td>
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<td></td>
<td></td>
<td></td>
<td>Less complex projects:</td>
<td></td>
<td>3. Commercial framework agreed with the preferred proponent.</td>
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<td></td>
<td></td>
<td></td>
<td>1. Suitably pre-qualified Contractors all able to bid</td>
<td></td>
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<tr>
<td>2</td>
<td>Tendering costs</td>
<td>Principal</td>
<td>Expensive as each design needs to be evaluated in addition to the pre-set criteria – often involves specialist input. All Contractor’s costs of bidding have to be passed on to a client at some point.</td>
<td>Significant for the Principal due to the assessment of non-price criteria, workshops and external independent auditors and verifiers.</td>
<td>Significant for the Principal in Stage 1 due to assessment of non-price criteria, workshops and external independent auditors and verifiers.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Contractor</td>
<td>Expensive as design needs to be developed to allow determination of risk and costing. Can be reduced if Client offers a design fee.</td>
<td>Expensive to proponents due to workshop resource requirements to prepare for the tender selection process.</td>
<td>Moderate. Some aspects can be addressed in Stage 1.</td>
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<td></td>
<td>Traditional contract</td>
<td>Design &amp; construct</td>
<td>Alliencing</td>
<td>Early contractor involvement</td>
</tr>
<tr>
<td>3</td>
<td>Basis of selecting contractor</td>
<td>Best competitive tender based on Principal’s design. Selection often based on lowest price conforming tender. Non-price criteria selection used where the risk analysis indicates a project contains high risk aspects. Non-price criteria can be used to address those high risk aspects</td>
<td>Selection based on three components: 1. Tenderers design; 2. Tenderers non-price criteria; and 3. Tenderers price.</td>
<td>Cost Competitive Alliance – Assessment of price and non-price criteria, proposals and structured workshops of competing proponents to a limit of 2. Final selection based on design and price.</td>
<td>Assessment of non-price criteria, proposals and structured workshops of competing tenderers.</td>
</tr>
<tr>
<td>4</td>
<td>Number of contested designs</td>
<td>One but selected by Principal from options developed by one Designer.</td>
<td>Concept Design developed to a more advanced design by 2 to 3 Tenderers, utilising the Principal’s design brief. Potential for Principal to use components of unsuccessful designs in the final design.</td>
<td>Single concept design to Project Brief, but refined by the Alliance team. Scope for innovation.</td>
<td>Single preliminary design to Design Brief by Contractor/Designer/Principal. Scope for innovation.</td>
</tr>
<tr>
<td>5</td>
<td>Collaborative design</td>
<td>Not applicable. Principal owns the Design Contractor bids on the project as designed.</td>
<td>Some Constructor/Designer synergy. Possible to include partnering as part of the D&amp;C contract.</td>
<td>Owner/Constructor/Designer synergy.</td>
<td>Final design to Design Brief by Contractor/Designer and Principal. Designer synergy.</td>
</tr>
<tr>
<td>6</td>
<td>Constructability</td>
<td>Designer not necessarily aware of successful Contractor’s strengths or his latest construction methods.</td>
<td>Design tailored to Contractor’s equipment and methods.</td>
<td>Design tailored to Contractor’s equipment and methods.</td>
<td>Design tailored to Contractor’s equipment and methods.</td>
</tr>
<tr>
<td>No.</td>
<td>Feature</td>
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<td></td>
<td>Principal's control of standards</td>
<td>Documentation of design and specifications and then surveillance during construction by Superintendent’s team.</td>
<td>Design and construction must meet ‘minimum’ standards detailed by the Principal through auditing of Contractor’s design and construction using Principal’s Representative and/or Independent Verifier.</td>
<td>As a member of the Alliance plus auditing of construction by Independent Project Verifiers, Independent Estimators, Independent Financial Auditors and Probit Advisors.</td>
<td>As a member of the team during Stage 1 plus auditing of construction during Stage 2.</td>
</tr>
<tr>
<td>7</td>
<td>Design management</td>
<td>Principal contracts with Designer separately.</td>
<td>Principal’s Representative deals directly with Contractor.</td>
<td>Project focused – controlled within Alliance. Principal represented within Alliance.</td>
<td>STAGE 1 (preliminary design): Project focused – controlled within Principal/Contractor/Designer team. STAGE 2 (final design): Principal deals directly with Contractor.</td>
</tr>
<tr>
<td>8</td>
<td>Intellectual property</td>
<td>Owned by Principal.</td>
<td>Contractor warrants that it and/or Designers own the copyrights to drawings and contract documents and grants the Principal an irrevocable royalty – free licence to use the drawings and documents for construction of the project and its maintenance. Unsuccessful Tenderers also may have to provide a similar licence to the Principal, as above, to allow use of some parts of their tender design in the final design. The Tender contribution amount may facilitate the Principal’s use of such intellectual property.</td>
<td>Owned by Principal.</td>
<td>Principal owns the intellectual property rights which are given to the Contractor for the duration of the contract.</td>
</tr>
</tbody>
</table>
## Design and then construct compared to design and construct delivery model

<table>
<thead>
<tr>
<th>No.</th>
<th>Feature</th>
<th>Traditional contract</th>
<th>Design &amp; construct</th>
<th>Alliencing</th>
<th>Early contractor involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Design and construction timing</td>
<td>A serial process with no potential for overlapping design and construction.</td>
<td>Detailed design is developed during construction with potential time savings. Design is programmed to Contractor time requirements.</td>
<td>Overlapping of design and construction is possible. Design is programmed to Alliance time requirements.</td>
<td>Overlapping of design and construction is possible.</td>
</tr>
<tr>
<td>11</td>
<td>Risk allocation – design</td>
<td>Reflected in Designer’s contract. Designer required to insure against adequacy of design, suitability for the site and so on. Principal accepts risk for delays and associated costs.</td>
<td>The Contractor is responsible for both construction and design (may use Designer to develop design but Contractor ultimately responsible). Designer required to insure against adequacy of design, suitability for the site and so on. Contractor accepts risk for delays and associated costs. Principal accepts risks of an inadequate Project Brief.</td>
<td>Nearly all risks and opportunities are shared by Alliance team members. Principal accepts risk for default of an Alliance participant and for unforeseen delays and associated costs.</td>
<td>Designer required to insure against adequacy of design, suitability for the site and so on for the Stage 2 final design. Principal accepts risk for delays and associated costs in the preliminary design phase. Contractor accepts risk for delays and associated costs in the final design phase.</td>
</tr>
<tr>
<td>12</td>
<td>Risk allocation – construction</td>
<td>Principal accepts risk for time and associated costs for delays that it causes. Contractor accepts risks for matters directly under its control or as required by the contract. For risks associated with neutral matters, some are borne by the Contractor (re-work after wet weather) and some by the Principal (time for wet weather).</td>
<td>Principal accepts risk for time and associated costs for delays that it causes. Contractor accepts risks for matters directly under its control including design errors/omissions. For risks associated with neutral matters, some are borne by the Contractor (re-work after wet weather) and some by the Principal (time for wet weather).</td>
<td>Generally risks are shared. Principal still has risk of cost over-runs above the level of the OAP’s Fee and lack of precise specification. Contractor has risk in respect of profit and overheads and of sharing management of construction with the Principal.</td>
<td>Principal accepts risk for time and associated costs for delays that it causes. Contractor accepts risks for matters directly under its control. For risks associated with neutral matters, some are borne by the Contractor (re-work after wet weather) and some by the Principal (time for wet weather).</td>
</tr>
<tr>
<td>No.</td>
<td>Feature</td>
<td>Design and then construct delivery model</td>
<td>Design and construct delivery model</td>
<td>Alliancing</td>
<td>Early contractor involvement</td>
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</tr>
<tr>
<td>13</td>
<td>Defects liability period</td>
<td>Typically 3 months.</td>
<td>Variable – 1-5 years.</td>
<td>Variable – 6 months to 2 years.</td>
<td>Variable – 6 months to 2 years.</td>
</tr>
<tr>
<td>14</td>
<td>Certainty of final cost</td>
<td>Schedule of Rates for quantities calculated by Principal. Scope for significant variances if Design is inadequate. High likelihood of variations where inadequate investigation or poor documentation, but can be evaluated as an estimated percentage to Lump Sum.</td>
<td>Lump Sum (Schedule of Prices) may have some rates for provisional items and so on. Reduced chance of large variations but increased risk of large ‘contractual’ variations due to an inadequate Project Brief. No certainty of final costs until all claims are settled.</td>
<td>Target Out-turn Cost Estimate (TOC) determined by Alliance Leadership Team. Use key performance indicators and incentive payments to achieve targets (cost, time, profit, quality and so on). Little chance of large variations. No certainty of final costs until project completed and Limb 3 (profit/loss) payment allocated.</td>
<td>Risk Adjusted Price (RAP) determined by Contractor/Principal team. Lump sum or schedule of rates using Contractor calculated quantities. Less chance of large variations. No certainty of final costs until all claims are settled. Risk Adjusted Max Price can be requested</td>
</tr>
<tr>
<td>15</td>
<td>Dispute management</td>
<td>Design errors can be settled during construction but difficult issues tend to take considerable time and cost, often beyond completion of the contract. Partnering used to facilitate settlement of disputes in first instance, elevated to Principal then to arbitration.</td>
<td>Can be settled during construction but difficult issues tend to take considerable time and cost, often beyond completion of the contract. Generally only involves the Principal and Contractor. Partnering used to facilitate settlement of disputes in first instance, elevated to Principal’s Representative then to arbitration.</td>
<td>Alliance system focuses on settlement of issues as they arise. Decisions of the ALT are unanimous. Issues not resolved in a reasonable time by the AMT elevated to Alliance Board for resolution.</td>
<td>Dispute defined in contract documents. Dispute referred to Dispute Resolution Board as defined by the contract.</td>
</tr>
<tr>
<td>16</td>
<td>Conflict of interest</td>
<td>Principal focused on quality while Contractor will not stay in business long if he loses money.</td>
<td>Contractor tendency to under design with Principal concerned about meeting Design Brief.</td>
<td>All participants Project focussed with decisions made on a best-for-project basis.</td>
<td>All participants Project focussed to the extent permitted by the contract documents.</td>
</tr>
<tr>
<td>No.</td>
<td>Feature</td>
<td>Design and then construct delivery model</td>
<td>Design and construct delivery model</td>
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<td>Traditional contract</td>
<td>Design &amp; construct</td>
<td>Alliancing</td>
<td>Early contractor involvement</td>
</tr>
<tr>
<td>17</td>
<td>Insurance</td>
<td>See Appendix F “Project Delivery Options Risk Allocation and Insurance”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Staffing</td>
<td>Steady input of Principal’s staff throughout works. Staffing needs could increase as variations and claims arise.</td>
<td>Principal’s staffing inputs required for auditing of work, progress payment assessment and design checking.</td>
<td>Principal’s staff inputs heavy throughout all stages of the selection, evaluation and duration of the works.</td>
<td>Principal’s staffing inputs heavy throughout the selection, evaluation and Risk Adjusted Price phases but reduced during the construction of the works.</td>
</tr>
<tr>
<td>19</td>
<td>Management process</td>
<td>Success can depend upon relationship between Principal, Superintendent and Contractor.</td>
<td>Requires the Principal to fully understand what it wants. Can be quite intensive for the Principal’s team as design is developed to suit constructed time requirements, not the capability or capacity of the Principal.</td>
<td>The ‘no blame’ and ‘all win/all lose’ culture are the keystones upon which the Alliance is built. Excellent working relations have become a strong culture in Alliances.</td>
<td>Minimum scope for confrontation after design is agreed. Design Brief becomes critical to avoid issues on final design.</td>
</tr>
<tr>
<td>20</td>
<td>Innovation</td>
<td>Can be restricted under this system where the Principal arranges design through Designers who would not be familiar with the selected Contractor’s expertise or methods.</td>
<td>Contractor can incorporate innovation, constructability and efficiency into design as it’s under its control.</td>
<td>Alliance can incorporate innovation, constructability and efficiency into design as it’s under its control.</td>
<td>Contractor can incorporate innovation, constructability and efficiency into design as it’s under its control.</td>
</tr>
<tr>
<td>21</td>
<td>Value for money</td>
<td>Open Tender, transparent competitive market environment coupled with the ability to select Contractors using price and non-price components where justified.</td>
<td>Open Tender, competitive market environment coupled with the ability to select Contractors using a non-price criteria component.</td>
<td>Contractor selected using non-price criteria. The price is unknown when the Contractor is initially appointed but an independent auditor or estimator is employed during the development of the Target Cost Estimate.</td>
<td>Contractor selected using non-price criteria. The price is unknown at start of work but an independent auditor or estimator is employed during Stage 1 while the Risk Adjusted Price is being developed.</td>
</tr>
</tbody>
</table>
### Appendix F – Project delivery options risk allocation and insurances

<table>
<thead>
<tr>
<th>Ref No.</th>
<th>Risk description</th>
<th>Design and then Construct Delivery Model</th>
<th>Design and Construct Delivery Model</th>
<th>Alliencing risk allocation</th>
<th>Early contractor involvement risk allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Site assessment</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Relocation of public utility plant</td>
<td>Principal</td>
<td>Principal &amp; Contractor shared</td>
<td>Alliance Partners share including Principal</td>
<td>Principal &amp; Contractor shared</td>
</tr>
<tr>
<td></td>
<td>Latent site conditions</td>
<td>Principal &amp; Contractor shared</td>
<td>Contractor</td>
<td>Principal for inaccurate borehole data</td>
<td>Principal &amp; Contractor shared</td>
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<td></td>
<td>Wet weather and effects of</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Alliance Partners share including Principal</td>
<td>Contractor</td>
</tr>
<tr>
<td>2</td>
<td>Tendering</td>
<td>Principal</td>
<td>Principal but shared with Contractor</td>
<td>Principal</td>
<td>Not applicable to Stage 1 and 2 delivery</td>
</tr>
<tr>
<td></td>
<td>Documentation – sufficient, clear, easily understood</td>
<td>Principal</td>
<td>Principal but shared with Contractor</td>
<td>Principal</td>
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</tr>
<tr>
<td></td>
<td>Tendering costs</td>
<td>High Cost Principal, Low cost Contractor but no payment made for bid cost</td>
<td>Medium cost Principal, High cost Contractor. May be payment for offer cost</td>
<td>High cost Principal and Contractor</td>
<td>High cost Principal and Low cost Contractor. May be payment for offer cost</td>
</tr>
<tr>
<td></td>
<td>Certainty of final costs at award</td>
<td>High risk if Design inaccurate</td>
<td>Medium risk, control of variations but potentially higher in cost for each Variation</td>
<td>Alliance Partners share including Principal</td>
<td>Very high risk, as design needs to be developed after Tender</td>
</tr>
<tr>
<td>3</td>
<td>Design</td>
<td>Principal</td>
<td>Principal, but low if Project Brief is performance based</td>
<td>Low Principal risk, as design is performance based and responsible by Alliance</td>
<td>Very low Principal risk, as design is being developed, shared risk with Contractor.</td>
</tr>
<tr>
<td></td>
<td>Design Brief – accurate, consistent and specific requirements referencing current and appropriate standards</td>
<td>Principal</td>
<td>Principal, but low if Project Brief is performance based</td>
<td>Low Principal risk, as design is performance based and responsible by Alliance</td>
<td>Very low Principal risk, as design is being developed, shared risk with Contractor.</td>
</tr>
<tr>
<td>Ref No.</td>
<td>Risk description</td>
<td>Design and then Construct Delivery Model</td>
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<tr>
<td></td>
<td></td>
<td>Traditional contract risk allocation</td>
<td>Design &amp; construct risk allocation</td>
<td>Alliance Partners share including Principal</td>
<td>Stage 1 – shared by Principal/Contractor/Designer. Stage 2 – Contractor.</td>
</tr>
<tr>
<td></td>
<td>Design drawings – errors, conflicts, deficiencies</td>
<td>Principal</td>
<td>Contractor &amp; Designer</td>
<td></td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td>Design documentation – inaccurate quantities, errors</td>
<td>Principal</td>
<td>Contractor &amp; Designer</td>
<td>Alliance Partners share including Principal</td>
<td>Contractor/Designer</td>
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<tr>
<td></td>
<td>Constructability of design</td>
<td>Principal</td>
<td>Contractor &amp; Designer</td>
<td>Alliance Partners share including Principal</td>
<td>Contractor/Designer</td>
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<tr>
<td></td>
<td>Sequencing of design with construction, delays</td>
<td>Principal</td>
<td>Contractor &amp; Designer</td>
<td>Alliance Partners share including Principal</td>
<td>Contractor/Designer</td>
</tr>
<tr>
<td></td>
<td>Innovation</td>
<td>Low likelihood and with Principal</td>
<td>High likelihood and with Contractor &amp; Designer</td>
<td>Medium likelihood, shared by Alliance</td>
<td>High likelihood by Contractor/Principal</td>
</tr>
<tr>
<td></td>
<td>Design interface issues</td>
<td>Principal</td>
<td>Contractor &amp; Designer</td>
<td>Alliance Partners share including Principal</td>
<td>Stage 1 – shared by Principal/Contractor/Designer. Stage 2 – Contractor.</td>
</tr>
<tr>
<td></td>
<td>Long term maintenance of as-constructed design</td>
<td>Principal</td>
<td>Shared Risk Principal/Contractor but can be altered to Contractor is D&amp;C including Maintenance</td>
<td>Alliance Partners share including Principal</td>
<td>Most likely Principal but can be altered to be shared. Needs to be clear in the contract</td>
</tr>
<tr>
<td></td>
<td>Defect liability maintenance of as-constructed design</td>
<td>Principal</td>
<td>Contractor &amp; Designer</td>
<td>Alliance Partners share including Principal</td>
<td>Contractor/Designer</td>
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<td></td>
<td>Environmental standards</td>
<td>Principal</td>
<td>Contractor &amp; Designer</td>
<td>Alliance Partners share including Principal</td>
<td>Contractor/Designer</td>
</tr>
<tr>
<td>Ref No.</td>
<td>Risk description</td>
<td>Design and then Construct Delivery Model</td>
<td>Design and Construct Delivery Model</td>
<td>Alliancing risk allocation</td>
<td>Early contractor involvement risk allocation</td>
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<td>4</td>
<td>Construction</td>
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<td></td>
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<td>Construction standards</td>
<td>Design – Principal Construction – Contractor</td>
<td>Contractor</td>
<td>Alliance Partners share including Principal</td>
<td>Contractor</td>
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<td></td>
<td>Supply of materials</td>
<td>Should the contract include supply by Principal – Principal risk. Otherwise Contractor risk</td>
<td>Contractor. Should the contract include supply by Principal – Principal risk</td>
<td>Alliance Partners share including Principal but should the contract include supply by Principal – some risk Principal</td>
<td>Should the contract include supply by Principal – Principal risk. Otherwise Contractor risk</td>
</tr>
<tr>
<td></td>
<td>Sub-contractors</td>
<td>Should the contract incl. nominated by Principal – some risk Principal Otherwise Contractor risk</td>
<td>Contractor</td>
<td>Alliance Partners share including Principal, but should the contract include nominated by Principal – Principal risk</td>
<td>Should the contract include nominated by Principal – some risk Principal. Otherwise Contractor risk</td>
</tr>
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<td>Wet weather</td>
<td>Principal for specified period, Contractor after specified period</td>
<td>Contractor</td>
<td>Alliance Partners share including Principal</td>
<td>Principal for specified period, Contractor after specified period</td>
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<td>Effects of wet weather</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Alliance Partners share including Principal</td>
<td>Contractor</td>
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<td>Works not fit for purpose</td>
<td>Design – Principal Construction – Contractor</td>
<td>Contractor &amp; Designer</td>
<td>Alliance Partners share including Principal</td>
<td>Shared by Proponents in design Contractor in construction</td>
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<td>Variations</td>
<td>Principal</td>
<td>Contractor but can be Principal if unknown at Tender stage</td>
<td>Alliance Partners share including Principal</td>
<td>Stage 1 – Principal Stage 2 – Contractor</td>
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<td>Quality assurance</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Alliance Partners share including Principal</td>
<td>Stage 1 – Principal Stage 2 – Contractor</td>
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<tr>
<td>Ref No.</td>
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<td></td>
<td>Community consultation</td>
<td>Principal</td>
<td>Shared by Principal and Contractor</td>
<td>Alliance Partners share including Principal</td>
<td>Shared by Proponents and Contractor</td>
</tr>
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<td>Environmental harm</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Alliance Partners share including Principal</td>
<td>Contractor</td>
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<td>OS&amp;R</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Alliance Partners share including Principal</td>
<td>Shared by Proponents in design. Contractor in construction</td>
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<td>Traffic management</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Alliance Partners share including Principal</td>
<td>Shared by Proponents in design. Contractor in construction</td>
</tr>
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<td>5</td>
<td>Management systems</td>
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<td>Project timing and sequencing</td>
<td>Principal’s risk for matters under its control, otherwise Contractor</td>
<td>Principal’s risk for matters under its control, otherwise Contractor</td>
<td>Alliance Partners share including Principal</td>
<td>Shared by Proponents in design. Contractor in construction</td>
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<td>Management of project OH&amp;SR plan</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Alliance Partners share including Principal</td>
<td>Shared by Proponents in design. Contractor in construction</td>
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<td>Management of Project Quality Plan</td>
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<td>Alliance Partners share including Principal</td>
<td>Shared by Proponents in design. Contractor in construction</td>
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<td>Management of Project Traffic Management Plan</td>
<td>Contractor</td>
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<td>Alliance Partners share including Principal</td>
<td>Shared by Proponents in design. Contractor in construction</td>
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<td>Management of Project Environment Plan</td>
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<td>Alliance Partners share including Principal</td>
<td>Shared by Proponents in design. Contractor in construction</td>
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<td>Ref No.</td>
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<td>Design and then Construct Delivery Model</td>
<td>Design and Construct Delivery Model</td>
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<td>Alliancing risk allocation</td>
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<td></td>
<td>Principal’s risk for matters under its control, otherwise Contractor</td>
<td>Principal’s risk for matters under its control, otherwise Contractor</td>
<td>Alliance Partners share including Principal</td>
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<td></td>
<td>Construction</td>
<td>Construction</td>
<td>Alliance Partners share including Principal</td>
<td>Shared by Proponents in design. Contractor in construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Principal – Partnering may be offered to Contractor by Principal with mutual collaboration and expected outcome</td>
<td>Principal – Partnering may be offered to Contractor by Principal with mutual collaboration and expected outcome</td>
<td>Alliance Partners share including Principal, then AMT then ALT</td>
<td>Relationship Management Team on behalf of Principal, Contractor, Designer, sub-contractors and suppliers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shared by Principal and Contractor</td>
<td>Shared by Principal and Contractor</td>
<td>Alliance Partners share including Principal</td>
<td>Shared by Proponents in design. Contractor in construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shared by Principal and Contractor with arbitration a last option</td>
<td>Shared by Principal and Contractor with arbitration a last option</td>
<td>Alliance Partners share including Principal, then AMT then ALT</td>
<td>Shared by Principal and Contractor with referral to Dispute Resolution Board if necessary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Owned by Principal</td>
<td>Owned by Contractor with rights given to Principal</td>
<td>Owned by Principal</td>
<td>Owned by Principal</td>
</tr>
<tr>
<td></td>
<td>Probit auditor’s actions</td>
<td>Not applicable</td>
<td>Principal</td>
<td>Principal</td>
<td>Principal</td>
</tr>
<tr>
<td></td>
<td>Safety Auditor’s actions</td>
<td>Safety audit carried out on design and final construction. Not part of contract, but can cause variations if issues arise</td>
<td>Safety audit carried out on design and final construction. Not part of contract, but can cause variations if issues arise</td>
<td>Issues taken into account by Alliance partners</td>
<td>Safety audit carried out on design and final construction. Not part of contract, but can cause variations if issues arise</td>
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<tr>
<td></td>
<td>Independent Verifier’s actions</td>
<td>Not applicable</td>
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<td>Principal</td>
<td>Principal</td>
</tr>
<tr>
<td>Ref No.</td>
<td>Risk Description</td>
<td>Design and then Construct Delivery Model</td>
<td>Design and Construct Delivery Model</td>
<td>Alliancing Risk Allocation</td>
<td>Early Contractor Involvement Risk Allocation</td>
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</tr>
<tr>
<td>Partnering</td>
<td>Shared by Principal and Contractor</td>
<td>Shared by Principal and Contractor</td>
<td>Shared by Alliance partners</td>
<td>Shared by Principal and Contractor</td>
<td></td>
</tr>
<tr>
<td>Insurances</td>
<td>Refer to matrix below on “Insurance for Project Delivery”</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Contractor</td>
<td></td>
</tr>
<tr>
<td>Provision of securities</td>
<td>Contractor</td>
<td>Contractor</td>
<td>Not applicable</td>
<td>Contractor</td>
<td></td>
</tr>
</tbody>
</table>
Insurance for project delivery

1) Insurance is NOT about buying a policy, it is about SELLING a risk to the insurer by the proposed insured coverage at an affordable cost.

2) In order to sell its risk, the proposed insured needs to:
   a) Establish a risk register for each activity on the project which includes full disclosure of all known risks
   b) Establish a risk management strategy to remove or reduce risk to acceptable levels
   c) Demonstrate risk management skills by reference to prior experience, suitably qualified staff and management procedures
   d) Demonstrate risk assessment strategies for all site activities
   e) Demonstrate risk mitigation strategies where risks are high or not fully controlled, including providing insurers with a Severe Weather Event Emergency Response Plan, and

3) As part of insurance arrangements, the Department has a range of insurance options appropriate to a range of projects:
   - For contracts >$1M and <$75M, the Department currently has Bulk Principal Arranged Insurance (PAI) program available. Endorsement of a project onto this program is arranged through the submission of the (Corporate Forms Database, F5013). There are special requirements for Minor Works contract. Contact Assistant Director (RISE) for more information.
   - For contracts >$75M, the Department has a Major Projects PAI program available. Endorsement onto this program is arranged through submission of a project-specific risk assessment questionnaire. For a copy of the risk assessment questionnaire, contact Assistant Director (RISE).

4) The PAI programs consist of three separate policies – one for Material Damage, one for Public and Product Liability and one for Professional Risk and Indemnity.

5) Standard contract insurance requirements include:
   - The Works – generally includes permanent and temporary works, structures, materials, project buildings and contents, formwork, falsework, scaffolding, documents but excludes certain construction plant, equipment and existing property (generally provided under PAI program, important to see Ref 1 for complete details).
   - Professional Indemnity – cover against failure of a professional’s duty of care (generally provided under PAI program).
   - Public Liability – cover for injury or damage sustained by a third party arising from a construction activity or situation (generally provided under PAI program).
   - Product Liability – cover for damage resulting from failure of the product to be delivered (generally provided under PAI program).
   - Worker’s Compensation – cover against injury sustained by employees at and to or from work (provided by Contractors).
• Plant and Equipment Insurance – cover of plant and equipment against loss or damage and Third Party injury and damage (generally provided by Contractors).
• Vehicle Insurance – cover of vehicles against loss or damage and Third Party injury and damage (generally provided by Contractors).

6) All projects insured through a PAI program must prepare and provide a Severe Weather management Plan to [RISE unit] in accordance with Engineering Policy 146.

7) The financial responsibility for the payment of deductibles/excesses sits with the Contractor for the majority of standard Departmental contract models. This can be a Recoverable or Principal’s Cost depending on indemnity and risk obligations under the contract. Contractors can purchase supplementary insurance (Difference in Excess or Difference in Conditions policies) at their own cost to manage contractor-allocated risks.

8) The duration of PAI packages (apart from Public and Product Liability – see Table below) is for the Duration of the Works plus the Defect Liability Period. Where a project’s construction period is greater than 48 months or its Defect Liability period is greater than 24 months, contact Assistant Director (RISE) to arrange.

9) Be aware that the default value of project automatically covered under PAI, begins at $1M. For projects <$1M, if PAI is required, the project would have to be added to the Schedule of projects covered under PAI. Contact Assistant Director (RISE) to arrange.

Insurance is a very complex subject. Information given here is indicative only and no reliance should be placed on it for the development of individual insurance plans because insurance must be tailored to individual risk profiles. For more information, contact Assistant Director (RISE).
<table>
<thead>
<tr>
<th>Insurance</th>
<th>Design and then Construct Delivery Model</th>
<th>Design and Construct Delivery Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minor works</td>
<td>Traditional</td>
</tr>
<tr>
<td>Works</td>
<td>Contractor Controlled Insurance (CCI).</td>
<td>Principal Arranged Insurance (PAI).</td>
</tr>
<tr>
<td></td>
<td>If over $5M, contact RISE for PAI</td>
<td>If over $75M (roads) or and $20M (bridge or tunnel component), contact RISE for appointment of broker under TMR panel arrangements.</td>
</tr>
<tr>
<td>Professional indemnity – design</td>
<td>Consultant cover required for designs.</td>
<td>Consultant cover required for designs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAI cover replaces consultant cover at construction start.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAI. If over $75M (roads) or and $20M (bridge or tunnel component), contact RISE for appointment of broker under TMR panel arrangements.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAI arranged during Alliance setup period. If project relies on PPP funding arrangements, contact RISE.</td>
</tr>
<tr>
<td>Insurance</td>
<td>Design and then Construct Delivery Model</td>
<td>Design and Construct Delivery Model</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-----------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td></td>
<td>Minor works</td>
<td>Traditional</td>
</tr>
<tr>
<td>Professional indemnity – construction</td>
<td>N/A</td>
<td>PAI cover placed at construction start, retroactively covering design risks.</td>
</tr>
<tr>
<td>Duration of PI insurance</td>
<td>This is a complex area. For information, refer to Assistant Director (RISE)</td>
<td>5 or 10 years after project start date, depending on project value.</td>
</tr>
<tr>
<td>Public liability</td>
<td>Contractor Controlled Insurance (CCI). If over $5M, contact RISE for PAI placement.</td>
<td>PAI, same as Works (above)</td>
</tr>
<tr>
<td>Product liability</td>
<td>This is a subset of public liability which relates more closely to the product being delivered. If PAI is used, covered by PAI.</td>
<td>PAI. This is a subset of public liability which relates more closely to the product being delivered.</td>
</tr>
<tr>
<td>Insurance</td>
<td>Minor works</td>
<td>Traditional</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>Principal supplied materials</strong></td>
<td>Supplier risk or TMR risk.</td>
<td>PAI is used for Principal supplied materials from the time of delivery to site or when Principal takes over Contractor supplied product. Contractor supplied product is the responsibility of the Contractor until on site delivery.</td>
</tr>
<tr>
<td><strong>Duration of public and product liability</strong></td>
<td>Must cover Defect Liability Period. If unsure, contact RISE for review.</td>
<td>PAI-specified 24 month Defect Liability Period or becomes apparent at a later date but is attributable to an occurrence during this period.</td>
</tr>
<tr>
<td>Insurance</td>
<td>Design and then Construct Delivery Model</td>
<td>Design and Construct Delivery Model</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Minor works</td>
<td>Traditional</td>
</tr>
<tr>
<td>Worker's compensation</td>
<td>Contractor’s and sub-con’s responsibility to cover their own staff.</td>
<td>Contractor’s and sub-con’s responsibility to cover their own staff.</td>
</tr>
<tr>
<td>Plant and equipment</td>
<td>Contractor’s responsibility for plant and equipment not covered by PAI.</td>
<td>Contractor’s responsibility for plant and equipment not covered by PAI.</td>
</tr>
<tr>
<td>Vehicles</td>
<td>The Department and Contractor responsible for own vehicles.</td>
<td>The Department and Contractor responsible for own vehicles.</td>
</tr>
</tbody>
</table>
Appendix G – Project risk profile

Example A – Risk profile for the floodplain crossing of a western river

Project characteristics:
- TMR owned design (traditional packaging)
- Estimated contract value of $20M - major works
- Construction of 16 bridges across the floodplain, and
- Supply and delivery of approximately 1000 precast concrete piles, deck units, etc.

Risk factors:
- Cultural heritage issues
- Lack of experienced local constructors
- Possible flood damage during construction, and
- Possible delays associated with delivery of precast piles, deck units.

Project risk profile (works)
Using Table 5.1 of Volume 1, the following were identified as significant:
- Cultural heritage issues, and
- Flood damage.

Project risk profile (tenderers)
- No significant issues.

Recommendation
Because of the abnormal project risk profile, it was recommended that a two stage tendering process apply involving:
- Registration of interest to shortlist those applicants with strong cultural heritage experience
- Capability as well as procedures to reduce flood damage, and
- Price ONLY assessment for short listed Tenderers.

Example B – Risk profile for the construction of a tunnel to bypass suburban commercial centre located on a busy urban arterial

Project characteristics:
- TMR owned design (traditional packaging)
- Estimated cost $30M – Major Project, and
- Cut and cover tunnel through strip shopping area.

Risk factors:
- Severe traffic disruption
- Vibration/noise effect on adjacent buildings/shops, and
Sensitive to delays.

**Project risk profile (works)**

Using Table 5.1 of Volume 1, the following were identified as significant:

- Traffic disruption and delays
- Community consultation, and
- Possible damage to adjacent buildings.

**Project risk profile (tenderers)**

- No significant issues.

**Recommendation**

Because of the abnormal Project Risk Profile, it was recommended that either:

- A two-stage tendering process involving:
  - Registration of Interest to shortlist those applicants with strong traffic management experience and capability, followed by
  - Price ONLY assessment for short listed Tenderers.

OR

- A single-stage process involving:
  - Prequalified constructors (R4/B3)
  - Specific requirements re key personnel experience and traffic management, and
  - Weighted price/non price criteria.
Appendix H – Sole invitation justification methodology

Before commencing an evaluation process, an assessment should be made as to whether the risk or the cost of the project is high enough to warrant the effort. This would generally exclude low cost or minor works contracts. Up to that level, it is appropriate to use judgement as to how a sole invitee contract will provide value for money.

There are five main steps in determining value for money in sole invitation contracts:

1) Identify and undertake weighting of non-price criteria to determine their relative importance
2) Evaluate the non-price criteria by a "Selection Process" (to quantify sole invitee benefits and compare to equivalent open tender benefits)
3) Establish a market-based expectation of the price
4) Evaluate the non-price benefits against cost, and
5) Document the decision.

These steps are explained in more detail on the following pages.

STEP 1: Identify and weight the non-price criteria

Non-price criteria refer to those factors important to the achievement of project objectives that are not directly covered by the contract price. They often relate to the way the contract is run, the skill sets offered by the supplier or the methodology the supplier engages to complete the project. For the purposes of evaluating value for money of a sole invitee contract, the following non-price criteria are recommended:

- Specific Expertise (of the contractor)
- Delivery Process (likely costs for purchaser)
- Engineering Risk Management, and
- Ability to contribute to the Broader Objectives of the Purchaser (community and social factors).

Depending on the project objectives it is unlikely that each of the identified non-price criteria have the same importance to the outcome of the project. The relative importance of each non-price criteria is taken into account in the evaluation by assigning weightings to the criteria. The more important non-price criteria the higher the weighting.

A process such as the Pair-Wise Comparison method can be used to weight each of the non-price criteria.

STEP 2: Non-price evaluation

Information on the use of the Pair-wise process can be found on the internet.

The non-price merits of the sole invitee offer can be compared to the non-price merits of an expected open tender offer, using a simple form similar to the type used to rate applicants for a job vacancy. A worked example of the results of a non-price criteria evaluation is shown in Table 1.
Table 1 – Example non-price criteria evaluation

<table>
<thead>
<tr>
<th>Non-price criteria</th>
<th>Weighting (%)</th>
<th>Evaluation scores</th>
<th>Sole invitee (LG or Road Tek)</th>
<th>Anticipated open tender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Score</td>
<td>Weighted score</td>
<td>Score</td>
</tr>
<tr>
<td>Specific expertise</td>
<td>50</td>
<td>3</td>
<td>150</td>
<td>3</td>
</tr>
<tr>
<td>Delivery process</td>
<td>10</td>
<td>3</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>Engineering risk management</td>
<td>20</td>
<td>2</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>Broader objectives</td>
<td>20</td>
<td>4</td>
<td>80</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>100%</td>
<td>300%</td>
<td></td>
<td>240%</td>
</tr>
</tbody>
</table>

Both the sole invitee proposal and the anticipated open tender result are scored from 1 to 5 for each criterion, multiplied by the weightings determined in Step 1 and the results totalled.

This method is consistent with the Two-Envelope System detailed in Chapter 7 of the manual Consultants for Engineering Projects.

The evaluation of each non-price criteria will involve some break down of the criteria into elements and a means of measuring each element of the criteria. Suggestions for elements within each of the non-price criteria are listed below.

Specific expertise (of the contractor)

Specific expertise refers to a contractor's ability to meet the particular requirements of an individual job. The goal in assessing specific expertise is to seek the best fit with the location and size of each project.

Table 2 – Elements of specific expertise

<table>
<thead>
<tr>
<th>Elements of specific expertise</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suppliers</td>
<td>Good understanding of capabilities of local suppliers</td>
</tr>
<tr>
<td>Utilities</td>
<td>Good relationships with local public utility providers and authorities</td>
</tr>
<tr>
<td>Construction conditions</td>
<td>Demonstrated successful experience with conditions likely to be encountered, eg geotechnical, weather</td>
</tr>
<tr>
<td>Availability of plant or equipment</td>
<td>Contractor has appropriate plant available in the area</td>
</tr>
<tr>
<td>Cultural heritage management</td>
<td>Demonstrated successful experience with local issues</td>
</tr>
<tr>
<td>Alternative Tendering</td>
<td>Good alternative tender proposal offering assessable benefits in price or non-price factors</td>
</tr>
</tbody>
</table>

Delivery process (likely costs for purchase)

This criterion takes into account the likelihood of difficulties being incurred by the Purchaser in delivering the project.

Consideration of the letting process should look at costs of market tendering and subsequent issues over variations and sole invitee negotiations on unit rates.
A contractor with good understanding of the complexities of the project or location and with a good performance record, would be considered less likely to generate a high demand for interaction. A comparison between contractors should be based on factual data (for example, contract post-completion reports) which clearly quantify the judgements made.

The goal is minimum process costs; that is, lower likely cost = higher rating.

**Table 3 – Elements of delivery process**

<table>
<thead>
<tr>
<th>Elements of delivery process</th>
<th>Element attributes</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract letting</td>
<td>Cost (time and dollar) incurred by purchaser</td>
<td>Compare likely tender process to sole invitee negotiation</td>
</tr>
<tr>
<td>Supervision</td>
<td>Confidence held in sole invitee contractor</td>
<td>High / Medium / Low</td>
</tr>
<tr>
<td></td>
<td>Amount of supervision required in past</td>
<td>High / Medium / Low</td>
</tr>
<tr>
<td></td>
<td>Quality auditing – past performance</td>
<td>Good / Average / Poor</td>
</tr>
<tr>
<td>Disputes</td>
<td>Claims history of sole invitee contractor</td>
<td>Number of claims made per job undertaken</td>
</tr>
<tr>
<td></td>
<td>Frequency of disputes</td>
<td>Percentage of contractor's jobs involving disputes</td>
</tr>
<tr>
<td></td>
<td>Time/cost to resolve</td>
<td>Average time/cost per dispute</td>
</tr>
</tbody>
</table>

**Engineering risk management**

This factor considers ways to reduce engineering risk in road construction.

The Department’s commercial business units contribute to risk reduction by showing the lead in engineering best practice, especially in respect to safety, environmental protection and cultural heritage. They also perform a vital role in retaining and developing the Department’s competence as an informed purchaser of construction and maintenance services, ensuring that technical staff have the opportunity to be trained in both purchaser and provider roles.

Local Governments do not need to be prequalified to be given preferred supplier work, so the Department must act to ensure that contractors possess adequate skills for the task. With respect to local government contractors, this factor attempts to minimise the risk of engineering problems during construction or in the finished road. It draws on the prequalification criteria detailed in Volume 3 of this manual.

The goal in assessing risk is to minimise it; that is, lower risk = higher rating.

**Table 4 – Elements of engineering risk management**

<table>
<thead>
<tr>
<th>Elements of engineering risk management</th>
<th>Element attributes</th>
<th>Measurement (consequence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informed buyer</td>
<td>Inadequate skills retention, knowledge management and technology transfer</td>
<td>Poor stewardship of road network</td>
</tr>
<tr>
<td>Project management</td>
<td>Project management plan is inadequate or not followed</td>
<td>Road unable to open at due date, or work delayed or damaged through onset of wet season</td>
</tr>
<tr>
<td>Quality</td>
<td>Quality management plan is inadequate or not followed</td>
<td>Quality non-conformance. Re-works may be required.</td>
</tr>
<tr>
<td>Elements of engineering risk management</td>
<td>Element attributes</td>
<td>Measurement (consequence)</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Time</td>
<td>Work not completed on time</td>
<td>Unable to open road at due date. Work delayed or damaged through onset of wet season.</td>
</tr>
<tr>
<td>Budget</td>
<td>Budget for works exceeded</td>
<td>Community or political backlash. Other work unable to be funded.</td>
</tr>
<tr>
<td>Safety</td>
<td>OHS requirements not met. Poor traffic management.</td>
<td>Incident leading to injury, loss of life, property damage, legal action, costs. Community or business costs from traffic disruption.</td>
</tr>
<tr>
<td>Environment</td>
<td>Environmental management plan is inadequate or not followed</td>
<td>Damage to environment. Community or political backlash. Legal proceedings and extra costs.</td>
</tr>
<tr>
<td>Cultural heritage</td>
<td>Cultural Heritage management plan is inadequate or not followed</td>
<td>Cultural issues not respected Damage to cultural heritage. Community or political backlash. Legal proceedings and extra costs.</td>
</tr>
</tbody>
</table>

**Ability to contribute to the broader objectives of the purchaser (community and social factors)**

This criterion reflects the Department’s Strategic Plan in its aim of meeting government priorities, and in particular, the Department’s mission of improving the liveability of Queensland communities and supporting economic and regional development.

Government Priorities change as governments change and therefore all projects need to be reviewed with the current government’s priorities in mind.

**STEP 3: Establish market expectation of price**

There is no direct basis for comparing price in sole invitee situations. In some areas, a certain type of work is always done by sole invitation. However, there must be a demonstrable attempt to determine a market expectation of competitive pricing levels, for the Department to be able to demonstrate that it has obtained “value for money” from each sole invitee contract.

Table 6 lists some of the options for determining the expected price for the sole invitee

**Table 5 – Determining expected price for sole invitee**

<table>
<thead>
<tr>
<th>Method</th>
<th>Objective</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional estimate</td>
<td>To compare the price for a negotiated contract with its estimated value, using first principles</td>
<td>Use first principles to develop estimate of the contract price.</td>
</tr>
<tr>
<td>Comparison with historical</td>
<td>To compare the price for a negotiated contract with its estimated value, based on recent local records</td>
<td>Develop an estimate of the contract price under tender conditions, using unit rates for similar projects let recently in open competition. Compare this estimated price with the negotiated price.</td>
</tr>
<tr>
<td>expectations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Method** | **Objective** | **Process** |
--- | --- | --- |
**Benchmarking** | To assess whether there is a significant difference between unit rates offered for open tender or sole invitee | Compare units rates for selected items (or item groups) for a range of similar projects, where some works are let in open competition and some are let under sole invitee arrangements. |
**Open book review** | To examine the unit rates of a sole invitee contract for reasonableness | Review a supplier's unit rates for an item or group of items by checking calculations used to develop those unit rates. |
**Market testing – Guidelines to be developed for frequency of testing and selecting contracts** | To periodically test the market by letting some contracts in open competition that might otherwise be let under a sole invitee arrangement | Select contracts for letting by open tender. Use unit rates and/or tender prices for comparison with sole invitee contract rates/prices. |
**Statistical Analysis** | To determine whether there is a significant price difference between works delivered by open tender or sole invitee | Pricing of road projects (for example, unit rate per lane-length) against physical factors and project-related factors, where the method of competition (open tender or sole invitee) is one of those factors. |

**STEP 4: Evaluation of benefits against costs**

Value for money is achieved from a sole invitee contract when the offered or negotiated price is equal to better than the anticipated open tender result, adjusted to take account of the non-price benefits of the sole invitee contract.

To evaluate relative benefits against costs, a model devised by Dr. Peter Wilton is used – see Figure 1.

---

1 Dr Peter Wilton is Academic Director of International Business Programs at the University of California, Berkley, where he teaches marketing and international management. He has published widely in leading journals, and provides a range of strategic management services to an international client base which includes government, banking and corporate institutions.
The principle of this model is: "the higher the offered price, the greater must be the benefits, in order to achieve value for money".

A sole invitee offer which provides greater benefits than those expected from the open market process, can be priced higher than market expectations and still deliver value for money.

If a sole invitee offer is higher than the expected open market price, yet is not anticipated to produce at least equivalent value for money, this model can be used as a basis for further negotiations on price.

**Use of the Wilton Model**

A worked example of the Wilton Model is shown below. The example is based in part on the simple example of a non-price criteria evaluation shown in Section 5.5.1 of Volume 1 of this manual. For the purposes of demonstrating the Wilton Model, an anticipated open tender price and a sole invitee have been assumed (Table 7). In reality, both non-price and price criteria would have been evaluated using the steps outlined in Section 5.5.1 of Volume 1. The details of the example project are:

**STEP 5: Document the decision**

The following documentation should be retained on file, in respect of each sole invitee contract:

- The working papers (i.e. Pair-Wise comparison) by which the non-price criteria were weighted
- A selection form to demonstrate the comparison between the sole invitee benefits and the equivalent open tender benefits, and
- A Wilton Model graph, indicating the position of the sole invitee contract’s ratio of benefits to costs, compared to the position of the anticipated equivalent open tender result.
Table 6 – Example project details

<table>
<thead>
<tr>
<th>Example project</th>
<th>Sole invitee (RoadTek or LG)</th>
<th>Anticipated open tender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-price criteria</td>
<td>300</td>
<td>240</td>
</tr>
<tr>
<td>Price</td>
<td>$1,000,000</td>
<td>$970,000</td>
</tr>
</tbody>
</table>

The steps to be followed are:

1. Place the open market equivalent benefits (determined by the non-price evaluation) at the halfway point of the horizontal (benefits) axis.

2. Calculate range values or limits for the benefits scale. A range of ±50% from the total score for the equivalent open tender benefits is recommended initially (see note below).
   
   50% of 240 = 120
   240 + 120 = 360
   240 − 120 = 120

   Therefore, benefits range = 120 to 360. Place this range on the X axis.

3. Plot the benefits rating for the sole invitee offer on the horizontal axis.
4. Join the sole invitee benefits rating to the value for money line.
5. Place the anticipated open market competitive price at the halfway point of the vertical (cost) axis.
6. Calculate range values or limits for the price scale. A range of ±20% from the estimated open market price is recommended initially (see note below).

   20% of $970,000 = $194,000
   $970,000 + $194,000 = $1,164,000
   $970,000 - $194,000 = $776,000

   Therefore costs range = $776,000 to $1,164,000. Place this on the Y axis.

7. Measure the maximum price for sole invitee value for money on the vertical axis.

   The maximum price for value for money in this example is $1,067,000.

If the price of the sole invitee offer plots above the value for money price upper limit, this can be used as a basis for further negotiation with the sole invitee offeror.

   In this case the Sole Invitation offer ($1,000,000) plots below the maximum value for money amount of $1,067,000. Unless there were unusual circumstances, this sole invitee amount offers value for money over the anticipated open tender amount.

**NOTE:** Care is needed in setting appropriate scales for the axes of the model.

The aim should be that a sole invitee offer at the maximum end of the price range will need to provide maximum benefits relative to open tender, in order to plot into the shaded ‘value for money’ area.

If the price limits are set too far away from the open tender estimate, the sole invitee offer will be ‘squeezed’ close to the estimate, restricting the bandwidth for the benefits, making comparisons difficult. Conversely, if the price limits are set too close to the estimate, the sole invitation offer will be pushed off the scale.

The recommended initial price range of ±20% is expected to fit the majority of bids for straightforward (low risk) projects. This is a generic starting point which may be varied at the discretion of the DD if needed for specific cases.