Department of Transport and Main Roads

Manual

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

March 2025

Queensland Government

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1 Purpose

The *Transport Infrastructure Project Delivery System* (TIPDS) supports the Department of Transport and Main Roads (the department) to plan value for money outcomes when developing projects for delivery. The aim of the TIPDS is to provide guidance to Infrastructure Project delivery teams for:

- recommending a Delivery Model by undertaking an analysis informed by market conditions, risk and scope requirements
- developing a strategy and plan to drive value for money procurement, transactions, and tendering, and
- determining suitable suppliers to deliver services to the department.

TIPDS consists of 3 volumes. The general content of the 3 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 on 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 for Civil (Road and Bridge) Construction (NPS) and sets out details of the prequalification system for Contractors in Queensland, including Asphalt Contractors.

2 How TIPDS Volume 1 relates to Government policy

2.1 When to use this volume

The TIPDS has an integral role in the department's project management framework.

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. Some aspects of Volume 1, such as client leadership and collaboration, are applicable across all phases of project delivery.

For clarity of process, this release of the TIPDS is written from the *Transport Infrastructure Construction* (TIC) Contract perspective but applies to all other standard form departmental Contracts; the general principles can be applied to these other forms of Contract with appropriate consideration by the Project Team. Where any doubt exists as to the applicability of the principles, the Director (Prequalification and Contracts) can advise.

2.2 Queensland Transport and Roads Investment Program (QTRIP)

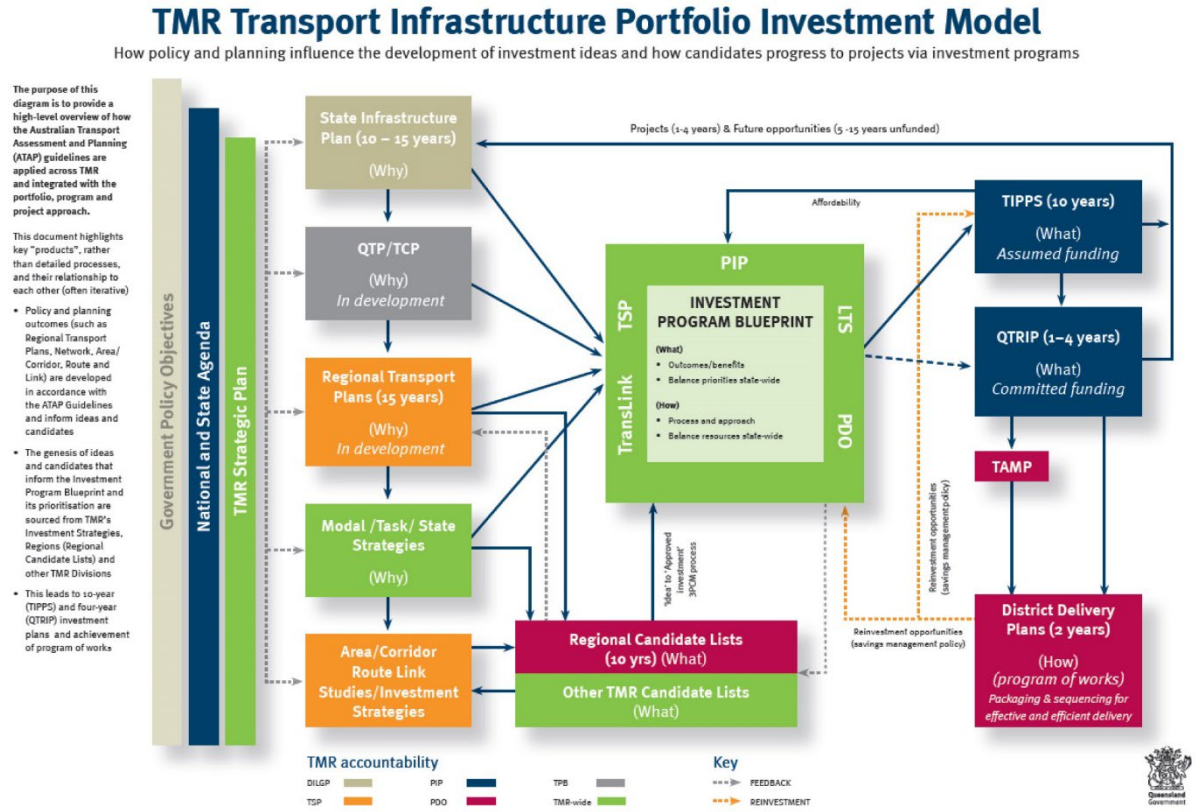
The Queensland Transport and Roads Investment Program (QTRIP) details transport and road infrastructure projects across local, state, and national networks that the Queensland Government plans to deliver over the next 4 years. It is developed annually to meet legislative requirements under the *Transport Infrastructure Act 1994* (Qld). The QTRIP is a rolling 4-year programme of Works, with firm funding commitments for the first 2 years, and indicative funding, for planning purposes in the following 2 years. This provides industry and local government a pipeline of Works for effective business and workforce planning.

The Queensland Government, through the Department of Transport and Main Roads, works collaboratively with Australian, state, and local governments and key industry stakeholders to determine funding priorities. The QTRIP is a key deliverable which fits within the department's Transport Infrastructure Portfolio Investment Model.

The Transport Infrastructure Portfolio Investment Model, Figure 2.2, illustrates the key deliverables (outputs) that arise from the Transport Infrastructure Portfolio Governance Framework processes. The model provides a high-level map outlining the 'bridge' spanning planning, programming, and project delivery, and how the Australian Transport and Assessment Planning (ATAP) guidelines are applied across the department and integrated with the portfolio, program and project approach.

TIPDS relates to the delivery areas which are responsible for delivering a program of Works, and sequencing projects to achieve their efficient and effective delivery.

Figure 2.2 – Transport Infrastructure Portfolio Model



The department strives to reliably deliver its QTRIP projects in a no-surprises environment. This environment has been established through adopting the project management framework, OnQ, which is divided into 5 phases:

- Planning – strategic planning that meets the requirements of the *Transport Planning and Coordination Act 1994* (Qld) including Area, Corridor, Route, Link and Node planning activities.
- Concept – initiation with a service need, scoping and strategic alignment study. Considers options and develops a robust business case for investment.
- Development – considers the procurement strategy, risks, specifications and design requirements and planning for market engagement to deliver the defined project scope and benefits sought.
- Implementation – engages Contractors and consultants and manages their performance to deliver value for money, control cost, time and quality, and
- Finalisation – to commission the new asset into the Transport Network System and measure how it has realised the benefit details in the Business Case.

2.2.1 Departmental OnQ Project Management Framework

Figures 2.2.1(a) and 2.2.1(b) details the phases of the OnQ project management framework and the relationship of TIPDS to QTRIP.

Figure 2.2.1(a) – OnQ project phases

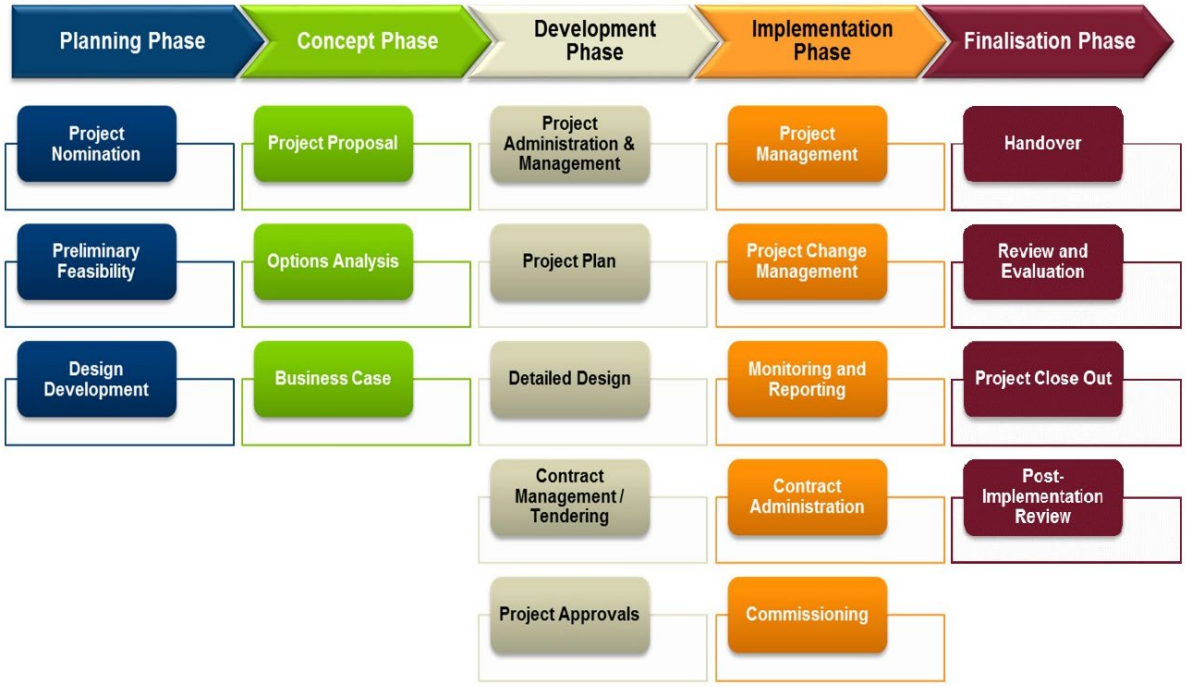


Figure 2.2.1(a) – The OnQ project phases – outline the components of each of the phases of the project management framework. Figure 2.2.1(b) describes how each of the 3 volumes of the TIPDS suite fit into the delivery of QTRIP projects, commencing at the 'Concept' phase.

Figure 2.2.1(b) – Application of TIPDS in the phases of QTRIP project delivery

Project Management Phases for Delivery of QTRIP Projects			
Concept	**Development**	**Implementation**	**Finalisation**
TIPDS Volume 1		**TIPDS Volume 3**	
	TIPDS Volume 2		
Explore project delivery options and recommend how to achieve a robust value for money outcome through a Contract and transaction with partners.	Review and confirm the project delivery strategies. Develop key Plans, Contract and Tender documentation to implement the transaction.	Manage the transaction to select and appoint the Contractor. Prequalification system pre-assesses technical and financial capacity of Contractors, based on NPS. Deals with who is eligible to bid on department tenders.	Contractor performance reports provide feedback for the prequalification system, and delivery methodology success.

2.3 Queensland Procurement Policy (QPP)

Any procurement, including infrastructure procurement, must ensure that it delivers value for money for taxpayers. The Queensland Procurement Policy (QPP) is a framework that maximises the benefits that can be delivered through procurement.

The Queensland Procurement Policy describes 6 principles:

- **Principle 1:** Achieve value for money
- **Principle 2:** Apply a 'responsible public procurement' approach
- **Principle 3:** Behave ethically, and embed integrity, probity and accountability
- **Principle 4:** Be leaders in procurement practice
- **Principle 5:** Collaborate for more effective outcomes, and
- **Principle 6:** Support strong governance and planning.

Elements of the QPP, several related policies and how they impact infrastructure delivery, should be addressed in the Delivery Model Analysis report and Business Case chapter. For some projects, this can be addressed in a summary chapter of the Business Case; all Project Teams should consider and address Achieve Value for Money, Principle 1, as a minimum requirement and overarching principle of the project.

The department applies Queensland Government structures and policies for all commercial engagements. The QPP may be referenced in value for money assessments and policy alignment, however, it is applied in practice to decision making as part of Delivery Model Analysis. The following guides Infrastructure Teams on when to consider the QPP.

2.3.1 Achieving value for money

Value for money does not mean the lowest price. At its simplest, value for money involves an assessment of the total benefits and costs provided by procurement. Value for money includes cost and non-cost factors such as relevant government objectives, economic, environmental, and social outcomes, whole of life costs, maintenance considerations, and price.

It is important to consider value for money in the delivery selection process, because it informs the contracting plan, which can define the level of design development required, separable portions, as well as any local supplier involvement.

The QPP requires the following factors be considered when assessing value for money:

- Relevant government economic, ethical, social and environmental objectives and targets including but not limited to local benefits.
- Contract price, transaction costs and acquisition costs. Also whole of life costing appropriately scaled to the value, risk and complexity of the procurement.
- Fitness-for-purpose (this may include alignment with procurement objective(s), compliance with specifications, and quality).
- 'Supplier' capability, capacity, experience, including delivery and after-sales service and support.
- Risk (this may include operational and reputational risks).

Targets

The following procurement-specific targets must be pursued wherever possible:

- increase government procurement with Aboriginal and/or Torres Strait Islander businesses to 3% of 'addressable spend'
- Source at least 30% of procurement by value from Queensland 'small and medium enterprises.

The Queensland Government has set economy-wide emissions reduction targets of:

- 30 percent emissions reduction below 2005 levels by 2030
- Net zero emissions by 2050. To contribute to the abovementioned emissions reduction targets, the following procurement-specific targets must be pursued:
- The Department of Housing and Public Works (DHPW) will work with priority 'categories' and 'agencies' to identify and estimate tonnes of greenhouse gas emitted
- An emissions baseline will be set for each priority 'category' by 2024, and priority procurement activities identified that can contribute to reducing agreed emission levels
- Following approval of the emissions baseline and commencing from 2025, priority procurement activities will aim to reduce emissions by at least 30% from the baseline by 2030, with a recommended target of 5% reduction from the baseline per year.

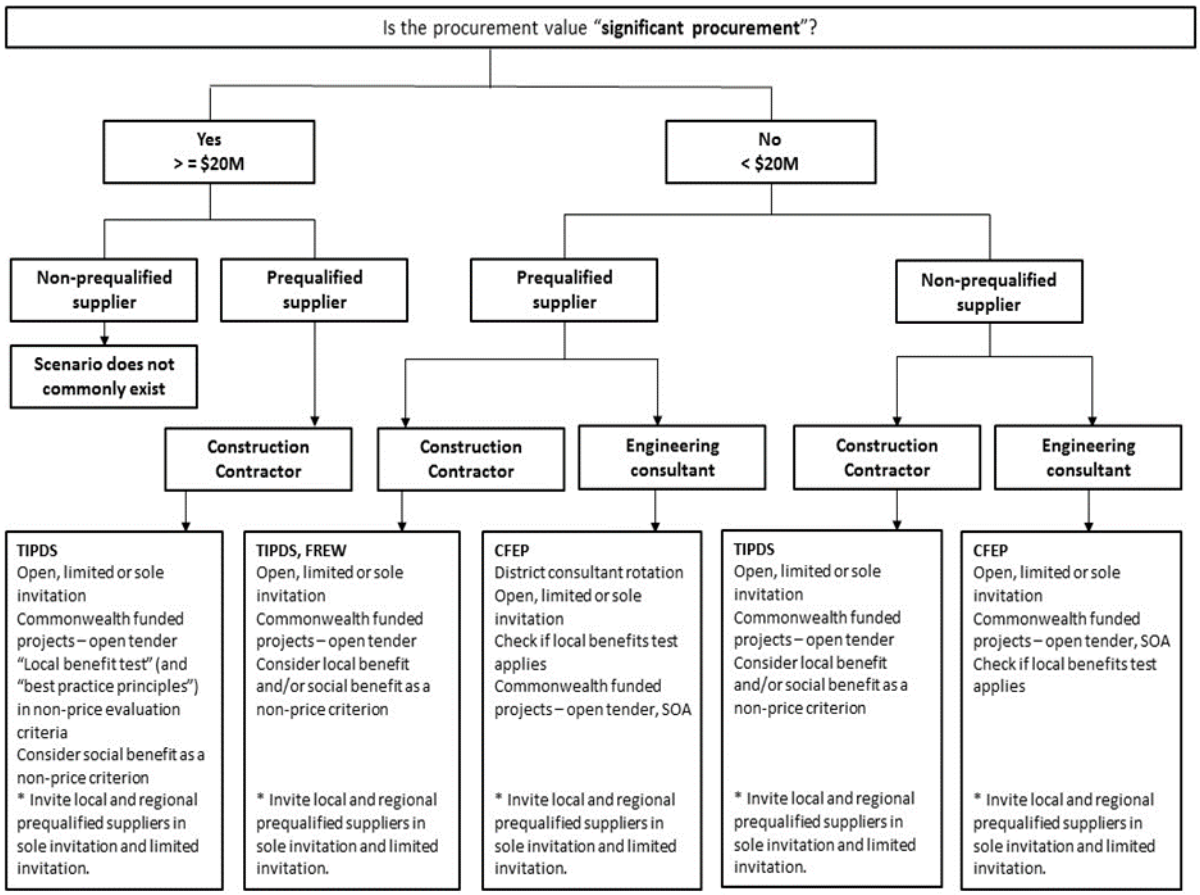
Significant Procurement:

As per the Queensland Procurement Policy, the Significant procurement includes 'goods and/or services' identified by the 'agency' as being high expenditure and/or for which there is a high degree of business risk. For TMR, the significant procurement includes procuring for significant Queensland infrastructure projects worth $20M and above.

Figure 2.3.1 provides a flowchart of how the significant procurement threshold affects the choice of procurement method, and the application of local benefits and best practice principles applicable to those methods.

The flowchart is applicable to construction Contracts, engineering consultants, and Works in a road corridor (excluding principal-supplied materials).

Figure 2.3.1 – Significant procurement and choices of procurement method



Applying the Local Benefits Test

Local benefit is the benefit that a supplier (located outside of the local area) can bring locally and includes benefits such as those derived from using a local workforce or using local businesses in the supply chain.

The local benefits test weighted evaluation criterion; this will be considered in the Procurement Strategy and Procurement Plan and then executed through the Transaction and Tender Evaluation Plan (TEP). For the department's major infrastructure projects based on a Transport Infrastructure Contract – Construct Only (TIC-CO), or Collaborative Project Agreement (CPA), with an estimated Contract value greater than $20M[1] (excluding GST), a weighting of up to 30% can be applied.

Where projects are considered significant infrastructure projects under the QPP, there is a requirement to use local subcontractors and manufacturers where the local capability and capacity exists.

Notwithstanding this requirement, departmental Contracts and Specifications require:

- construction Contractors to be prequalified under the NPS
- use of the department's approved products and registered suppliers, and
- use of prequalified engineering consultants such as design consultants where stated in the tender and contact documents.

Where a tender process consists of two stages for example, TIC-CO Stage One (100% non-price criteria) followed by Stage Two (100% price criterion), the application of the principle of 'inviting at least one regional and one Queensland supplier, where possible, to submit a tender or quote for procurement' only applies to Stage One. This is because no new tenderers are invited for Stage Two, as the shortlisting process in Stage One selects the tenderers to proceed to Stage Two.

Best Practice Principles

Best Practice Principles are an additional value for money assessment and apply to the department's major projects of $100M and above and declared projects.

Best practice principles include:

- workplace health and safety systems and standards, and
- a commitment to apprentices and trainees.

For infrastructure procurements, the evaluation criteria weightings including the Local Benefits Test and Best Practice Principles must be published where used. Sub-criteria weightings are typically published in the Tender Evaluation Plan, and not disclosed to tenderers.

Please note that the standard non price criteria weightages—20% for the BPP and 20% for the Local Benefit Test (LBT)—have been approved by the Minister for all BPP-applicable contracts. Any deviation from this weightage requires approval from the RD, ED, GM, and ultimately, the Minister. Best Practice Principles were introduced in May 2018. The QPP 2019 introduced the Ethical Supplier Mandate and Ethical Supplier Threshold[2], which became effective in 2019 in Transport and Main Roads. The QPP was updated again in November 2024 (as QPP 2023) reflecting the suspension of Best Practice Industry Conditions (BPICs), including the temporary removal of the best practice industrial relations principle.

[1] $20M (excluding GST) threshold has been adopted by the department for significant procurements.
[2] Ethical Supplier Mandate for suppliers: available from Business Queensland website: www.busines.qld.gov.au.

Queensland Charter for Local Content (QCLC)

The Queensland Charter for Local Content meets the intent of the QPP. It is administered by the Department of State Development, Manufacturing, Infrastructure and Planning and aims to provide all businesses with full, fair, and reasonable opportunities to tender for Queensland Government procurements. Table 2.3.3 summarises the application of the QCLC to infrastructure procurement. Completion of Tender Schedule S4 – *Queensland Charter for Local Content Compliance Outline* (Statement of Intent) (by tenderer) and *Project Outcome Report* (by Contractor) assists the department in understanding how the Contractor is engaging with suppliers and subcontractors.

Table 2.3.3 – Application of Queensland Charter for Local Content

No.	Description
1	Total Queensland Government contribution[3] of greater than $5.5M (inclusive of GST) in South-East Queensland.
2	Total Queensland Government contribution of greater than $2.75M (inclusive of GST) in regional Queensland (excludes ICT).
3	Any Public Private Partnerships (PPP) for projects and capital asset acquisitions with a Queensland Government capital value contribution of $5M (excluding GST) or greater.
4	Standing Offer Arrangements (SOAs) where expenditure of each engagement is projected to exceed $5M (excluding GST) over the life of the arrangement.
5	Large infrastructure projects where funding of over $20M is provided by the Commonwealth through the Queensland Government.
6	Strategically significant projects regardless of value, for example, infrastructure projects such as a road.

2.4 Indigenous Procurement

2.4.1 Queensland Indigenous Procurement Policy (QIPP)

The objective of the QIPP is to increase the value of the Queensland Government procurement spend awarded to Indigenous businesses to be 3% of addressable spend. Under the QIPP, an Indigenous business is at least 50% owned by Aboriginal peoples and Torres Strait Islander peoples. The QIPP came into effect on 1 September 2017.

2.4.2 Indigenous Employment and Supplier-Use Infrastructure Framework

Projects receiving $7.5M or more in Australian Government contributions under the National Partnership Agreement on Land Transport Infrastructure Projects (the NPA), are also required to apply the separate Indigenous Employment and Supplier-Use Infrastructure Framework.

This aims to increase Indigenous employment and supplier-use in the delivery of land transport infrastructure projects funded or co-funded by the Australian Government effective from 1 July 2019.

2.5 Training Policy

The *Queensland Building and Construction Training Policy* applies to civil construction projects with a Contract sum of $3M or greater (including GST). The policy meets the intent of the QPP. On civil construction projects with a Contract sum of $100M or greater (including GST), it is a core requirement that a minimum of 15% of the total labour hours on eligible projects be undertaken by apprentices and/or trainees and through other workforce training.

[3] This is the total Queensland Government contribution to a project and therefore differs from the Contract sum.

2.6 References

Queensland Procurement Policy: https://www.forgov.qld.gov.au/finance-and-procurement/procurement/procurement-resources/search-for-procurement-policies-resources-tools-and-templates/queensland-procurement-policy-2023

Procurement Guides: https://www.forgov.qld.gov.au/finance-and-procurement/procurement/procurement-resources/procurement-guidance

3 The department as leader

The department is a significant client in the delivery of transport infrastructure and aims to be a 'Customer of Choice'. Recognising that, where the department (the client) leads, the supplier will follow, making 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.

The concept of the department as leader meets the intent of Principal 4 of the QPP – *Leaders in procurement practice,* and how the department works with its suppliers meets the intent of Principal 5 of the QPP – *Working together to achieve outcomes*.

‘Supplier’ refers to the complex network of those who provide the department with goods or services. In the broad sense, this consists of 3 sectors:

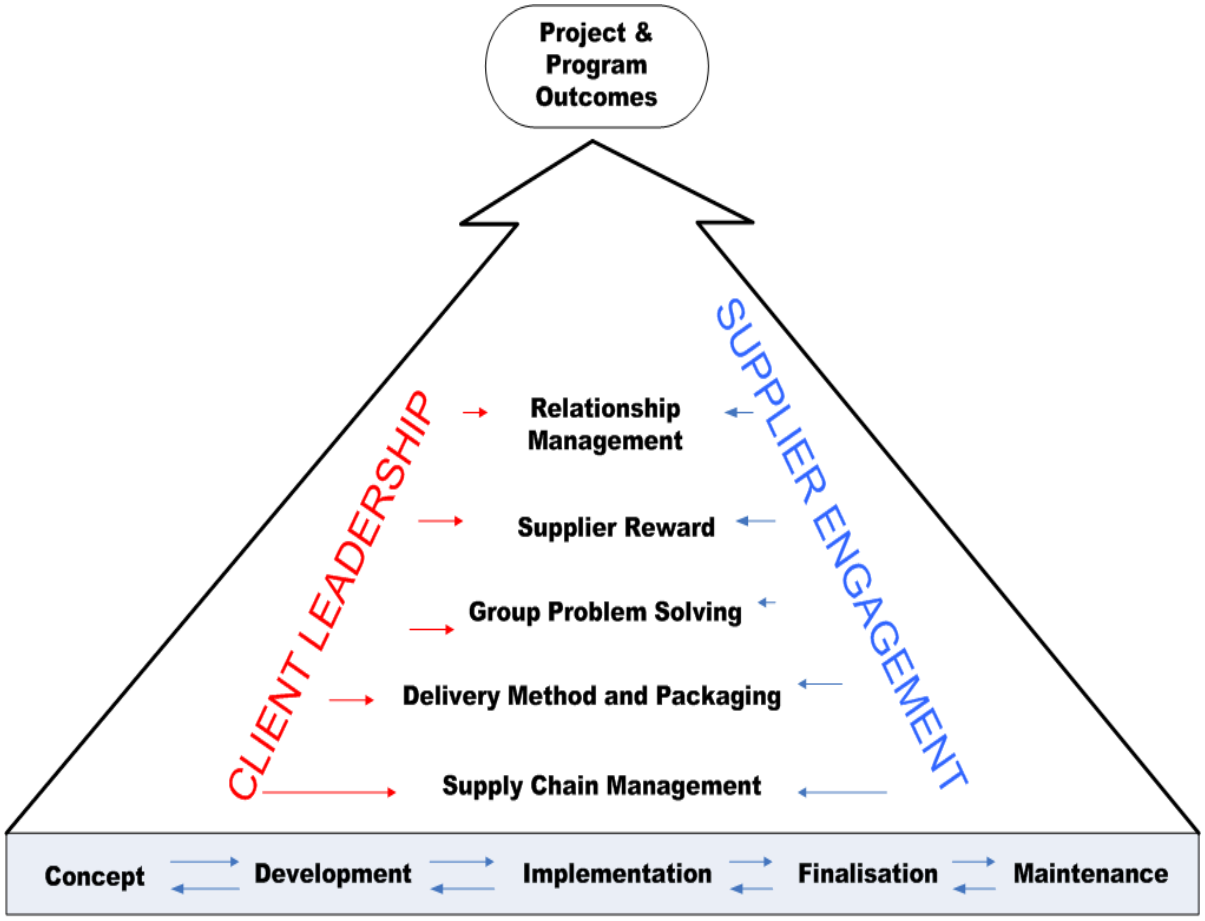
1. Private Industry
2. Local Government, and
3. RoadTek.

Figure 3 depicts how the department and its suppliers' work relate. The basic principles underpinning the relationships between the department and those suppliers are:

- 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
- the price agreed should enable the organisation involved to do the work required and make a reasonable profit, plus allow for development of the industry as a whole
- the time allocated to perform the work allows the quality required to be achieved, while undertaking business as usual
- above-expected achievements are appropriately rewarded, and
- 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.

Figure 3 – The department and suppliers working together



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's 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. Tools for achieving this are through various **Group Problem Solving** processes. 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 to 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 developing the project and not in isolation
- providing appropriate delivery mechanisms and packaging of projects which encourage best outcomes
- providing appropriate risk sharing and appropriate reward
- using and encouraging group problem solving techniques, and
- providing a collaborative environment through effective relationship management between all parties to the project.

3.2 Partnering, collaboration and relationship management

'**Partnering'**, also referred to as ‘collaboration’ in some Contracts, 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 more suited to some delivery methods than to others.

Partnering is a process generally applied outside the Contract to align goals and objectives and to facilitate professional conduct, good communication, teamwork and joint problem solving. Partnering can be used in conjunction with most forms of Contract.

The department's *Infrastructure Industry Engagement Charter* ‘sits behind’ the Contract generally without being legally binding (refer Appendix A for more detail of the Partnering process, benefits and the *Infrastructure Industry Engagement Charter).*

Although the partnering process generally sits outside the Contract, the department has formalised its commitment to creating a more relationship-centric approach to infrastructure project delivery, by incorporating its expectations around collaboration into its Contract documents.

The General Conditions of Contract (GCoC) of the TIC suite of Contracts (TIC-CO, TIC-SI, TIC-DC), contains specific clauses which make the commitment to relationship and collaboration a condition of the Contract (refer Figure 3.2).

The Vision Statement for RMPC delivery, contained in the RMPC Manual, also outlines the department’s vision for working actively and collaboratively with its suppliers.

The RMPC Manual also states that the Contractor must work 'collaboratively with the Principal to deliver the Work under the Contract in a way tailored to best meet the Principal’s evolving needs'.

The following excerpt from the TIC-CO General Conditions of Contract (GCoC), Figure 3.2, indicates how relationships and collaboration are to be included in the delivery of the project.

Figure 3.2 – Commitment to relationship and collaboration – C7830.TIC ? TIC-CO – GCoC Clause 3.2

> ***3.2 Commitment to relationship and collaboration***
>
> **3.2.1 Relationship and Collaboration Principles**
>
> a) The parties acknowledge that a good working relationship between the Principal, the Administrator and the Contractor is a significant factor that contributes towards the successful completion of a project. The Contractor, the Principal and the Administrator jointly commit to establishing and maintain a project team built on relationships and they agree to observe the following principles (Relationship and Collaboration Principles):
>
> i act as stated in this Contract and in the spirit of mutual trust, openness, respect, and cooperation
>
> ii at all times deal with each other fairly, honestly and reasonably
>
> iii communicate and expeditiously reconcile any matter that may affect the proper execution and timely completion of the Work Under the Contract, and
>
> iv be dedicated to achieving 'best for 'project' outcomes.
>
> b) The parties agree and acknowledge that the Relationship and Collaboration Principles do not apply where the Contract expressly provides that the Principal or the Administrator may act in its absolute or sole discretion.

In addition to the Relationship and Collaboration Principles, the TIC-CO and TIC-DC also include clauses pertaining to a Relationship and Collaboration Workshop (to be held within 2 months of the Date of Acceptance of Tender), a relationship management and collaboration protocol which is to be agreed, documented and signed by all participants of the Relationship and Collaboration Workshop (Refer Appendix C), and provisions for monitoring the project delivery team's performance against the Relationship and Collaboration Principles and relationship management and collaboration protocol.

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

- for projects with an expected value greater than $100M:
  - a Value Management Workshop as per Appendix D (Group problem solving), must be carried out. The Contract Selection Methodology (Section 8.4) may be used as a guide, but consideration must be given to the National PPP Policy Framework, and Value for Money (VFM) Framework.
  - Figure 9.1 illustrates the framework in which value for money in roadworks delivery is assessed).
- for projects with an expected value greater than $20M:
  - extended partnering and non-price criteria (related to management of relationships) must be included in the selection criteria (refer Appendix B), and
- for projects with an expected value greater than $5M:
  - 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 a Value Management Workshop. Individual project characteristics and a risk assessment will determine the need for that. For more information, please contact the Director (Prequalification and Contracts) of Infrastructure Delivery Services.

More detailed information on partnering and collaboration is contained in Appendix A.

4 Fundamental requirements

4.1 Developing and reviewing the delivery strategy

The OnQ framework, in its concept phase deliverables, requires a Business Case which includes a delivery strategy for the project.

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 Contract type must be confirmed prior to formation of tender documents. Section 5 of this Volume outlines the steps undertaken in developing a delivery strategy.

4.2 Key governance and policy frameworks

4.2.1 Project Assessment Framework (PAF)

The Project Assessment Framework (PAF)[4] has been developed to ensure that project management is undertaken effectively across the Queensland public sector and that government achieves value for money from its investment in project activity. The PAF provides tools and techniques to assess projects throughout the project lifecycle and is not limited to infrastructure projects or PPP projects.

4.2.2 Public-Private Partnerships

The Council of Australian Governments (COAG) endorsed the National PPP Policy and Guidelines in November 2008. The National PPP Policy and Guidelines apply to all Australian, state and territory government agencies. In line with the National PPP Policy Framework,[5] the Australian, state and territory governments will consider a PPP for any project with a capital cost in excess of $50M.

4.2.3 Probity guidelines

Engagement of a probity advisor or probity advisor is on a risk basis. For most low-risk projects, procurement staff and evaluation teams can manage probity issues. Where infrastructure procurement is complex, high value, sensitive, or tenderer grievances are more likely, it may be beneficial to engage a probity advisor and/or a probity auditor. Two templates have been developed (available upon request from the Director (Infrastructure Procurement):

- Probity Plan and Probity Checklist, and
- Probity Briefing.

The QPP no longer mandates engaging a probity advisor for infrastructure projects over $100M. A *Declaration of Conflict or Confidentiality for Public Service Employees* is required when an employee is making a declaration about a conflict or a confidentiality matter. The *Queensland Public Service Code of Conduct*[6] applies. If there is nothing to declare, then no declarations are required.

[4] Home - Queensland Treasury.
[5] Infrastructure Australia, http://infrastructureaustralia.gov.au/policy-publications/public-private-partnerships/index.aspx.
[6] Public Sector Commission, Home | Public Sector Commission | Queensland Government.

4.2.4 Building Information Modelling (BIM)

The State Infrastructure Plan released in 2016, outlined the government's direction to enable the implementation of Building Information Modelling (BIM) into all major state infrastructure projects by 2023. All major government infrastructure projects with an estimated capital cost of $50M or more, which commenced a detailed Business Case from 1 July 2019, are required to use BIM in accordance with the principles.[7] The Council of Australian Governments Infrastructure Working Group, is also developing a national approach to using BIM in delivering infrastructure projects.

Building Information Modelling is a process focused on information management, where digital data-sets comprising graphical (3D models) and non-graphical information (documents) come together in a shared digital space. The key principle is that BIM is not any single act nor process of creating a 3D model in isolation from others, or using computer-based design. It requires being aware of the information needs of others as you undertake your part of the process. A BIM model can contain information / data on design, construction, logistics, operation, maintenance, budgets, schedules and much more. The information contained within BIM enables a richer analysis than traditional processes. Information created in one phase can be passed to the next for further development and reuse.

Generally, the Project Manager, prior to engaging the consulting team, develops the Project BIM Brief, providing an outline of the project, objectives, and benefits that the department wants to achieve from BIM. The Project Manager engages a BIM Manager to lead the production of the Project BIM Management Plan, and this plan and the Project BIM Brief assists the Project Manager to retain overall control of the project program, deliverables, and communication.

The BIM can be implemented in all phases of project delivery, with information transferring through successive stages. For instance, design documentation in 3D delivers benefits of improved coordination through coordinated 3D modelling; construction Contractors can maintain the BIM model throughout the construction phase and produce an 'As-Built' model at handover, which can then be used for long-term asset management. The progression from design into construction and then finalisation, provides better data for Asset Management which is managed on a network level via a suite of internal asset management systems.

The *Building Information Modelling* (BIM) for Transport and Main Roads[8] guideline provides an overview of the department's plan for the implementation of BIM processes and methodology in delivering road infrastructure projects.

5 Developing a Delivery Strategy

In general, there are 5 steps involved in developing a recommendation for the project Delivery Model:

1. updating the Project's Profile (Section 6) to understand the current scope, risk and market conditions
2. selecting the Delivery Model (Section 7) that forms the recommended contracting plan and procurement approach
3. initial setting of a Prequalification Level (Section 8)
4. selecting the Contract type (Section 9), and
5. selecting any discreet supplier requirements (Section 10).

[7] Building Information Modelling (BIM) | State Development, Infrastructure and Planning.
[8] Department of Transport and Main Roads, https://www.tmr.qld.gov.au/business-industry/technical-standards-publications/building-information-modelling.

Although each step is distinct, they are interactive and there will be some iteration before a development of the Delivery Model recommendation is derived for any one project or program of projects. Essentially, the 5 steps have been distilled from 3 basic concepts:

- which is the best Delivery Model?
- which standard Contract form[9] should be used to achieve the desired strategy?
- how is the preferred supplier selected?

The following sections (Section 6-9) describe each of the 5 steps that make up the development project delivery strategy.

6 Identifying the project objectives

It is important to have a clear grasp of the current development and scope definition of the project before developing a delivery strategy. The project profile needs to look at the complexity of the design 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 so 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. 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 as well as the key risks of the project. The following offers a guide to the general headings under which project objectives may fall:

- funding requirements
- obligations
- constraints
- stakeholder satisfaction
- design for future capacity requirements
- reduction in accident risk
- temporary Works carried out in a safe manner
- traffic operations flow during construction
- construction completed in set time
- community employment
- increased tendering opportunities for local suppliers
- Indigenous participation
- current markets conditions

[9] Department of Transport and Main Roads, https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Infrastructure-Contract.

- low cost, straightforward maintenance
- sustainable design, construction, and disposal
- engagement and consultation with affected communities
- enhancing community safety, and
- apprentice training or professional skills development.

7 Selecting the Delivery Model

7.1 Delivery Model key considerations

Selecting a Delivery Model option involves an element of risk transfer and application of project-specific requirements. The risks involved in the construction of the project (and in some models, the design and maintenance risk also) either remain with the Principal or are transferred to the Constructor. A 'Risk Embrace' approach (Section 7.4) can result in better outcomes, and advice should be sought from the Director (Prequalification and Contracts) if you are considering this approach.

Conceptually, there are 4 Delivery Models which are widely used by the department:

1. Design – then Construct (also known as design bid build) – Completion of the design and construction documentation prior to market engagement and award of a 'Traditional' or 'Construct Only' contract (for example, Transport Infrastructure Contract – Construct Only (TIC-CO), or Minor Infrastructure Contract – Construct Only (MIC-CO)
2. Design and then document and construct – engages the Contractor to develop construction documentation based on a design
3. Design and Construct, and
4. Design, Construct and maintain.

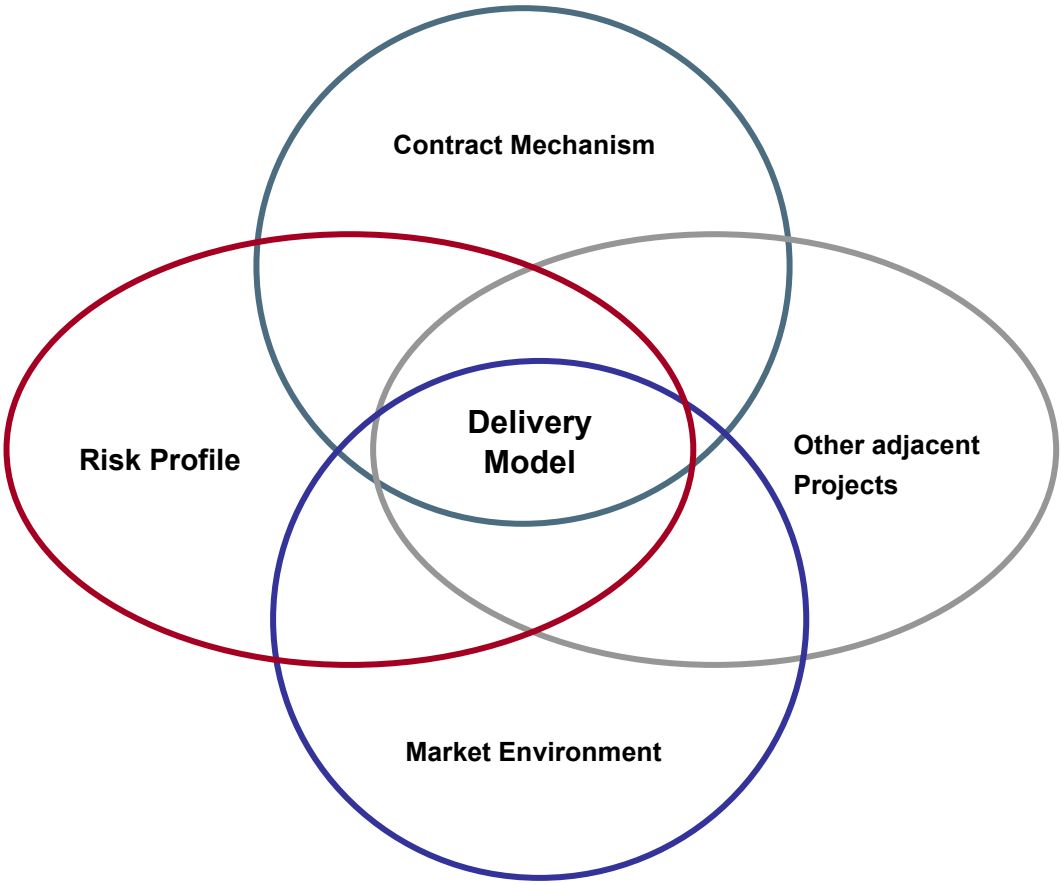
The department also has standard Contracts for emergency Works and for road maintenance. These are referred to as the *First Response Emergency Works Contract* (FREW), the *Road Maintenance Performance Contract* (RMPC) and the *Road Asset Maintenance Contract* (RAMC) respectively.

Note, the Goods and Services Contract **must not be used** to deliver infrastructure construction Works, including marine-related Works.

Figure 7.1 illustrates the 4 overlapping key considerations in deciding which of the 4 Delivery Models is most appropriate:

- Risk profile (Section 7.2)
- Packaging (Section 7.3)
- Market environment (Section 7.4), and
- Contract mechanism (Section 7.5).

Figure 7.1 – Delivery Model considerations



7.2 Risk profile

All QTRIP-based programs and projects undertaken by the department are undertaken in accordance with the Transport and Main Roads Risk Management Framework. The QTRIP programs and projects conform to both the Transport and Main Roads Risk Log (Risk Register) and the various guidelines found on the departmental intranet.

Fundamentally, the process of developing infrastructure delivery strategies is about achieving value for money. This 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 **project characteristics** are documented, and a qualitative risk analysis made, resulting in a **Risk Context Profile (RCP)**. RCPs complement the Project Risk Register and assist project managers to identify and focus on a project's key risks and to best prioritise the use of project resources, by attaining a better understanding of a project's risk context. Table 7.2 shows the project classifications and typical project value thresholds to which RCPs apply.

Table 7.2 – Application of RCPs according to project classification

Classification	Typical Threshold or Characteristic	Project Management Framework	RCP
Major Project	> $100M	PAF	Apply RCP
Type 1	$50M-$100M	OnQ (PAF if high risk)	Apply RCP
Type 2	Straightforward, medium risk	OnQ	Apply RCP
Type 3	Simple, low risk	OnQ	RCP not required

It is recommended that an RCP is undertaken at the early stages of a project's scoping and is updated progressively through the lifecycle. Currently RCPs are applied at the following subphases on the OnQ Methodology:

- Scoping and Strategic Assessments
- Option Analysis
- Business Case
- Design Development
- Detailed Design
- Contract Management Tendering, and
- Project Management, and Contract Administration.

The RCP can be completed at any time during a project and should be updated concurrently with the Project Risk Register. Engineering Policy EP153 *Risk Context Profiles*[10] outlines the steps required to develop an RCP, and further information and assistance can be obtained by contacting the Director (Delivery Risk). To assist with this the process of developing an RCP, an RCP Tool is available by request from PDO_RISK@tmr.qld.gov.au. A brief outline of the process follows.

7.2.1 Overview of completing an RCP

In essence, each project RCP consists of ten project risk categories:

1. Geotechnical
2. Environmental, Cultural Heritage and Native Title
3. Weather
4. Stakeholders
5. Procurement
6. Project Management
7. Preconstruction
8. Contract Administration
9. Construction, and
10. Finalisation.

[10] Department of Transport and Main Roads, https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Engineering-policies.

In tailoring the Risk Context Profile to the project, it is necessary to identify project characteristics and project risks, which fit within the sets of relevant nominated risk areas. This requires:

- Identifying the project characteristics:

  These are generally available at the time the project is published in the QTRIP and include:

  - scope of work
  - construction including temporary Works, construction staging, traffic staging, equipment
  - estimated cost
  - road classification / location
  - Site conditions (environment, cultural heritage, geotechnical, geology, topography, Public Utility Plan (PUP)
  - procurement of resources (labour, plant, materials)
  - planning layout including land requirements / resumptions
  - timing considerations (wet season, adjacent projects, committed milestones), and
  - project stakeholders.
- Identifying the project risks, based on the project characteristics and knowledge of similar completed projects, that the project will not be delivered and completed:
  - within budget
  - on time
  - satisfying all regulatory bodies and stakeholders, and
  - in accordance with standards, drawings, and specifications.

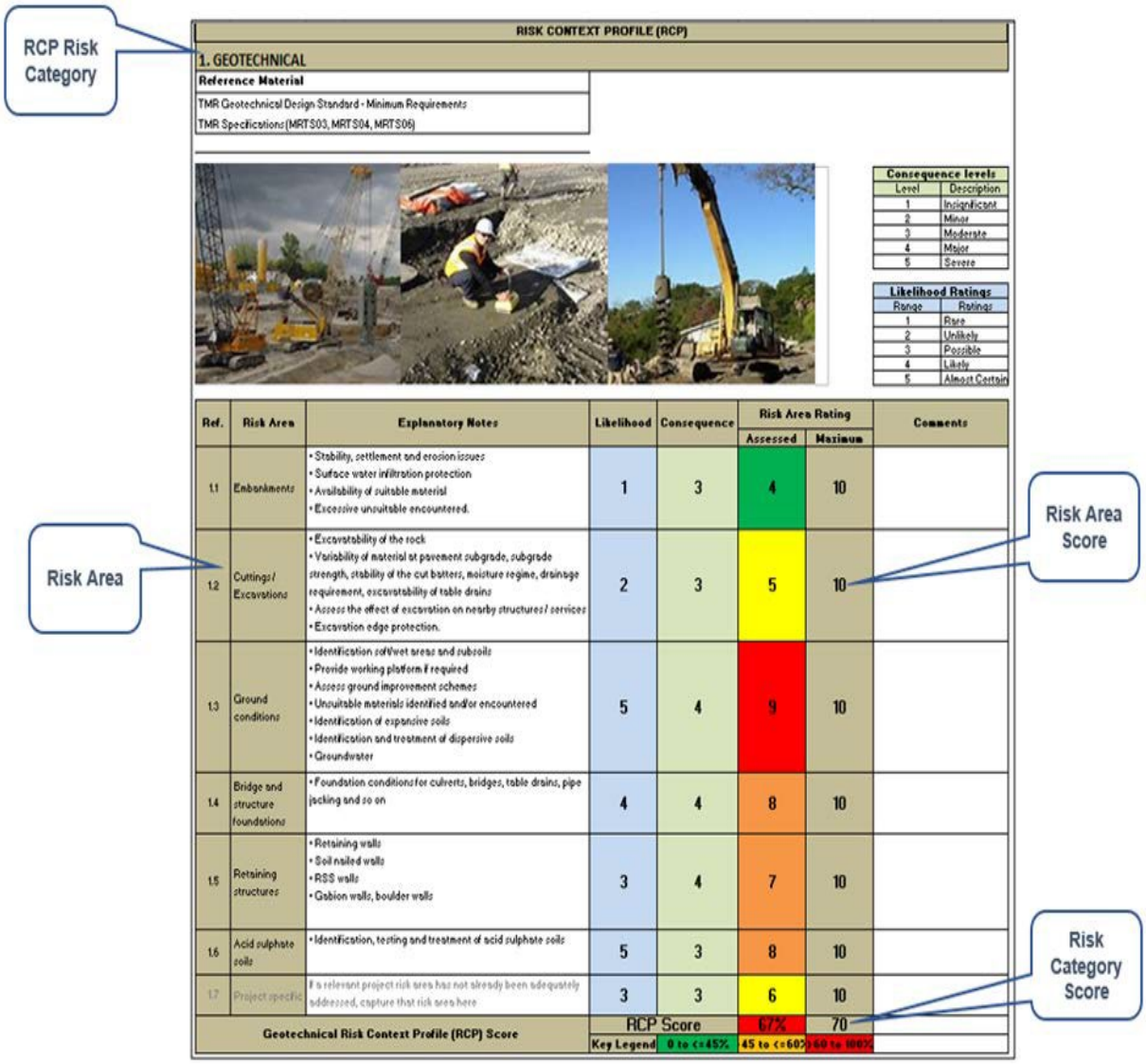
A typical list of risks for roadworks is shown in Table 7.2.1.

Table 7.2.1 – Typical risks in a roadworks project

Areas of risk	Risk description
Technical	
Site conditions including geotechnical conditions	Uncertainty leading to delays, variations, flood damage.
Materials	Unknown quantities or quality of materials affecting quality, delays and variations.
Road users	Lack of local knowledge, possible damage to adjacent buildings.
Traffic	Increased safety risk when working adjacent to live traffic.
Workers	Traffic disruption and delays, crashes causing disruptions. Poor traffic management affects the Department of Transport and Main Roads' reputation. Safety during construction activities.
Adjoining land owners	Noise, vibration, dust nuisance causes additional cost.
Timing / sequencing	Strict requirements may affect quality, delays and variations.
Innovative / Complex Designs	Lack of experience on new and complex methods may have an effect on quality, delays and variations.
Public Utilities (PUP)	Unknown cost of relocating PUP or installing new PUP.

Areas of risk	Risk description
Financial	
Cash flow	Periods of high outgoing cash flow may limit performance of the Constructor.
Other	
Environment	Environmental requirements, including *Environmental Protection and Biodiversity Conservation Act* 1999 (Cth) (EPBC), may cause delays and variations.
Cultural Heritage	Presence of cultural items may delay construction.

Figure 7.2.1 – Example of RCP risk category worksheet

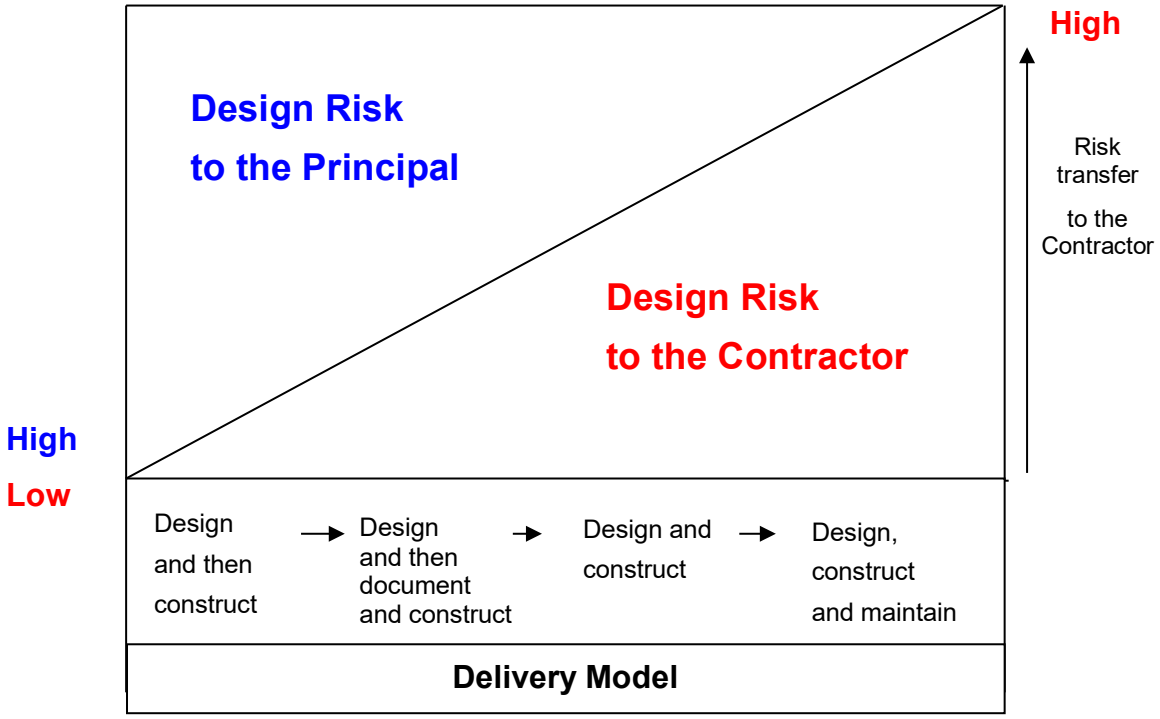


7.2.2 Managing the risk

Having identified project risks, the next step is to decide who (the Principal or the Contractor) is in the best position to manage the risks, particularly the high risks. Where it becomes apparent that project risks are best managed by the Contractor, a Delivery Model should be chosen that allows transfer of risks to the Contractor. Figure 7.2.2 shows a general relationship between design risk transfer and Delivery Model.

It is important that any areas 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, the risk occurs as this will have a large influence on where acceptance of the risk should lie.

Figure 7.2.2 – General relationships between Delivery Model and design risk transfer



7.3 Packaging

Decisions on how to package and deliver a project affect the physical size of the Contract(s) and require consideration of a number of differing issues such as:

- how the delivery method of the project can assist government's broader priorities
- the value of the funding allocation
- horizontal or vertical, or product separation of the work 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 or Project Delivery workshops may be appropriate in determining the packaging and delivery method to be used. Appendix D of this volume further details Group Problem Solving.

7.3.1 Government priorities

Transport infrastructure contributes significantly to the government's broader priorities. In the planning of a project, it is important to recognise 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. There are a number of government policies, principles and frameworks that may impact the delivery of a project, for example:

- Queensland Procurement Policy (QPP)
  - Value for Money – Local Benefits Test

  - Value for Money – Best Practice Principles
- Queensland Indigenous Procurement Policy (QIPP)
- Australian Government Indigenous Employment and Supplier-Use Infrastructure Framework
- Queensland Charter for Local Content (QCLC)
- Queensland Government Building and Construction Training Policy
- Social Procurement Guide, and
- Policies relating to Federal Government funding contributions.

Additional value can be added through more skills and innovation, quality of life and building Queensland's regions. Examples of this are:

a) growing local consultant services to increase competition

b) dividing projects into a large value project and a smaller valued project to encourage participation by a broader cross section of the construction industry

c) sequencing smaller Works to encourage the local or social industry

d) using delivery models such as design and construct on appropriate projects to encourage design and construction innovation, and

e) sequencing and packaging Works to minimise the impact to the community.

Government priorities change as governments change, as can priorities, principles and best practices adopted by National bodies (such as Infrastructure Australia and Austroads) to harmonise infrastructure project delivery across Australia, therefore all projects need to be reviewed with the current government priorities, policies, requirements, and best practices in mind.

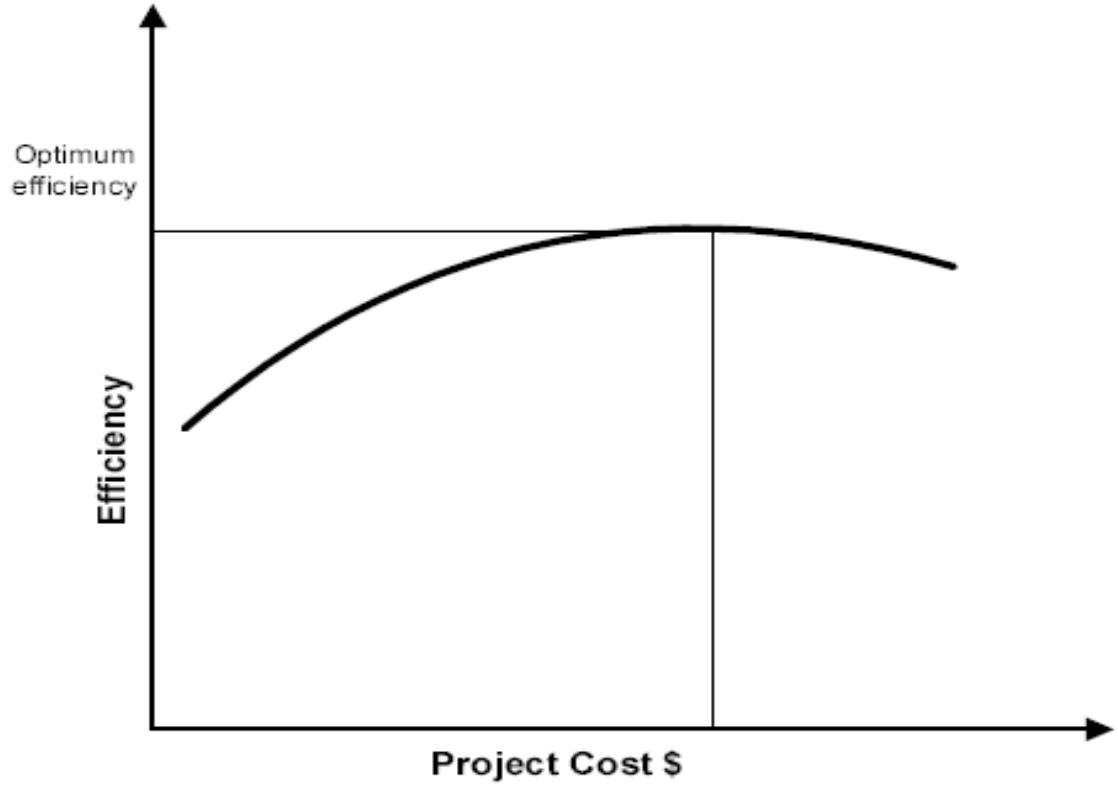
7.3.2 Optimum project size

While economies of scale can be achieved by increasing project size, consideration should also be given to the negative effect this may have on the community and smaller Contractors, particularly in regional areas.

Increased competition may occur if several smaller Contracts are called, rather than releasing the Works as the largest possible Contract. The potential pool of competitors is increased for the smaller packages. Smaller Contractors also tend to have lower overheads.

Figure 7.3.2 indicates that, for a given set of circumstances, there will be an optimum project size.

Figure 7.3.2 – Optimum project size



7.3.3 Bulking up like Works

It has been established that savings can be gained through grouping like projects into one Contract. Examples of successful application of this practice include the district's reseal program, in which a number of reseals are bulked together in the one Contract, and where a number of minor pavement stabilisation Contracts are grouped under the one Contract.

7.3.4 Sequencing and 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 timing the Works. An example of this is the district reseal program. By allowing a 6-to-9-month period for the Contractor to undertake the Works, the Contractor can effectively schedule its resources, and certain economies can be achieved in purchasing and supplying of materials.

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

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

7.3.5 Specialisation

In some projects, it may be appropriate to split up the Works into specialised components to increase competitiveness. For example, the earthworks may be split from the pavement Works if a specialised pavement, such as a concrete pavement, is being considered.

When considering splitting out 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 co-ordinating activities.

7.3.6 Supply of materials

To assist in the timing of the project or the proven quality of materials, it may be appropriate to provide separate Contracts for providing materials, for example, gravel or precast concrete products. This may be of 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 rest 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.

7.3.7 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 $100M, an appropriate Value Management Workshop must be conducted. The workshop can also be used to discuss appropriate Contract type(s). Although certain recommendations or strategies may be raised at these workshops, the final decision still rests with the department.

7.4 Market environment

7.4.1 Market competitiveness

In addition to the risk profile for a project, the choice of Delivery Model needs to account for market conditions. There may be many Contracts being put to the market at a particular time across several 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 and value of Contracts and locations. This may give rise to decisions such as restricting Contractors prequalified at a higher technical level than the advertised project level from obtaining tender documents for the project, thus providing opportunity to build the technical capacity and project experience of the Contractors prequalified at the appropriate level. The need to foster Contractor capability is important in maintaining an efficient and effective ongoing Contract industry.

7.4.2 Risk Embrace Approach

Where all contracting firms likely to bid have a lot of work in front of them, a heated market exists, and the bids submitted tend to reflect that fact, being relatively higher than what would normally be expected. Where a heated market exists, a Risk Embrace approach may result in a more favourable outcome to the department. In Risk Embrace forms of Contract delivery, actual costs incurred by the Contractor are reimbursed, and if performance is good, a bonus to the Contractor could also be applicable. Delivery Models which involve a Risk Embrace approach include Early Contractor Involvement (ECI), and CPA.

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. This negotiation process can lead to significant savings to the department, together with a good result for the Contractor.

In a less heated market environment where resources outnumber 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 volatile factor, decisions regarding the Contract type based on the market environment, should be left until as late as possible in the development phase.

7.5 Contract mechanism as a relationship management indicator

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 7.5. All Contracts, irrespective of the Contract mechanism, will benefit from proactive relationship management and improved communication with the Contractor.

Where the project is complex, or there is a significant level of risk, and there are opportunities for design optioneering, 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 are open and free-flowing, the project has a greater chance of success.

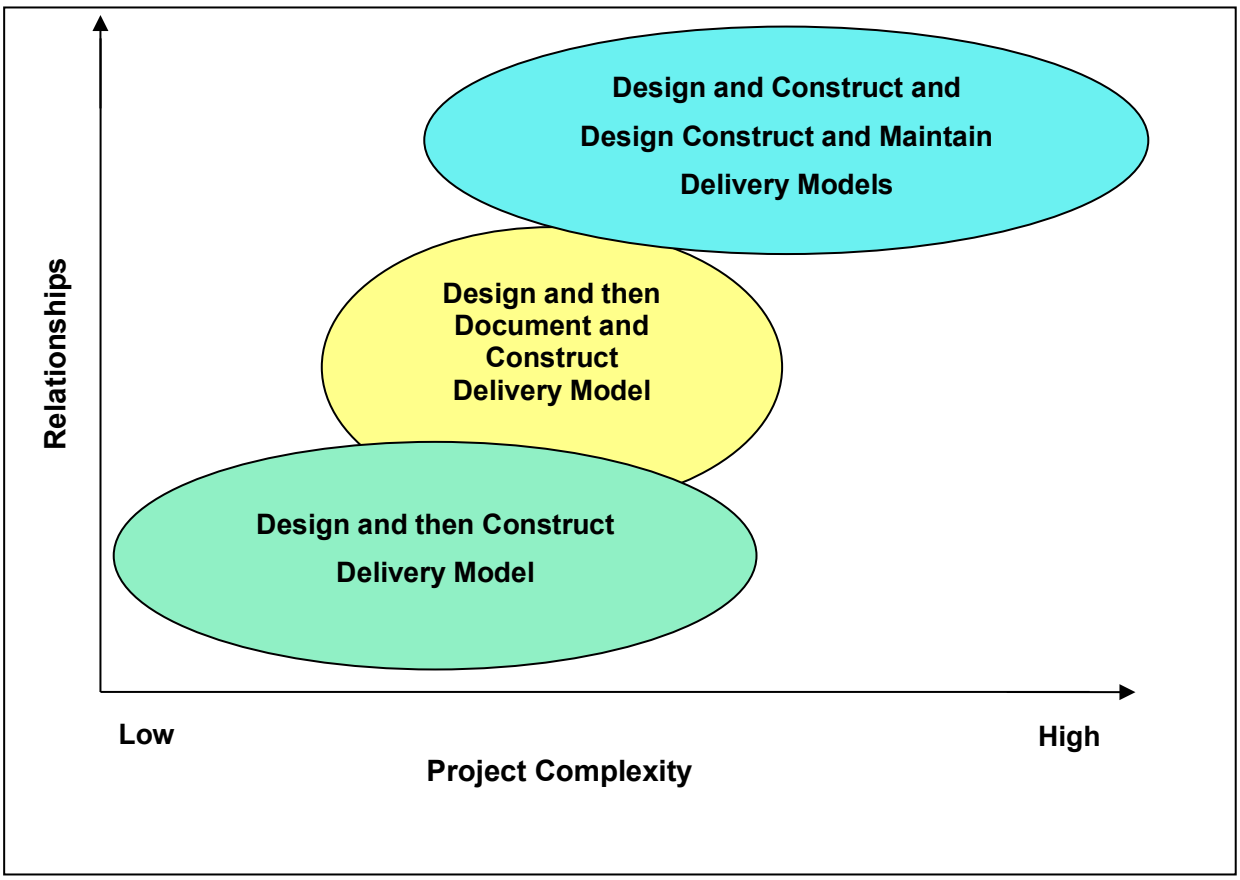
The **Design and Construct Delivery Model** offers the best fit for these complex projects. Delivery processes which benefit from the Design and Construct model, such as ECI, generally involve a high degree of relationship management and additional resources from the client and the contractor’s side.

The ECI has relationship management drafted into the 'conditions of Contract'. The entire premise of the ECI is based on sharing risk between parties and all parties working together as a team for the good of the project. In an ECI, partnering (also referred to as collaboration) is a contractual requirement facilitating a good working relationship between the department, Contract Administrator, Contractor, and designer.

Projects not considered complex, or do not carry a high degree of risk to the department, may not require intense relationship management, and a more distant relationship may be adequate and still result in a successful outcome. However, the department has incorporated 'Commitment to relationship and collaboration' clauses into its most used Contract, the TIC-CO, as a definite movement towards ‘best for project’ outcomes, and a move away from adversarial conduct.

Relationship management should be considered for all Delivery Models on the basis that the better the working relationships between contracting parties, the easier it is to work through issues, whether they be contractual or technical.

Figure 7.5 – General relationship between project complexity and Contract mechanism[11]



8 Prequalification

8.1 National Prequalification System (NPS)

The department has implemented the National Prequalification System for Civil (Road and Bridge) Construction[12] (NPS) for prequalification of organisations seeking to tender for transport infrastructure projects.

Volume 3 of TIPDS describes the prequalification system (which is the NPS with Queensland-specific inclusions), and the requirements of applicants, as well as application, assessment and performance review processes. Prequalification requirements may also be used as a basis for limiting Expression 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 (QPP), 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

d) to minimise tendering costs to Industry and the department by filtering out unsuitable prospective tenderers.

[11] Increased relationships from D and C through DCM, ECI to CPA. Note: It is recognised that some D and C models may be quite adversarial.

[12] http://www.austroads.com.au/road-construction/approved-contractors.

Prequalification with the department is based on an organisation's assessed ability to complete transport infrastructure projects, with consideration to the organisation's:

- financial capacity
- experience, qualifications and capability of key personnel, and
- capability to successfully manage major projects (including management arrangements and management systems).

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

8.2 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
- technical criteria for traffic management design of temporary Works
- consideration of asphalt content and requirement for prequalified asphalt Contractors, and
- requirements for specialist supplier(s) (See TIPDS Volume 3).

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 (Bridge Level 3 / Financial Level 10), 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 (Road Level 1) or B1 (Bridge Level 1). Examples would include construction of:
  - multiple simple bridges, or
  - 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.

8.2.1 Example – Process for determining prequalification levels

This example is based on the floodplain crossing of a western river where a Transport Infrastructure Contract (TIC-CO) type has been selected.

Project characteristics:

- Principal-led design
- requires construction of 4 bridges across a floodplain
- includes supply and delivery of approximately 100 precast concrete piles, deck units
- 3 bridges where floating equipment will be necessary to construct the foundations
- 2 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 piles and deck units.

Project risk profile (Works):

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

Financial criteria:

- estimated Contract value of $20 million.

Discussion:

- accepted as infrastructure Works
- adopt F10 financial level because:
  - the estimated Contract value is $20 million, and
  - the Contract duration of 24 months gives an indicative average monthly expenditure equivalent to a Level F10.
- adopt R2 road level because:
  - at-grade intersections are required, and
  - traffic volumes and the speed environment vary 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
  - F10 level for finance.

8.3 Prequalification for both design and construction

Volume 3 of the TIPDS covers prequalification of construction 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 *Consultants for Engineering Projects* (CFEP) *Manual*.

8.4 Consequences of selecting an inappropriate prequalification level

The undesirable consequences which may result if the appropriate Project Prequalification Level is not selected include:

When project prequalification level is too high:

- this may limit competition
- accusations may arise 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.
- on large Contracts, an undesirably small pool of tenderers may result, and
- this may limit the ability of a Contractor to engage a prequalified road designer to undertake traffic management design of temporary Works.

When project prequalification level is too low:

- Tenderers may be found to not have the financial or technical capacity to carry out the work. The P-Schedule check, conducted during tender evaluation phase, should identify this, but effort may then have to be expended explaining to a tenderer why its tender has been passed over.

8.5 Project with asphalt prequalification

The department includes in TIPDS Volume 3 – NPS Requirements, Queensland-specific prequalification levels and requirements for Asphalt Contractors working in Queensland. Typically, a project containing greater than 55% of asphalt (manufacture and paving, based on value), would be subject to open tender by prequalified asphalt Contractors, with any non-asphalt work being subcontracted to prequalified Contractors at the appropriate prequalification level.
Refer TIPDS Volume 3 for full details.

9 Selecting 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 include factors such as compressed time frame for delivery, construction sequencing issues, 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 9.1 outlines the various Contract types currently in use by the department. Section 9.3 describes a tool that may be used to help select a Contract type for a specific project.

9.1 Contract types

As described in Section 7, there are 4 general Delivery Models that can be selected for delivering 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 in Table 9.1.

Table 9.1 – Contract types in the department

Delivery model	Contract types
Design and then Construct (Section 9.1.1)	Minor Infrastructure Contract Construct Only (MIC-CO) Minor Infrastructure Contract Sole Invitation (MIC-SI) Transport Infrastructure Contract Construct Only (TIC-CO) Transport Infrastructure Contract Sole Invitation (TIC-SI) Small Scale Minor Works (SSMW)
Design and then Document and Construct (Section 9.1.2)	Document and Construct – Design Novation
Design and Construct (Section 9.1.3)	Transport Infrastructure Contract Design and Construct (TIC-DC) Minor Infrastructure Design and Construct (MIC-DC) (to be developed) Collaborative Project Agreement (CPA) (Early Contractor Involvement Contract)

Delivery model	Contract types
Design, Construct and Maintain (Section 9.1.4)	Design, Construct and Maintain Public Private Partnerships (PPP)[13]
Road Maintenance (Section 9.1.5)	Road Maintenance Performance Contract (RMPC) Road Asset Maintenance Contract (RAMC)
Emergency (Section 9.1.6)	First Response Emergency Works (FREW)

These Contract types, which may be used to deliver a range of projects, are described in the following pages. Also described is the CPA and 2 variants of Transport Infrastructure Contract – Construct Only (TIC-CO): Early Tender Involvement (ETI), and Guided Tender Alternative (GTA) processes.

The following Contract types are described in general terms. The information has been obtained from a range of sources within and external to the department. It is possible, with appropriate approval, to develop variations of the listed Contract types to suit individual situations. Additionally, applying techniques such as partnering can help to overcome some problems which may be experienced with certain Contract types.

There are numerous Contract types in use around the state, country and internationally. However, the department does not have systems in place to support Contract types other than those described in the following section, hence the other Contract types are not detailed here.

Where project objectives or a specific project risk profile does not lend itself to the suite of Contract types currently used by the department, there may be scope to research Contract types used outside the department.

9.1.1 Design and then construct (Traditional Contract type)

The Contract types that fit within the Design and then Construct (also known As Construct Only) Delivery Model are often referred to as **Traditional Contracts**. A Traditional Contract is the most common Contract type used by the department. Partnering, as a form of relationship management, is used to enhance this type of Contract.

There are 5 common **Traditional Contracts** used by the department:

1. Minor Infrastructure Contract – Construct Only (MIC-CO)
2. Minor Infrastructure Contract – Sole Invitation (MIC-SI)
3. Transport Infrastructure Contract – Construct Only (TIC-CO)
4. Transport Infrastructure Contract – Sole Invitation (TIC-SI), and
5. *Road Maintenance Performance Contract* (RMPC) (Refer Section 9.1.5).

[13] 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 Build Own Operate Transfer (BOOT), Design Build Finance Operate (DBFO), and so on.

In a Traditional Contract, the Contractor is engaged to undertake the construction phase of a project. The method of payment is usually a schedule of rates, but a lump sum can also be used. The department will have already prepared a design brief, a detailed design and ultimately the project documentation. An Administrator (Contract Administrator) must be provided by the Principal. Reference should be made to the *Contract Administration System Manual*[14] for details of the Contract Administration process.

Interested Contractors are invited to submit competitive tenders for the work. There is generally 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. However, in Contracts with an estimated value above $20M, the inclusion of some non-price based criteria is believed to aid in achieving a fair Contract price. Once selected, the Contractor 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 directly perform. The Contractor is liable for the work of subcontractors and suppliers. The department's General Conditions of Contract requires the Administrator to approve individual subcontractors where the subcontract amount exceeds $50,000 (depending on the financial level of the project, refer also to the Conditions of Tender). For certain types of specialist subcontract work, such as precast concrete products and asphalt manufacture and placing, only departmentally registered suppliers[15] 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 several factors – 2 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 selecting 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 Administrator, 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 delivery method presents a wider range of tendering options than other methods.

[14] Department of Transport and Main Roads, https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Contract-administration-system.
[15] Department of Transport and Main Roads, https://www.tmr.qld.gov.au/business-industry/Business-with-us/Approved-products-and-suppliers.

In general, the Design then Construct Delivery Model suits low to medium risk projects. However, at the limits where other delivery models may be contemplated, the Design then Construct Delivery Model may still be appropriate with the judicious application of two-stage tendering, non-price criteria, and consideration of alternative tenders. The two-stage tendering methodologies often associated with the Design then Construct Delivery Model, are ETI and GTA.

9.1.1.1 Minor Infrastructure Contract (MIC)

A MIC may be used for simple minor works.[16] There are currently 2 forms of MIC: MIC-CO and MIC-SI.

The MIC is applicable for:

- projects with a value of up to $1M, using non-prequalified Contractors
- projects with a value of up to $5M, using prequalified Contractors for low-risk projects (for example, pavement reseal or asphalt resurfacing) the value can be increased up to $10M
- all minor road projects including small capital Works (for example, minor intersection Works including traffic signal installation, installation of noise amelioration devices, installation of guardrail, line marking and landscaping)
- combined capital and maintenance projects, and
- rehabilitation and programmed maintenance work.

Selecting between either a MIC or TIC Contract is guided primarily by estimated expenditure level, with discretion dependent on the level of risk. The MIC is **not** intended for high-risk work. For example, projects involving geotechnical Work, railway crossings, Works near railway lines, or Works with a component of design by the supplier, such as Reinforced Soil Structures, must use other forms of Contract.

Estimated expenditure level guidance on the use of MIC Contracts:

- where the Works are budgeted up to $1M (excluding GST), the use of non-prequalified Contractors using a MIC Contract is acceptable
- where the Works are budgeted to exceed $5M, then a TIC-CO should be used except some low-risk Works such as pavement reseal or asphalt resurfacing as mentioned above, and
- determining when to use MIC 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.

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.

[16] Department of Transport and Main Roads, https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Standard-contract-provisions-roads-vol-3-minor-works-contract.

A **Risk Assessment process** should be undertaken wherever there is doubt. Section 7.2 describes the methodology for building a project's **Risk Context Profile**. The Risk Context Profile and the strategies to mitigate identified risks, should be used to determine the appropriateness of using a MIC. 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**.

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 and timing 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
   - the MIC documents do not necessarily require prequalified Contractors to carry out the work under the Contract, where the Contract budget (excluding GST) is up to $1M. This represents a significant risk to the department where the Contractor may not perform to expectations or, more importantly, may not complete the Contract
   - the MIC Securities are by Retention only, and
   - 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
   - weather and impacts of flooding
   - exposure to variations
   - suitable constructional plant, and
   - working under traffic.

Additional factors to be considered where the value of the construction work, described under the *Work Health and Safety Act* 2011 (Qld) (WHS Act) is less than $250,000 are:

- a Principal Contractor under the WHS Act, (not to be confused with the term Principal Contractor used in a TIC-CO Contract), 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 would be the department's District Director or Regional Director, and
- the Contract Works may not be automatically covered by PAI insurance. Refer to Appendix F.

In these circumstances, consideration may be given to combining this work with other projects for the Work value to be greater than $250,000 (while still achieving value for money).

9.1.1.2 Minor Infrastructure Contract – Sole Invitation (MIC-SI)

The MIC can be offered as a MIC-SI Contract to local governments and RoadTek, using the MIC-CO Contract, with a few exceptions. The Contract consists of Volume 1 (C7820.MIC.CO Invitation for Tenderers, C7821.MIC.CO Conditions of Tendering, C7822.MIC.CO Conditions of Tendering Annexure, various Tender Schedules, C7830.MIC General Conditions of Contract with relevant annexures, and other documents).

Refer Section 9.3 for information for further information on Sole Invitation supplier selection process.

9.1.1.3 Transport Infrastructure Contract – Construct Only (TIC-CO)

The TIC-CO is the Contract form most used by the department. It is suitable for managing a wide range of construction and legal risks. The systems supporting the use of a TIC-CO are much more mature than they are for other forms of Contract.

Under the TIC-CO:

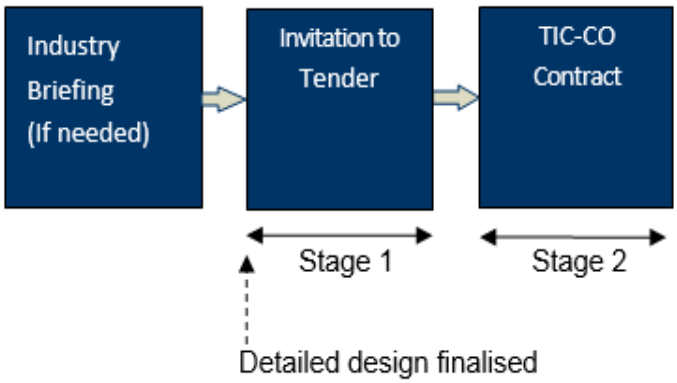
- the Contractor undertakes to complete the construction phase of a project (hence the term ‘Construct Only’)
- the department will have already prepared a detailed design and project documentation
- payment will be via a schedule of rates, lump sum or part lump sum / part schedule of rates
- the Contractor must be prequalified at or above the advertised prequalification level
- the Contractor can employ subcontractors and suppliers for parts of the work, with the Contractor assuming liability for the work of the subcontractor and suppliers, and
- a Contract Administrator administers the Contract and values payment claims:
  - the Administrator must implement the Contract in a fair and impartial manner.
  - a departmental officer or consultant may be used in this role, and
  - a prequalified Administrator, typically engaged under a departmental SOA must be used only where a suitably experienced departmental officer is not available.

Partnering and relationship management have been increasingly used to enhance the TIC-CO. Where there are significant risks, time constraints, large numbers of unknowns, opportunities for innovation, or a high degree of complexity, other Contract types may be more appropriate.

The TIC-CO Contract may be awarded as a result of a single-stage, or a two-stage (with shortlisting) tendering process. The shortlisting option is only permitted for TIC-CO projects over $100M. However, by exception (Executive Director – Program Management and Delivery (ED – PMD) approval required), it may also be used on other medium to high value, medium risk projects to reduce the number of tenderers and tendering effort.

Single-stage tendering, without a shortlisting process (Figure 9.1.1.3(a)), makes TIC-CO generally appropriate to construct only, low to medium value, low to medium risk projects.

Figure 9.1.1.3(a) – TIC-CO without shortlisting process



Stage One is active while the tenderers are preparing their tenders. Following release of the Invitation to Tender, tenderers prepare and submit a tender in accordance with the tender documents. Tenderers must provide a conforming tender. The tenders will then be assessed, including consideration of Alternative Tenders where provided.

In TIC-CO without shortlisting, the evaluation criteria can be either:

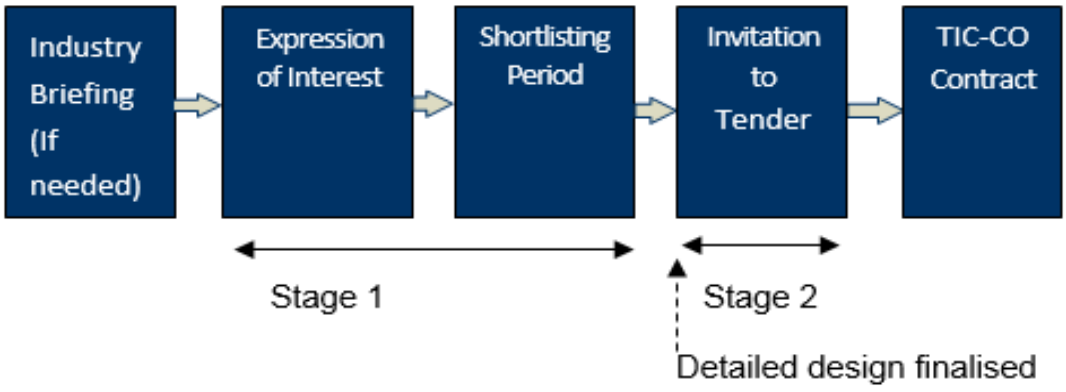
1. 100% price, or
2. 60% price and 40% non-price (where a Local Benefits Test of up to 20% must be included as a non-price criterion).

The intellectual property of an unsuccessful tenderer, proposed in the form of an Alternative Tender, cannot be made available to the successful tenderer.

In **Stage Two** the successful tenderer starts the construction of the Works under a TIC-CO Contract.

TIC-CO can also include a shortlisting process to identify the most appropriate constructor. Refer Figure 9.1.1.3(b) following.

Figure 9.1.1.3(b) – TIC-CO with shortlisting process



TIC-CO with shortlisting is a two-stage tendering process which can include ETI or GTA processes, and which is generally appropriate to construct-only, high value ($100M minimum), medium risk projects. However, by exception (ED – PMD approval required), it may also be used on other medium to high value, medium risk projects to reduce the number of tenderers and tendering effort.

Expressions of Interest are called from suitably qualified Contractors to engage in a TIC-CO with a shortlisting process for delivering the project. Tenderers must address the mandatory criteria and selection criteria provided in the Expression of Interest (EOI) booklet. During this process the number of tenderers is typically shortlisted to 3 or 4 (with any greater numbers by exception only).

In **Stage One**, the Principal issues an Invitation to Tender to the shortlisted tenderers to prepare their Stage Two Tenders. Each tenderer is requested to prepare and submit a Stage Two Tender in accordance with the tender documents. Tenderers must provide a conforming tender. Shortlisting is based on 100% of the scoring of the non-price criteria included in the EOI.

The **Stage Two** Tenders are then assessed, including consideration of Alternative Tenders where provided. No financial contribution is made to the shortlisted tenderers. The intellectual property of the shortlisted tenderers is not transferred to the Principal, and the intellectual property in the form of an Alternative Tender proposed by an unsuccessful tenderer, cannot be made available to the successful tenderer.

The Principal must not accept more than one Stage Two Tender. The successful tenderer is awarded construction of the Works under TIC-CO Contract.

Early Tender Involvement (ETI) process

This process has two stages, with the second stage commencing with the award of a TIC-CO. Shortlisting occurs following an EOI period, and 3 to 4 Contractors are shortlisted based on non-price submissions and possibly interview considerations. In the first stage, the shortlisted Contractors, under an ETI Agreement, will provide input into the department's design through several workshops, then tender for the Works.

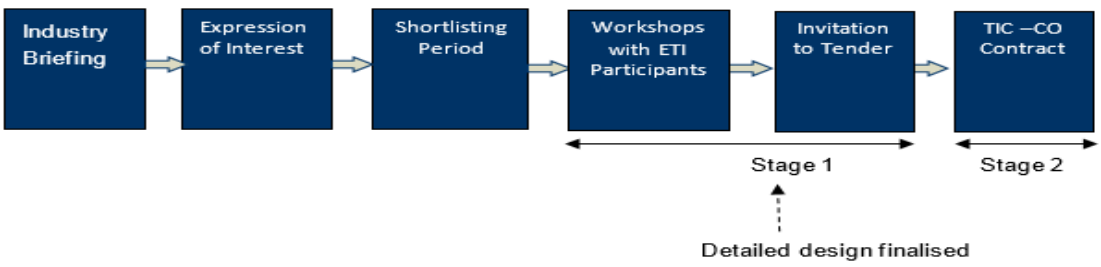
Through the ETI Agreement, the intellectual property of the shortlisted tenderers is transferred to the Principal. The department still retains the design risk. The successful tenderer is chosen, based on price, and the TIC-CO, for construction, is awarded. A financial contribution is made to the unsuccessful shortlisted tenderers only.

The ETI process (Figure 9.1.1.3(c)) is appropriate to construct only, high value (greater than $100M), and medium to high-risk projects, where the Principal seeks to improve constructability with input from the shortlisted tenderers, prior to the design being finalised.

Benefits of an ETI include:

- reduction of overall costs to the department – as costs of bidding are less to the industry (any greater than 4 shortlisted tenderers are by exception only) and therefore less to the department in the long-term
- access to Contractors' constructability knowledge
- the constructor's understanding of the design risks and assumptions
- the Principal being able to convey important aspects of the project through the selected non-price criteria, and
- the Contractor putting forward alternative design proposals more readily.

Figure 9.1.1.3(c) – Early Tenderer Involvement process



Expressions of Interest (EOI) are called, from suitably prequalified Contractors to engage in an ETI process for delivering the project. Prospective tenderers need to address the mandatory criteria and non-price evaluation criteria provided in the EOI booklet.

Shortlisting is based on 100% of the scoring of the non-price criteria included in the EOI booklet. At the completion of this step, it is anticipated that at least 2 preferred tenderers will be invited to execute an ETI Agreement, thereby making them ETI participants. This step concludes with execution of the ETI Agreements.

Stage One commences after the ETI Agreements are executed. The basis for the tender is the Principal-owned detailed design, which is prepared by an appointed design consultant. This stage involves the formation of ETI participant teams to review the partially completed detailed design. The relationship between the Principal and the ETI participant and their design consultants will be interactive.

At this stage the GTA process may also be implemented to encourage tenderers to provide Alternative Tenders. Consistent with a standard TIC, in the ETI process, an Alternative Tender will only be considered if a Conforming Tender is also submitted.

In Stage One, the ETI participants prepare their tenders for Stage Two. Each ETI participant is requested to prepare and submit a Stage Two Tender in accordance with the tender documents.

The Stage Two Tenders are then assessed, usually based on price-only evaluation criteria. Payment to unsuccessful tenderers for services in Stage One is subject to meeting performance criteria for Stage One.

The Principal must then only accept one **Stage Two** Tender to commence Stage Two, under a TIC-CO.

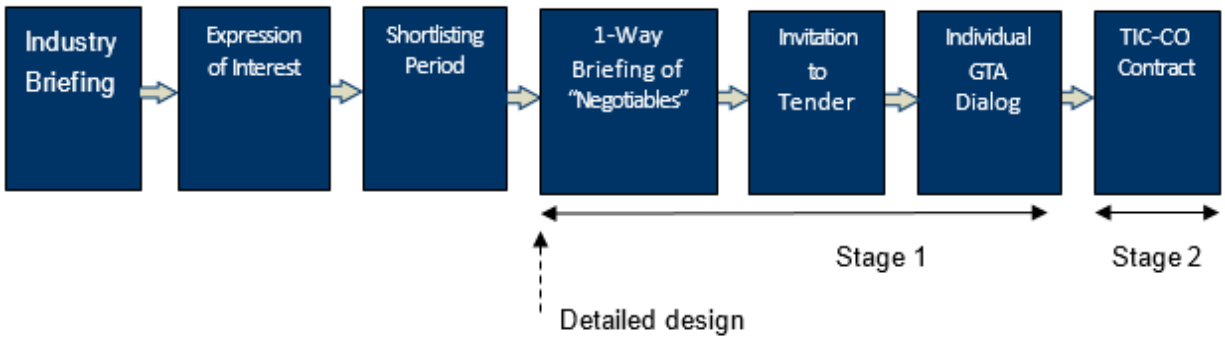
Guided Tender Alternative (GTA) process

Guided Tender Alternative process (Figure 9.1.1.3(d)) is appropriate to construct only, high value (greater than $100M), medium risk projects where tenderers may also (not mandatory) provide Alternative Tenders.

After the Principal's design has been finalised, the goal of the GTA process is for tenderers, prior to submitting their tenders, to individually develop Alternative Tenders through early structured dialogue with the Principal. Such dialogues enable the tenderers to better understand the project and to discuss their proposed Alternative Tender, prior to expending extensive effort and resources. This process ensures that the department clearly and consistently articulates its requirements and risk allocations to industry, thereby reducing potential bid costs for both the department and its tenderers.

During the GTA process, the number of tenderers is typically shortlisted to 3 or 4 (with any greater numbers by exception only) and no financial contribution is made to the shortlisted tenderers. The intellectual property of the shortlisted tenderers is not transferred to the Principal.

Figure 9.1.1.3(d) – Guided Tender Alternative Process



Expressions of Interest are called from suitably prequalified Contractors to engage in a GTA process for delivering the project. Prospective tenderers must address the mandatory criteria and non-price selection criteria provided in the EOI booklet.

Shortlisting is based 100% on the scoring of the non-price criteria included in the EOI booklet.

In **Stage One**, the department and its design consultant brief the shortlisted tenderers (EOI participants) on the detailed design work completed to date. During workshops, the interaction with the Principal, the EOI participant and their design consultants will generally be one way; from the Principal.

As part of the Guided Tender Alternative process, the department will provide tenderers with a list of 'negotiables and non-negotiables'. Generally, the list itself is not negotiable and therefore not subject to amendment by the project team (except where approved by the Principal) or negotiation with tenderers.

Tenders should be submitted on the basis that the terms are accepted without contractual qualification or departure. An Alternative Tender should be submitted if departure or qualification are proposed. The GTA process encourages the tenderer to meet individually with the Principal to discuss proposed Alternative Tenders, and the Principal will then advise the tenderer in writing, prior to it submitting its tender, of the Principal's acceptance, or otherwise, of the Alternative proposal.

Consistent with the TIC-CO Contract, in the GTA process an Alternative Tender will only be considered if a Conforming Tender is also submitted. In Stage One, the tenderers prepare their Stage Two Tenders. Each tenderer is requested to prepare and submit a Stage Two Tender in accordance with the Tender documents. Tenderers still need to provide a conforming tender.

Typically using a 100% price criterion, the Stage Two Tenders are assessed including a consideration of Alternative Tenders where provided. The Principal will only accept one Stage Two Tender. The intellectual property of the unsuccessful tenderer, in the form of a proposed Alternative Tender, cannot be made available to the successful tenderer.

Stage Two is the award of Contract and construction of the Works under a TIC-CO.

9.1.1.4 Transport Infrastructure Contract – Sole Invitation (TIC-SI)

A TIC-SI[17] is similar to the TIC-CO but designed specifically for departmental Contracts with RoadTek and Local Government (LG). The tenderer is the single invitee and the price is negotiated.

The TIC-SI can be used on low to medium risk construction of all forms of transport infrastructure including marine structures and busways. The Contract consists of 2 volumes: Volume 1 (Invitation for Offer, a simplified Conditions of Offer – C7014.IC, Tender Schedules, General Conditions of Contract – C7830.TIC in conjunction with Appendix D – Special Conditions, and other documents), and Volume 2 (drawings).

Under a TIC-SI a Contractor's risk is limited to risks associated with:

- plant and labour use 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

[17] Department of Transport and Main Roads, https://www.tmr.qld.gov.au/business-industry/technical-standards-publications/infrastructure-contract/transport-infrastructure-contract.

- delay costs associated with wet weather, but subject to mitigation by the Contractor, and
- latent conditions (physical conditions onsite or its surroundings).

The value obtained from a TIC-SI can be enhanced through constructor input into the design.

9.1.1.5 Small Scale Minor Works Contract (SSMW)

The Small-Scale Minor Works (SSMW) Contract was originally developed by the Department of Housing and Public Works and later updated as a TMR contract. While it is commonly used for building-related works, it can also apply to low-value, low-risk infrastructure works where payment is made on a lump sum basis, with a total value not exceeding $250,000 (including GST).

Small Scale Minor Works can be used to engage RoadTek, LG, or a private Contractor (by a sole invitation process, or through open tender if the cost-benefit ratio of going to market supports it) where LG or RoadTek is not available to deliver the Works.

9.1.2 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 delivery type, which can also be referred to as Novated Design and Construct, the department has developed the design of the project well beyond the concept stage. The design is then novated to the Contractor. The Document and Construct method allows the department greater control over the end product. There are 2 possibilities when novating a design:

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

The Contractor must take control and be responsible for all design completed prior to entering 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 the design, the 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 and Construct, hence increasing the capacity for the department to comparatively assess bids
- the department can select and engage design consultants to its liking, and
- the process still permits the Contractor to make certain changes to improve constructability.

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 the design risk
- the maturity of the design, at the point of entering 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 buildability and value management studies, are not present to the same degree and redesign may be required for the Contractor to increase buildability or use its preferred construction methodology

- Contractors may be reluctant to accept the risk of assuming responsibility for a prior design, and
- the process may not encourage innovation.

9.1.3 Design and Construct Delivery Model

Overview of Design and Construct (D and C)

Design and Construct is a term used to describe both a process of project delivery and a standard Contract form.

The Design and Construct methodology can be used with the following Contracts:

1. TIC-DC, and
2. ECI with CPA.

Under a Design and Construct Delivery Model, the department enters into a lump sum Contract with a single entity 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 or, alternatively, the primary supplier consists of a Contractor with a designer in a joint venture arrangement.

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 is important for the Principal to fully examine all alternatives and factors subject to change early in the project process, before going to tender.

For traditional / design then construct packaging, the designer warrants that the design is in accordance with the brief and design standards and is subject to changes under the Principal's direction. In turn, the Contractor warrants that the completed Works have been constructed in accordance with the design and to the department’s construction standards.

In D and C, the Contractor warrants that the design and completed Works comply with the Scope of Works and Technical Criteria (SWTC) and are 'fit-for-purpose' (which shifts the design risk to the Contractor and cause greater legal consequences to the Contractor). Where the Contractor engages a designer, (also referred to as the Consultant in the CPA), to pass on the benefits of the no blame framework, the parties (comprising the Principal and Consultant) enter into a Deed of Acknowledgement.

A 12-month defects correction period (also referred to as a defects liability period in some Contracts) transfers 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 originating from the design. The Contractor is encouraged to consider maintenance matters during its construction to ensure that maintenance costs are minimised during the maintenance period.

To highlight some of the differences between the Design and Construct delivery types and the Traditional – Design and then Construct Contract type, a comparison of features can be found in Appendix E.

Preparing for Design and Construct

Success of a D and C may be measured by 3 primary factors, being:

1. on budget
2. on schedule, and
3. able to fulfil expectations (envisioned functional goals, effective risk transfer, fitness for purpose, meeting specifications, quality, and so on).

To achieve these goals, the most important task for the department is to prepare a reference layout, reference data (for example, survey, pavement tests, borehole logs for bridges, condition assessment of structures, and so on), clear scope, performance, and 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.

The D and C approach can be quite resource intensive on the Principal. Unlike the design and then construct methodology, the Principal cannot control the design development process, which for a D and C is developed to suit the Contractor's program, 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 conditions of Contract may include and define the roles of 'Contract Administrator', 'construction verifier' and 'design verifier'. Where engaged, in collaborative Contracts, these are key roles, sometimes referred to as 'independent certifier' or 'independent verifier'. The definitions should encompass their status under the Contract, authority, responsibility, and accountability, as well as their role in auditing and testing compliance of the Contractor’s work against Contractual obligations. The hiring cost is the Principal's responsibility.

Intellectual property is another area of particular significance in a D and 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

During the post-award construction phase, a D and C imposes some additional requirements on the parties to ensure that the department's objectives and scheduled targets are met.

Communication in design development, approval periods, documentation review and selection of finishes is often best handled through a project design review process.

This process ensures 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 Design and Construct

The D and C Contract type has a number of specific advantages including:

- the department can specify the Scope of Work upfront and participate in discussions during the tender process
- 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 buildability studies and implement value management measures
- assessing in the tendering phase creates several alternative ways of satisfying 'fit-for-purpose' within a price competitive context
- making a clear allocation of risk supported by appropriate warranties and responsibility for insurance – risk is transferred to the party(s) best able to manage it
- where the department owns the design, it is protected from design defects to a higher degree than in a Traditional (design then construct) Contract. Under a D and C Contract, the Contractor owns the design and warrants that the design (and construction) is fit for the purpose expressed in the design brief. There is a single line of responsibility for the design and construction phases, rendering it unnecessary to distinguish between defects in design and construction

- the Contractor enjoying a higher degree of control over the project and being best placed to predict, manage, and absorb the risk of events, such as latent conditions, adverse weather and industrial disputes, impacting on time and cost. The design will be implemented having regard to the most efficient method of construction relating to time and cost. This can minimise costs to the department, maximise the project component of the lump sum for the Contractor and generally creates a common goal for both parties that may serve to reduce the degree of conflict
- reduced claims and disputes by managing the interface between technical reviewers employed by the department, and the Contractor, and
- that D and 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 from the unsuccessful tender by paying a tender contribution if expressly written into the Contract? for that purpose).

Disadvantages inherent in the Design and Construct

In addition to the earlier advantages, there are a number of disadvantages to be considered:

- planning effort is required from the client for upfront work such as survey, hydraulic modelling, geotechnical investigations, pavement condition, PUP investigations, resumptions, reference layout and a definition of a clear scope of work
- while it is important 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 that 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
- given the potential under a D and C for re-transfer of design risk back to the department, from a practical viewpoint, the department has significantly less control than it would in a more traditional delivery method
- design risk is transferred to engineering design consultants. The availability of Professional Indemnity insurance, and any project-specific exclusions, should be investigated at the tender preparation stage
- a lack of clarity around specifications in the design brief, may lead to a dispute as to whether the Contractor has in fact achieved the product described by the brief
- 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
- where proposals differ significantly, it may be challenging for the department to comparatively assess tender proposals submitted by prospective Contractors
- there is a high resource cost to the industry in tendering for a D and C. Two or more design teams can be occupied for 4 months in the tender process, and
- a considerable investment can be associated with preparing D and C tenders. In certain circumstances the department may consider offsetting tender preparation costs by providing the tenderers with a tender contribution fee.

Tendering in Design and Construct

The level of effort required of tenderers and their consultants in preparing D and C bids 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 challenges for the tender process with this Contract type, is the conversion of the preferred offer (where used) into a signed Contract. This arises because of the need for the client to create, in negotiation with the tenderer, an integrated Contract document that matches 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 its performance requirements rather than infrastructure designed to meet lowest cost objectives of the Contractor.

Critical to the success of the D and C is the specification and the technical brief:

- the final technical brief must define what is meant by 'fit-for-purpose', and include all post tender negotiations, and
- outcomes must be clearly specified.

9.1.3.1 Transport Infrastructure Contract – Design and Construct (TIC-DC)

The TIC-DC can be used for constructing all forms of transport infrastructure including roads, marine structures and busways. While there is no dollar threshold for applying a TIC-DC, prior to selecting this Contract, there must be careful consideration of internal resources, risks, timeframes, and scope for design innovation (or lack thereof).

Either a one-stage or two-stage tenderer selection process may be used, considering the relevant thresholds. TIC-DC is the department's design and construct Contract. Where the risk profile of the project is applicable, other design and construct infrastructure Contract forms, such as the CPA, may be appropriate.

The TIC-DC consists of 2 volumes: Volume 1 (Information for Tenderers, Conditions of Tendering, Tender Form, Tender Schedules, General Conditions of Contract, and other documents) and Volume 2 (drawings).

Early Contractor Involvement (ECI) process

While drawing heavily from United Kingdom principles, the department's double ECI infrastructure procurement process has been specifically drafted to suit Queensland market conditions, risk allocation and governance. The term 'double ECI' means shortlisting 2 tenderers in Stage One.

The principle aim of an ECI is for the proposed tenderer and designer to be involved and provide input while the design is still at a stage where it can be efficiently influenced so that the project budget and objectives are fulfilled. This 'constructability and design optimisation' input is essential to the department having more certainty of project outcomes.

Early Contractor Involvement can generally be described as a collaborative or interactive Design and Construct Contract, with significantly more efficient use of resources during the tender phase.

Tenderers are engaged through a multi-step selection process placing considerable emphasis on the calibre and experience of the proposed team.

Simply put, an ECI procurement process consists of 2 distinct stages with 2 Contracts, that is, a Stage One Contract, and a Stage Two Contract. The Stage One Contract is essentially a service agreement to develop the design to a point where it can be confidently estimated. The Stage Two Contract is entered into by customising the Contract to reflect the risks agreed in Stage One and sees the completion of the design through to final construction. To ensure the best possible relationships are maintained, both stages use collaboration as a specific Contract obligation. The department has the option to terminate the Contract after Stage One if it does not believe the offer establishes true value.

The ECI process allows the department substantial 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 allows for a wide variance in design detail, though the length and cost of Stage One is obviously affected by the work that must be done.

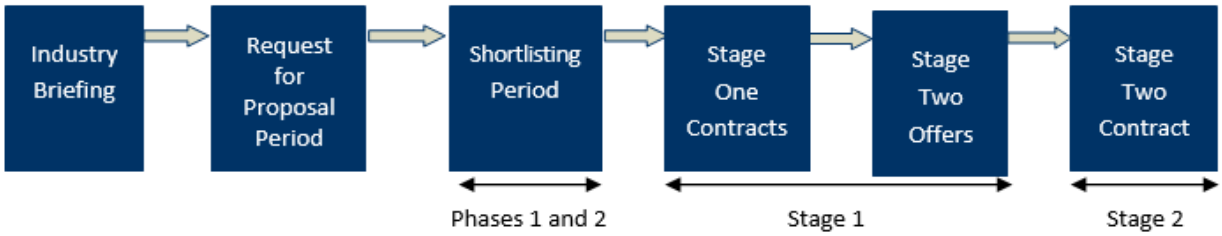
Though not typical, the department can make novation of its designer to the Contractor a condition of the Contract. It would be incumbent on the Contractor to evidence the value in not accepting this arrangement, in their tender submission.

Other benefits from using ECI include:

- application of a risk-based Contract called the CPA
- earlier Contract award
- shortened delivery timeframes
- reduced tender costs for all parties
- fewer variations during construction
- no surprises through good communication, and
- understanding the project and increased opportunity for innovation.

Finally, and importantly, the ECI model allows for variable targeted input from the department, whereby higher, up-front resource levels encourages 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.

Figure 9.1.3.1(a) – Early Contractor Involvement (ECI) process



The ECI process, (Figure 9.1.3.1(a)), is typically appropriate for design and construct projects with high value, medium to high risk, and creates opportunities for design innovation. However, there may be occasions where it is suitable for medium value, low to medium risk projects. Proposals are requested from suitably prequalified and experienced Contractors. Prequalification requirements for Contractors and designers are detailed in the Request for Proposal.

Phase One of the shortlisting process evaluates the written submissions which address the mandatory criteria, non-price evaluation criteria and other requested information, which culminates in shortlisting tenderers to proceed to Phase Two.

Phase Two assesses the shortlisted tenderers from Phase One, through presentations to the Evaluation Panel, to select 2 tenderers to proceed to Stage One.

Two tenderers are invited to execute a Stage One Contract. **Stage One** involves engaging 2 separate and independent Contractor teams to undertake planning and preliminary design work. Based on the initial procurement Contract, the intellectual property from the shortlisted tenderers in Stage One is transferred to the Principal. The Principal will then offer a capped lump sum financial contribution to both shortlisted tenderers in Stage One.

Refer to EP145[18] *Tendering Contribution Framework for Non-standard Tendering Mechanisms* for guidance on determining the capped contribution fee to the 2 tenderers after submitting a conforming Stage Two offer.

Stage One involves each of the 2 tenderers separately undertaking:

- planning and design work to develop the design to a point where it can be accurately priced and risks identified
- Risk Analysis and Risk Apportionment and Variation Benchmarking workshops
- preparation of a Gantt Chart
- Cost Planning
- preparation of their commercial model and Contract conditions, and
- development of a detailed Stage Two offer.

The relationship with the Principal during the Stage One Contract will be interactive. There is significant input from the department into the design, risks, scheduling and pricing. Each ECI Contractor must prepare and submit its own Stage Two offer in accordance with the Stage One Contract.

The Stage Two offer requirements include:

- a preliminary design report
- plans
- a Contract Adjusted Price (CAP) for the design and agreed risk allocation
- the Contractor's schedule
- any changes to the Contract documents, and
- the Contractor's commercial proposal for incentivising Stage Two.

The Principal may reject one or both Stage Two offers but must not accept more than one Stage Two offer. Evaluation of the offers is based on a combination of both price and non-price evaluation criteria.

The Principal may also enter into discussion in relation to any Stage Two offer. As part of these discussions, risk is allocated through structured negotiations.

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.

Assuming that a Stage Two offer is accepted, the ECI Contractor who submits the accepted **Stage Two** offer, is to complete the design and construction under the Stage Two Contract. Intellectual property in the form of a design or constructability element proposed by an unsuccessful tenderer, can be made available to the successful tenderer. Contract administration must be undertaken by persons experienced in administering design and construct projects including PPP and ECI.

Stage Two of the ECI is based on more traditional D and C Contract conditions, with interwoven partnering inclusions to maximise the benefit of relationships developed in Stage One. During Stage Two, the Contractor completes the design and constructs the Works.

[18] Note, this policy, EP145, is an internal document.

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, design verification, and surveillance.

Variations to the ECI process

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 the use of a commercial model which includes open book, Pain-share / Gainshare, incentivised KRAs and a no blame framework. One such model is the Collaborative Project Agreement (CPA).

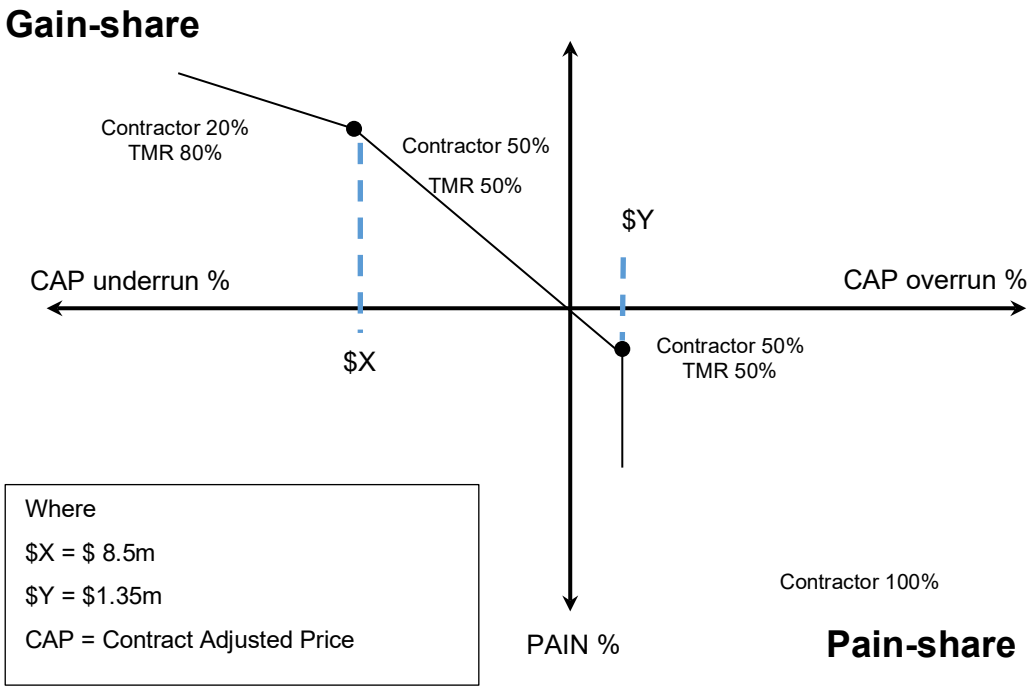
Collaborative Project Agreement (CPA)

The CPA is a purpose-built Contract in which the department and the Contractor work cooperatively, sharing project risk and reward, for the purpose of achieving agreed outcomes, based on the principles of good faith and trust and an open book approach towards costs.

Remuneration is focused on incentive and is made in accordance with a gain-sharing / pain-sharing mechanism and a performance-based reward structure, with project savings or overruns shared according to a pre-arranged formula referred to as a pain / gain chart.

Refer to Figure 9.1.3.1(b) – Typical pain / gain graph.

Figure 9.1.3.1(b) – Typical pain / gain graph



The Collaborative Project Agreement is typically suitable for high value ($100M minimum value), medium to high-risk projects.

All enquiries about the applicability of the CPA Contract should be directed to the Director (Infrastructure Procurement). The following provides a general overview of the CPA.

Mentioned earlier in this Volume, the CPA is the Stage Two Contract awarded to the successful tenderer at the end of an ECI process. The CPA sets out the terms and conditions of the working arrangement.

There are 3 phases to a CPA delivery:

1. Project Development Phase – This takes place under an ECI Agreement (the Stage One Contract of the ECI Process) and is an interactive process with the Principal where each of the 2 ECI Contractors carry out design development, pricing, risk identification, project planning, and provide comment on the CPA model. This results in each Contractor making an Offer to the Principal relating to project Works. Following negotiations with the Contractor(s), the Principal accepts a Project Works Offer, and awards the CPA Contract.
2. Project Implementation Phase – The CPA Principles guide the relationship between the Contractor and Principal from this point forward. The Contractor's primary task is to design, construct, commission, and handover project Works on or before the Target Completion Date, and
3. Project Finalisation Phase – This includes defect correction, construction completion reporting, and issuing the Final Certificate.

In performing the Works under the CPA, the parties use the following principles to guide actions and behaviours:

- the primary focus is to satisfy project objectives and deliver outcomes including reasonable commercial expectations of each party
- equal-say peer relationship
- responsibility for performance, and an obligation to provide successful outcomes
- full access to 'best in class' resources from all parties
- encouragement of innovation and commitment to achieving outstanding results
- clear responsibilities / 'no blame' culture
- open, straight, honest communication
- full support for the project from each party
- all transactions fully open book, and
- all decisions made in accordance with these principles.

The 'no blame' framework also applies to the design consultant, with the parties having collective responsibility for the Prior Design Services and Design Services, and a 'Deed of Acknowledgment' with the Designer formalising this.

A key objective of the CPA is to avoid disputes; striving for early identification, notification, and prompt resolution, while minimising inefficiencies associated with adversarial conduct. Another key objective is sharing burden risks, avoiding risks where possible and mitigating those that are unavoidable.

Key Result Areas allow the parties to measure delivery (and appropriate payments) against key departmental objectives, such as quality, program, community and stakeholders, environment and sustainability, and project culture.

A Project Leadership Team, with members representing both the Principal and the Contractor, will direct and govern the project. A Project Management Team, including members representing both the Principal and the Contractor, a Design Verifier and a Construction Verifier, will manage the everyday operations of the project, and ensure the necessary culture to achieve all KRAs is created and sustained. All decisions made by the Project Management Team must be unanimous.

The Contract is administered by an Administrator, appointed by the Principal, who functions as the Principal's agent, not as an independent certifier, assessor or valuer. A Differences Resolution Advisor is appointed as an independent party to the Contract. An Independent Financial Auditor, as an advisor to the Principal, will provide ongoing auditing services to substantiate the accuracy and appropriateness of all financial records, payments and reports of the Contractor. The Contractor also has the right to audit the Principal's financial records in the open book approach.

All decisions and discretions exercised under the CPA, must have regard to 'best for project' outcomes and Project Principles, together with obligations of mutual benefit and good faith. In relevant matters, the Principal's contractual rights to absolute and unfettered discretion, absolute discretion, or sole discretion, where applicable (Principal’s Reserved Powers), are also maintained.

The project'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 project outset
- there is a reduction in the costs otherwise 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 doing the minimum required to avoid penalty.

9.1.4 Design, Construct and Maintain Delivery Model

The department uses only one Contract type under the Design, Construct and Maintain Delivery Model: Design, Construct and Maintain (DCM).

Public Private Partnerships (PPP) are mentioned in this section as they generally cover the 3 phases of design, construction and maintenance, however, PPPs are not a Contract type as such.

Design, Construct and Maintain

Under 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.

A major difference between Traditional and DCM delivery relates to maintenance and the defects liability period. Maintenance of the Works in a Traditional Contract becomes the department's responsibility during and after the defects liability period. In DCM, the maintenance (both during and after construction) and defects liability of the completed Works remain the Contractor's responsibility for an extended period (up to 10 years) governed by strict performance standards before final handover 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 and C delivery methods.

Under Traditional and D and C, the Contractor can usually absolve itself of the project, after expiration of a (relatively short) defects liability period and has no incentive to execute its design and/or construction tasks 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 emphasises reducing the costs to be incurred during the maintenance phase. Pavement designs under DCM packaging are more conservative than traditional packages. Therefore, there is a reduced risk of an adverse trade-off between buildability and maintainability.

The department will usually conduct a competitive bidding process based on a design brief (as for a D and C project). Cost proposals, for the maintenance component, will form part of tender submissions. This will be remunerated via any one or more of a number of methods, with provision for rise and fall due to the Contract's long-term nature. 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.

Prior to handover, the Principal should specify the condition it expects the Works to be in at completion of the maintenance period. Similarly, the standard of maintenance, impact on traffic, responsiveness to repairs and so on, during the period, should also be specified.

Despite the potential advantages to be gained around 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 financially stable throughout 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 construction Contractor versus the operator / maintainer, and
- at the time of tendering, it may be challenging to specify exactly what the Contractor's maintenance and operating obligations are. In turn, this may lead to Contractors attempting to price unpredictable risks, thus leading to uncompetitive tenders. If it is not possible to specify long-term requirements with sufficient clarity, consideration should be given to performance-based remuneration around the maintenance component.

Public Private Partnerships

While the PPP policy includes a range of relational contractual arrangements, it focuses on where private sector equity is at risk, that is, where the private sector provides some degree of finance (up to 100%).

In general, a PPP is a long-term contractual arrangement and involves a private sector party across the full spectrum of the infrastructure's delivery, that is, planning, design, construction, operation, and maintenance. The private sector party usually comprises several organisations that carry out the various elements of the contractual arrangement and delivers the infrastructure.

The private sector party contributes capital investment and carries risks and in return is remunerated by the government. The private sector party will also pay a concession fee to the government for the right to operate and 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, depends on the party's success in designing and constructing the facility and its 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

There is a National PPP Policy Framework[19] prepared and endorsed by Infrastructure Australia and the state, territory and Commonwealth governments as an agreed framework for delivering PPP projects. Queensland Treasury has released Queensland PPP Policy supporting guidelines, with Queensland-specific departures, as a component of its Project Assessment Framework (PAF).[20]

Projects with total capital costs equal to or above $100M, should trigger evaluation of a PPP as a potential procurement method.

The policy does not apply to the provision of core services involving 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, in an arrangement that is beneficial to both public and private sectors as well as to users and taxpayers
- encourage private sector innovation
- optimise asset use, and
- achieve an integrated whole of life management of public infrastructure.

For more information, please contact the Director (Prequalification and Contracts).

9.1.5 Road Maintenance Contracts

9.1.5.1 Road Maintenance Performance Contract (RMPC)

The RMPC was 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.

The RMPC is used with RoadTek or LG, where either can be the single invitee, in a sole invitation arrangement for period of up to 2 years. Prior to commencing each sole invitation Contract period, a Schedule of Routine Maintenance Work must be agreed. Road Maintenance Performance Contract Works include day Works, provisional sums, and emergency maintenance.

The Contract consists of Volume 1 (Invitation to Offer, General Conditions, Schedules, Implementation Plan, and other documents). More details of the RMPC can be found in the RMPC Manual.[21]

[19] Commonwealth Department of Infrastructure, Transport, Regional Development, Communications and the Arts, https://www.infrastructure.gov.au/infrastructure-transport-vehicles/infrastructure-investment-project-delivery/national-guidelines-infrastructure-project-delivery.
[20] Queensland Treasury, https://www.treasury.qld.gov.au/programs-and-policies/project-assessment-framework/.
[21] Department of Transport and Main Roads, https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Road-maintenance-performance-contract-manual.

9.1.5.2 Road Asset Management Contract (RAMC)

The RAMC was introduced to South-East Queensland in 2013 as a nominal 5-year-term Contract, providing a holistic approach to the provision of asset management and maintenance services. It is a long-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 designing and constructing these Works.

In general, private industry is involved in this Contract.

The Contractor provides a stewardship role and works collaboratively with the department to maintain road network safety, serviceability and improve network sustainability.

The Contract consists of Volume 1 (Invitation to Offer, General Conditions, Routine Maintenance Specifications, and other documents).

9.1.6 Emergency Works Contract

First Response Emergency Works Contract (FREW)

The FREW, known as FREW V3 (2020), is a single invitee Contract which only applies in the event of an emergency and where the scope of the work is generally limited to making the situation safe. It is typically a Contract between the department and a traditional supplier. Emergent Works are defined as:

- activities that are necessary during a disaster to protect eligible public assets or to restore essential services and maintain public safety
- immediate post-disaster repairs to an eligible asset to enable it to operate and/or be operated at a reasonable level of efficiency, and
- lasting only a period of 60 days from the date of the disaster event, unless otherwise approved by the Program Director, National Disaster Program.

9.2 Contract value thresholds

The range of available delivery methods and Contracts used by the department have been grouped together in the following tables according to their work type:

- Construct Only Contracts – Tables 9.2(a) and 9.2(f)
- Minor Contracts – Table 9.2(b)
- Design and Construct Contracts – Table 9.2(c)
- Maintenance Contracts – Table 9.2(d), and
- Sole invitation Contracts are shown in Table 9.2(e).

Note: This section of TIPDS Volume 1, containing the abovementioned tables, has also been included as Appendix J, so that it can be readily accessible as a reference tool for meetings and so on.

Table 9.2(a) – Construct only Contracts

Infrastructure Procurement Method	Contract Forms	Value and Risk Profile	Contract Value ($M excl GST) Thresholds	Probity Advisor / Auditor Required?	Application
Early Tenderer Involvement (ETI)	Transport Infrastructure Contract (TIC-CO)	High value, medium to high-risk projects	$100M (minimum)	See footnote[22]	Used where the department has a partially developed design and is seeking constructability input from tenderers prior to the design being completed. The department requires design effort from tenderers. Typically, tenderers receive a contribution for their participation.
Guided Tender Alternative (GTA)		High value, medium risk projects	$100M (minimum)		Used where the department has a fully developed design but there may be opportunities for tenderers to provide Alternative Tenders if they choose to do so (not mandatory). This can also be applied to ETI. Typically, tenderers do not receive a contribution for their participation.
Construct Only with shortlisting		High value, medium risk projects	$100M (minimum)		Also, applies to small-scale high-risk Works such as geotechnical construction Works, including slope stabilisation and soil nailing.
Construct Only without shortlisting		Low to medium value, low to medium risk projects	$1M (minimum)		

Note: Shortlisting is only permitted for TIC-CO projects over $100M.

Table 9.2(b) – Minor Contracts

Infrastructure Procurement Method	Contract Forms	Value and Risk Profile	Contract Value ($M excl GST) Thresholds	Probity Advisor Required?	Application
Minor	Small Scale Minor Works Contract (SSMW)	Low value, low risk projects	< $250,000	No	For Contractors undertaking basic Works as a lump sum.
Minor (non-prequalified Contractor)	Minor Infrastructure Contract (MIC-CO)	Low value, low risk projects	< $1M to $5M (in some cases $10M)	No	
Minor (prequalified Contractor)	Minor Infrastructure Contract (MIC-CO)	Low value, low to medium risk projects	$1M to $10M	No	For Contractors other than LGs and RoadTek. Depends on, among other things, project risk. Risk varies with estimated cost / duration as well as variability in the type, scale, complexity, and number of construction activities.

[22] For most low-risk projects, procurement staff and evaluation teams can effectively manage probity issues. Where infrastructure procurement is complex, high value, sensitive, or Offeror grievances are more likely, it may be beneficial to engage a Probity Advisor.

Table 9.2(c) – Design and Construct Contracts

Infrastructure Procurement Method	Contract Forms	Value and Risk Profile	Contract Value ($M excl GST) Thresholds	Probity Advisor Required?	Application
Early Contractor Involvement (ECI)	Collaborative Project Agreement (CPA)	High value, medium to high-risk projects	$250M (minimum)	Yes	Depends on project risk, complexity, scope, and opportunity for design innovation. Low value projects can be considered where there is value in transferring risk but requires prior approval from the Executive Director (Program Management and Delivery).
Design and Construct	Transport Infrastructure Design and Construct (TIC-DC)	Medium to high value, low to high risk	Seek advice from Infrastructure Procurement	See footnote[23]	Depends on project risk, complexity, scope, and time. Requires prior approval from the Executive Director (Program Management and Delivery).

Table 9.2(d) – Maintenance Contracts

Infrastructure Procurement Method	Contract Forms	Value and Risk Profile	Contract Value ($M excl GST) Thresholds	Probity Advisor Required?	Application
Road Maintenance	Road Maintenance Performance Contract (RMPC)	Low to medium risk	No limit	No	Routine maintenance Works on a sole invitation basis only to traditional suppliers, local governments or RoadTek.
	Road Asset Maintenance Contract (RAMC)		N/A		Routine maintenance Works in South-East Queensland.

[23] For most low-risk projects, procurement staff and evaluation teams can effectively manage probity issues. Where infrastructure procurement is complex, high value, sensitive, or Offeror grievances are more likely, it may be beneficial to engage a probity advisor and/or a probity auditor.

Table 9.2(e) – Sole Invitation Contracts

Infrastructure Procurement Method	Contract Forms	Value and Risk Profile	Contract Value ($M excl GST) Thresholds	Probity Advisor Required?	Application
FREW V3	First Response Emergent Works V3	Low value, low to medium risk projects	< $1M unless authorised by the Program Director (Natural Disaster Program)	No	Undertake short term temporary emergent Works.
Sole Invitation	Minor Infrastructure Contract Sole Invitation (MIC-SI)	Low value, low risk projects	< $1M	No	Replaced Minor Works Performance Contract (MWPC). For LGs and RoadTek.
Sole Invitation	Transport Infrastructure Contract Sole Invitation (TIC-SI)	Low to medium risk	< $5M	No	Replaced Road Performance Contract (RPC). Construction of all forms of transport infrastructure on a sole invitation basis only to Local Government or RoadTek.

Table 9.2(f) – TIC-CO stages for tendering

Contract Value ($M)	Number of stages in the tendering process
Value < $20M	Single stage TIC-CO with 100% price weighting.
$20M < Value < $100M	Single stage TIC-CO with 60% price and up to 40% non-price weighting (including Local Benefits Test of up to 30%, project-specific criteria). Two stages are not permitted for projects within this value range unless approved by ED (PMD).
Value > $100M	Two stage TIC-CO including ETI, GTA. Stage One 100% non-price (including Local Benefits Test, Best Practice Principles) and Stage Two 100% price weighting. Stage Two may incorporate non-price criteria along with the price criteria, the weightage for price and non-price can be 60% and 40%.

Table 9.2(g) – Summary of Contractor / Supplier for Contract type

Contractor	Design and Construction	Construction					Road Maintenance		Emergent
	TIC-DC / MIC-DC / CPA	TIC-CO	TIC-SI	MIC-CO	SSMW	MIC-SI	RMPC	RAMC	FREW
Traditional Suppliers	Yes	Yes		Yes	Yes			Yes	Yes
Local Government			Yes		Yes	Yes	Yes		
RoadTek			Yes		Yes	Yes	Yes		

9.3 Contract selection methodology

This section describes a Contract selection methodology which may assist in choosing an appropriate infrastructure procurement methodology and the type of Contract. The choice of delivery method must also be tempered by common sense and experience.

9.3.1 Mandatory

For large projects of expected value greater than $100M, a Value Management Workshop (VMW), with representation from relevant industry participants, must be held (refer to Appendix D). Additional industry representation, for example, product suppliers, quarries and so on may benefit from some projects.

The purpose of the VMW, is to gain contribution from a wider audience than the client alone. This helps to produce ideas which the client may use in planning, design and construction, to make decisions about the optimum delivery process and packaging for the project. The delivery method selection is still within the client's domain.

9.3.2 Contract selection tool

The department has used both qualitative and quantitative approaches to Contract selection, to arrive at consistent and appropriate delivery method decisions, with varied results. Without a good understanding of the technical requirements and procurement options, the diversity in project-specific considerations often makes this process difficult to model.

The Infrastructure Procurement Delivery (IPD) Unit has produced a selection tool which aims to make this process easier and more consistent, while also gathering relevant information for developing the project Business Case and justifications for delivery method selection.

The *Infrastructure Procurement Delivery Form Selection Tool* is available by contacting infrastructuretransactions@tmr.qld.gov. This tool is used to qualitatively score the suitability of features in a project against the department's standard Contract forms. It consists of several spreadsheets, including questionnaires, to gather detailed project-specific information, and to perform Pair-Wise analysis. The district completes and returns the Selection Tool to the IPD Unit, which, using the information, together with experience in project delivery, will recommend a form of project delivery supported by a brief report.

A sample questionnaire, which provides an indication of the type of information required for delivery method selection, is included for information only, in Appendix I.

10 Supplier selection

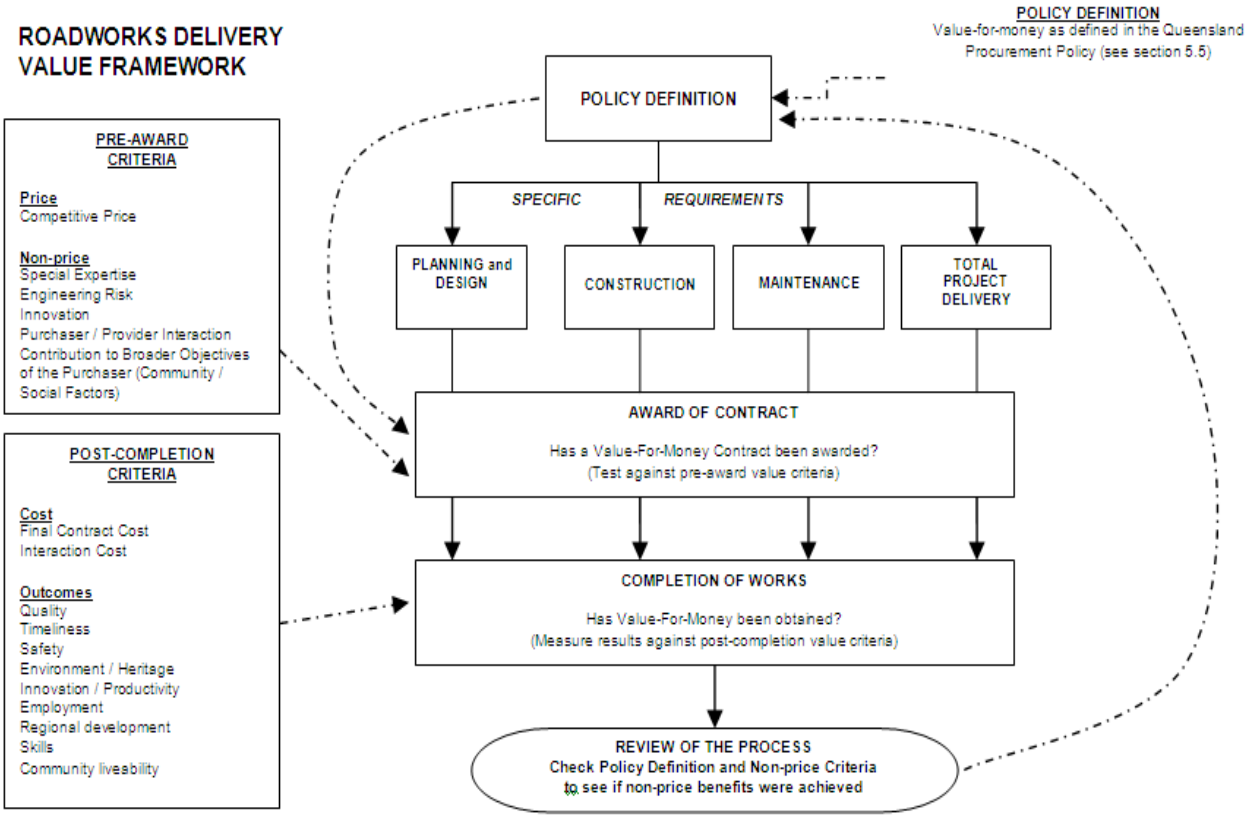
10.1 Attaining value for money

The last step in forming a delivery strategy is determining how the suppliers will be selected. The objective in supplier selection is to attain value for money in delivering 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 10.1 illustrates the framework in which value for money in roadworks delivery is assessed.

The framework 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.

Figure 10.1 – Value for Money Framework in roadworks delivery



10.2 Open market Contracts considerations

Project size, complexity and uncertainty factors should be considered when choosing the method of selecting the project Contractor / supplier. Whatever approach is adopted, the underlying principle for assessing tenders should be achievement of best value for money. Refer Table 10.2 – Comparison of Tender Selection Methods which compares 4 basic, open market tender selection methods.

For the application of the Queensland Procurement Policy, all TIC-CO tenders over $20M must contain a non-price evaluation criterion for 'Local Benefits'. For projects over $100M, the tenders must contain non-price evaluation criteria for 'Local Benefits' and 'Best Practice Principles'.

Table 10.2 – Comparison of tender selection methods

Tender selection method	Project characteristics
1. Price only	Routine or repetitive type work / supply: • low level of complexity, and/or • low level of uncertainty.
2. Price and non-price – 1-stage process	Works with: • moderate to significant level of complexity, and/or • moderate to significant level of uncertainty. or: • as a conscious attempt to raise industry standards, and/or • to address specific project issues (technical or non-technical).
3. Price and non-price – 2-stage process	Significant Works at the highest level of the department's prequalification with: * • significant level of complexity, and/or • significant level of uncertainty.
4. Project-specific	Significant Works above the department's prequalification level with: * • significant level of complexity, and/or • significant level of uncertainty.
* The decision to use either a two-stage or project specific tendering process for Works, will depend upon: • the complexity and risks involved in the work • the decision to make the Works PPP (refer Section 9.1.4), and • the planned delivery arrangements.	

Method 1 – Price only

In price only Contracts, the lowest priced conforming tender is accepted. Price only methodology is generally adopted for Works:

- with low levels of complexity and uncertainty, and using 'traditional' delivery arrangements, and
- which are not associated with 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 into 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 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, the 'Two-Envelope' system, 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 is ranked.

Method 3 – Price and non-price – two-stage

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 the Director (Prequalification and Contracts).

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 may be used.

Two-stage selection processes are used to:

- ensure a comprehensive process which carefully addresses all project risk factors in depth
- shortlist tenderers with the capability to successfully undertake the Contract
- select from the shortlist 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 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 considering project-specific circumstances and risk factors.

A typical two-stage process would consist of the following:

Stage 1: Expression of Interest (EOI)

- Identification of prequalified or pre-registered organisations interested in tendering for the work, this is usually conducted 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
- Using 100% non-price weighted criteria, the Principal typically selects 3 or 4 tenderers to continue through Stage 2.

Stage 2: Detailed tenders

- Tenderers shortlisted in Stage 1 are invited (known as 'Invitation to Tender') to submit detailed and fully priced tenders, based on 100% price weighted criteria.
- As part of the tendering and/or assessment process, the Principal may request that the tenderers 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 selection criteria used in the EOI 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 2 or more shortlisted 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 contribute to the one 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 CPA Contracts. Information regarding the use of project-specific tender evaluation methods can be obtained from the Director (Infrastructure Procurement).

10.3 Sole invitation

10.3.1 Overview

Infrastructure projects may be individually considered for exemption from the full tendering process, and if approved, may be awarded by a sole invitation. In line with QPP definitions, the sole invitation tenderer may be either a 'sole supplier' or 'single invitee', as follows:

- **Sole Supplier –** The award of a Contract where there is only one genuine supplier that can provide the requirements. It is acceptable to invite a sole supplier when:
  - the goods and/or services are unique and only one known supplier can meet the department's need
  - time is of the essence and only one known source can meet the department's timeframe
  - regulated services from only one entity are required
  - the department's prequalification is required and there is only one registered supplier in the system, or
  - Non-Contestable Works.

- **Single Invitee –** The award of a Contract to one supplier, despite availability of other suppliers, without a competitive bidding process, for a justifiable reason. Procurement of RoadTek and LG are considered ‘single invitee’ engagements. It is acceptable to invite a single supplier when:
  - past performance has proven to achieve value for money outcomes, ensures continuity of services, or leverages on the knowledge already built by the supplier on similar procurements. The supplier (within the last 2 years) must have been previously awarded the Contract which gave creditability to its past performance, via a competitive process
  - there are long-term strategic objectives (direct benefits must outweigh the value in tendering)
  - unique capabilities are required, that is, the original equipment manufacturer
  - regulated services are required when multiple regulated service providers are available, or
  - the supplier holds a service Contract and therefore must supply the parts of the Contract that are under warranty.

Where 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. Procurement via an SOA, or a prequalified supplier arrangement, is considered to be an 'open market' process.

Appendix H contains:

- an outline of an evaluation process for assessing value for money of a sole invitation Contract, should the selection of sole invitation require justification, and
- a checklist for Application for Sole Invitation process to RoadTek.

In considering whether sole invitation is an appropriate delivery method, each project is considered in relation to the strength of its match to one or a combination of the following criteria. These criteria do not override the requirement to achieve best value for money in delivering the project.

There are 3 general categories for consideration, that is, 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, that is, disasters, accidents and so on, or
- where, by direction, the department is required to deliver within a prescribed timeframe.

Social imperatives

This category addresses social issues and government policy positions.

Social imperative issues are reviewed regularly, as part of the government's commitment to adding social value when buying for government. The *Social Procurement Guide* from the Office of the Chief Advisor (Procurement) contains the latest positions.

Underlying Principles

It is essential that the following principles be adhered to during the sole invitation process:

- 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.

10.3.2 Sole Invitation Contracts

10.3.2.1 Transport Infrastructure Contract – Sole Invitation

As previously discussed in Section 8.2.1.4, the Transport Infrastructure Contract – Sole Invitation can be used on low to medium risk construction of all forms of transport infrastructure including marine structures and busways up to $5M. This Contract can only be used for sole invitation Works to LG or RoadTek.

Formal tender exemption requests

Where a project receives any federal funding and a sole engagement to RoadTek is planned (which is not maintenance or Utilities Infrastructure), a formal tender exemption under one of the clauses in the *National Land Transport Act* 2014 (Cth) (Australian Government) is required.

This process is managed by National Programs and a letter to the Department of Infrastructure, Transport, Regional Development, Communications and Arts from the General Manager (Portfolio Investment and Programming) branch is required.

Receiving advice from the Australian Government usually takes between 2 and 3 months.

Figures 10.3.2.1(a) and 10.3.2.1(b) following are excerpts from the *National Land Transport Act* 2014 (Cth).[24]

[24] 'Notes on Administration for Land Transport Infrastructure Projects 2014 – 15 to 2018 – 19,' Australian Government of Infrastructure and Regional Development, November 2014. The National Land Transport Network | Infrastructure Investment Program.

Figure 10.3.2.1(a) – Notes on Administration for Land Transport Clause 2.1.3.4

2.1.3.4: Assess requests for tender exemptions

A Proponent seeking an exemption from the requirement to use a public tender process must seek approval for the exemption in the PPR. The request for approval must detail the:

- *scope of works for which the exemption is being sought*
- *value of these works*
- *intended entity to undertake these works*
- *category under which the exemption is being sought (Section 24(1)(c), (i) to (vi) of the National Land Transport Act), and*
- *supporting reasons for the exemption.*

Figure 10.3.2.1(b) – National Land Transport Act Section 24(1)(c), i to vi

State or State authority must call for public tenders for certain work

(1) If the funding recipient is a State or an authority of a State, the funding recipient must call for public tenders for all work on the funded project, other than:

(a) work that is maintenance of a road or railway; or

(b) work that is to be carried out by a public utility; or

(c) work that the Minister has, by a written exemption relating to the project, exempted from this condition because, in the Minister's opinion:

(i) the work is urgently required because of an emergency; or

(ii) the work is of such a minor nature that the invitation of tenders for the work would involve undue additional cost; or

(iii) the work is of a kind for which it is not practicable to prepare adequate tender specifications; or

(iv) the work is of a kind for which competitive tenders are unlikely to be received; or

(v) the work will contribute to employment in a region; or

(vi) the cost of the work is less than an amount determined by the Minister by legislative instrument under subsection (4) for the purposes of this subparagraph.

(2) The Minister may, in writing, vary or revoke an exemption referred to in paragraph (1)(c).

(3) An instrument granting, varying or revoking an exemption referred to in paragraph (1)(c) is not a legislative instrument for the purposes of the Legislative Instruments Act 2003.

(4) The Minister may, by legislative instrument, determine an amount for the purposes of subparagraph (1)(c)(vi).

Sample scenarios for RoadTek Sole Invitation engagements which require a tender exemption

1. **Scenario 1**

   RoadTek is engaged to drive a small number of test piles and monitor their performance with a Pile Driving Analyser machine as part of a Commonwealth-funded project, and a tender exemption is required. Given the piecewise nature of the work, the project was considered too small to engage a pile driving company.

2. **Scenario 2**

   RoadTek was engaged to undertake geotechnical investigation Works in a constrained area as part of a Commonwealth-funded project and a tender exemption was required. The Works included slope stability analysis and trials of different slope-stabilising methods.

3. **Scenario 3**

   RoadTek was engaged to install a set of traffic lights as part of a Commonwealth-funded project and a tender exemption was required. Given the specialised expertise required and engineering risks associated with the Works, it was considered that competitive tenders would not be achievable.

4. **Scenario 4**

   RoadTek was engaged to repair variable message signs on a state-funded project. The district is to arrange with RoadTek to define the scope of Works, timing, and cost for the Works. The authority to approve is based on the value of the Works:

   - $3M (including GST): District Director
   - $3M (including GST): Regional Director, and/or
   - $5M (including GST): General Manager (Program Delivery and Operations (PDO))

Payment is made via inter-company journal.

10.3.2.2 MIC-SI and SSMW

Under the MIC-SI, LG or RoadTek may be procured on a sole invitee basis to deliver transport infrastructure Works.

Mentioned earlier in Section 8.2.1.5, in certain circumstances, where LG or RoadTek are not available to deliver the Works, SSMW can be used to engage a private Contractor (by Sole Invitation or through open tender if the cost-benefit ratio of going to market supports it).

10.3.2.3 Road maintenance Contracts

Both RMPC and Road Asset Maintenance Contracts are delivered through single invitee arrangements. Refer to Section 8.2.5.

10.3.2.4 FREW Contract

As discussed in Section 8.2.6, the First Response Emergency Works Contract, known as FREW V3 (2020), is a single invitee Contract which only applies in the event of an emergency and where the scope of the work is generally limited to making the situation safe. It is typically a Contract between the department and a traditional supplier.

10.4 Matrix of suppliers and contracts

Table 10.4 – Summary of Contractor / Supplier for Contract type

Contractor	Design and Construction	Construction					Road Maintenance		Emergent
	TIC-DC / MIC-DC / CPA	TIC-CO	TIC-SI	MIC-CO	SSMW	MIC-SI	RMPC	RAMC	FREW
Traditional Suppliers	Yes	Yes		Yes	Yes			Yes	Yes
Local Government			Yes		Yes	Yes	Yes		
RoadTek			Yes		Yes	Yes	Yes		

Appendix A – Partnering and Collaboration

A1 Introduction – Partnering and collaboration in Contract delivery

Partnering, also referred to as ‘collaboration’ in some Contracts, is important as a means of changing adversarial relationships into team-based relationships. Partnering and collaboration can simplify the way business is conducted. It requires organisations to make joint commitments to achieve mutual goals, and promotes trust, understanding, teamwork and open communication among participants.

Partnering and collaboration is a relationship in which the parties to a Contract learn to prevent disputes, thereby decreasing or eliminating litigation and thus improving the overall performance of the Contract. To date, this has been used in many multi-million-dollar Contracts with great success.

The benefits include:

- **Reduced litigation –** The concept 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 the concept 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 attend work in good faith, when workers can concentrate on their job rather than dealing with complaints from the other side, and when people can work collaboratively, the morale and effectiveness of all involved is improved.

A2 What is partnering and collaboration?

Partnering and collaboration 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.

The parties seek input from each other to find better solutions to the problems and issues at hand. This involves trust and open communication, identifying and resolving problems at the lowest level, achieving common goals, and encouraging a win-win approach.

The department, in conjunction with the civil infrastructure industry, has developed the '*TMR – Infrastructure Industry Engagement Charte*r' (Charter).

The Charter is best seen not as a Contract, but as a covenant describing the attitudes and consultative processes mutually agreed to by the parties. The Charter will 'sit behind' the Contract without generally being legally binding. The result is that the partnering and collaboration 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 exception to this is where the Contract contains partnering or collaboration-related clauses which commit the parties to specific actions. Where such clauses are included in the Contract, the Charter complements the intent of the Contract clauses.

The benefits are significantly greater if the concept is applied throughout the supply chain, rather than simply between the client and the head Contractors.

A3 How does partnering work?

Table A3(a) lists some mutual objectives of the partnering and how they can be achieved.

Table A3(a) – Achieving mutual objectives of partnering

Mutual objectives	How to achieve
Improved efficiency	Cooperation
Cost reduction	Continuous improvement
Cost certainty	Early action on danger areas
Enhanced value	Constructability, value engineering
Reasonable profits	Predictable progress
Reliable product quality	Quality Assurance / Total Quality Management
Fast construction	No avoidable hold-ups
Certain completion on time	Critical path programme
Continuity of workload	Effective programming
Shared risks	Sensibly agreed
Reliable flow of design information	Cooperation
Lower legal costs	Dispute resolution procedure
Good public relations	By being proactive
Profit sharing	Prior agreement on sharing of savings

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 result is a measurable increase in value, while properly meeting the client's needs. It has multiple elements, some of which are summarised below.

Table A3(b) – Achieving continuous improvement

What to improve	How to improve
Staff development and training	Training program
Team continuity and retention	Management
Value management	Conceptual
Value engineering	Design process
Get it right first time	Cultural
Quality	Continuous improvement, open to suggestion
Reduction of Waste	Environmental, design, construction
Whole of life cost	Design
Benchmarking	Best Practice – examples
Looking for opportunities	Proactive attitude
Competition	Internal and inter-team
Measurement	Key performance indicators

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 to constantly explore opportunities. It is essential to measure performance at agreed intervals and to report on the results to the project team. Simple measures can be used as a starting point, where they can be continually developed and refined as the project progresses.

A4 Not used

A5 How partnering and collaboration is done?

Typically, the process would consist of 5 stages:

1. an initial workshop (or 'relationship and collaboration workshop') with key players participating – this would include representatives for the Principal, the Administrator, the Contractor and possibly major subcontractors, and the Contract Leadership Team (if any)
2. a follow-up workshop may be required 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 onsite to discuss detailed job issues
4. where necessary, additional workshops to accommodate high staff turnover or a breakdown in the process, and
5. regular discussions and knowledge sharing both in a work and social environment.

A commitment to relationship and collaboration by the senior management of the parties 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 says. Once top management is committed, all participants in the performance of the Contract should be brought on board.

A6 Not used

A7 The Relationship and Collaboration Workshop

A7.1 Key elements

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

Key elements of the workshop are:

- establish communication and team building skills – individuals learn about each other, learn communication skills and learn how conflict arises
- read and understand the *TMR Infrastructure Industry Engagement Charter* – parties need to agree to general and specific overriding mutual goals to be achieved in performing Contractual obligations. Accomplishment of these goals will mean success for all parties
- identify potential problems, strengths and weaknesses and clarify Contract requirements (but note this meeting is not about changing the risk profile, commercial framework or amending Contract clauses)

- understand the disputes resolution processes under the Contract – 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
- establish methods of measuring the effectiveness of the relationship.

A7.2 Define expectations

- identify all legal implications (or lack thereof) of the process
- identify potential pitfalls; and
- reinforce no change to Contract requirements.

A7.3 Get to know each other

- introductions
- personality profiles
- conduct team building exercises
- learn and practise empathy and listening skills
- set forth each individual's authorities and responsibilities to avoid people ‘passing the buck’ or being confused as to who to talk to
- delegate responsibilities from operational staff up to senior management, and
- identify common goals.

A7.4 Establish procedures for sound administration

- identify potential problems, and implement 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 Contractual obligations to identify areas of confusion, ambiguity, or differences of opinion.

A7.5 Establish methods of resolving conflict

- generate a conflict resolution process such as automatic conflict escalation, to prevent further harm, and
- agree to use alternative dispute resolution processes when good faith disputes arise, for example, mediation and negotiation.

A7.6 Generate a Project Charter

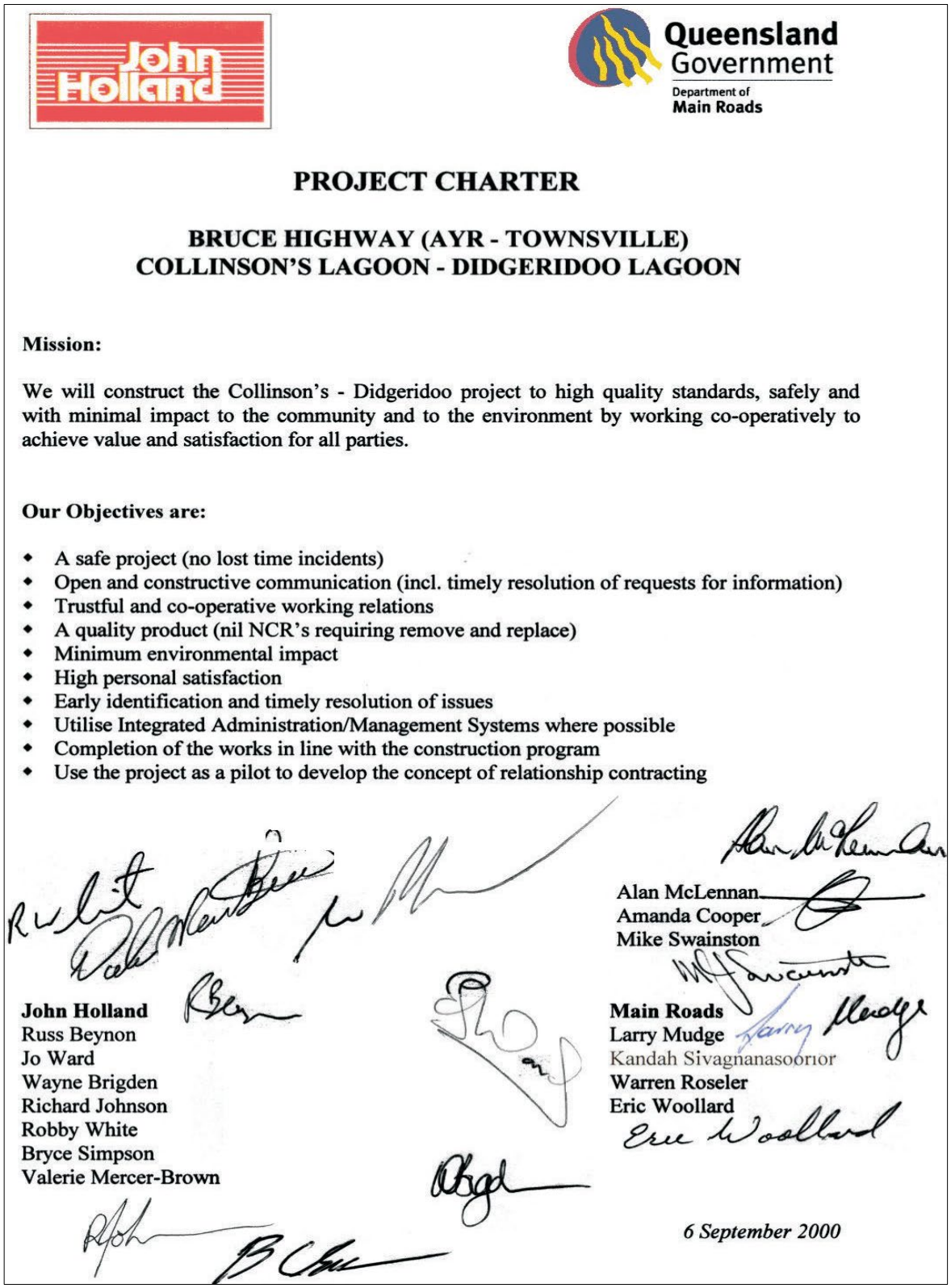
- intent of the parties to work together towards a successful project
- commitment

- common goals (measurable), and
- that all parties sign and display the Project Charter.

An example of a Project Charter is shown in Figure A7.6.

The following *TMR Infrastructure Industry Engagement Charter* is also provided for reference.

Figure A7.6 – Example of a Project Charter



John Holland

Queensland Government
Department of Main Roads

PROJECT CHARTER

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

Alan McLennan
Amanda Cooper
Mike Swainston

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

Main Roads
Larry Mudge
Kandah Sivagnanasoorior
Warren Roseler
Eric Woollard

6 September 2000

TMR Infrastructure Industry Engagement Charter

A7.7 Typical agenda for a Relationship and Collaboration Workshop

Purpose

To initiate a collaborative approach to delivering on the project and develop a Project Charter that underpins a systematic approach to managing relationships within the Contract.

Objectives

- define common objectives for project delivery
- initiate understanding of team members, and
- conduct ongoing relationship management meetings.

Workshop Agenda

- 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 of the project:
  - determine the project mission objectives
  - split into groups, by parties to the Contract, to determine key success factors
  - 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, and
  - determination of the Administrator, the Chair, and the attendees of the partnering process.
- time(s) and venue(s) for the regular partnership meetings:
  - determine frequency
  - duration, and
  - selection of regular venue.
- discussion and development:
  - of a typical agenda
  - risk assessment
  - briefing on features of the project
  - brainstorming in mixed groups of 4 to identify:
    - what is working well?
    - what is not working well? and
    - what strategies can be adopted to resolve these?
  - group's report to whole group
  - opportunity assessment and brainstorming
  - develop strategies to implement, and
  - develop an issues resolution matrix:
    - discussion of types of issues
    - big issues dealt with separately
    - everyday issues dealt with by an issues resolution matrix

    - establishing the ground rules, and
    - developing the matrix.
  - overview of skills workshop – time(s), venue(s) and so on
  - development of action plans, and
  - signing the Partnering Agreement Project Charter
  - more information can be found in Appendix C.

A7.8 Workshop participants

- Principal's team, including Principal's designer
- Contractor's team, including major subcontractors
- Contract Administrator's team, and
- Contract Leadership Team (if required).

A7.9 Duration

Half a day to one day depending on complexity of the Contract.

A7.10 Relationship management

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 discuss issues relating to relationships on the project, and
- to resolve issues relating to relationships on the project.

Appendix B – The extended partnering process

B1 Introduction

Project Delivery Models such as ETI and ECI, may involve extended partnering and collaboration processes in their pre-award phases. Extended partnering is a formal process used to facilitate greater team participation and communication outside of contractual processes, to achieve 'best for project' outcomes.

It does this by achieving some initial impetus towards achieving positive relationships and shared goals at the start of the project. It provides appropriate skills of the contracted parties to achieve and maintain these. Extended partnering also provides an agreed structure to assist in maintaining and improving these relationships. Various elements of the process are shown in Figure B2.

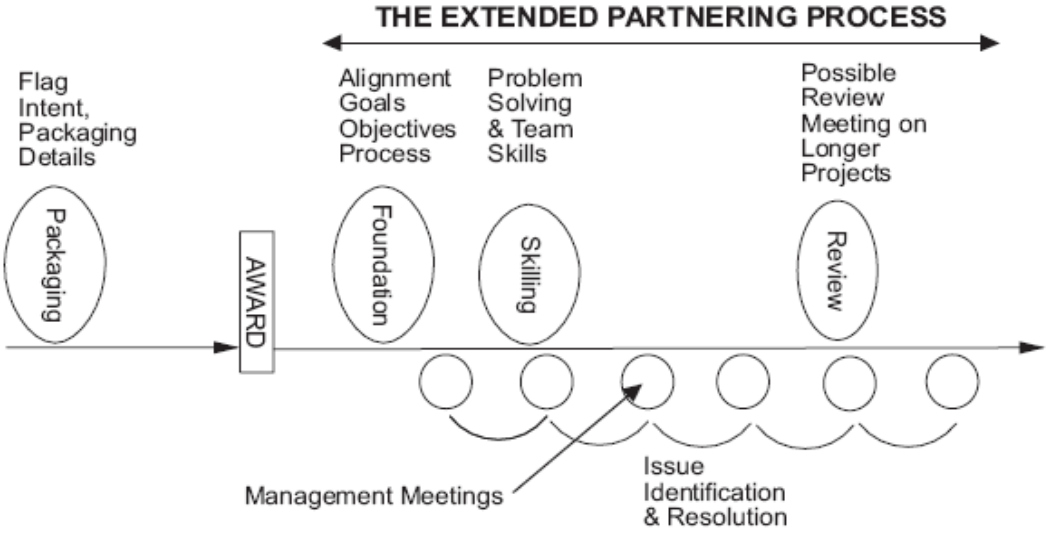
B2 Extended partnering

Scope

Extended partnering can be applied to various traditional types of Contract (for example, TIC-CO, AS 2124, AS 4300), Design and Construct, and Design Construct and Maintain, and to delivery processes such as ECI and ETI. It would normally be used more frequently for projects where elements of, for example, time, cost, environmental issues, community issues, size, traffic, and so on, increase the project's complexity, and where the outcomes could benefit from a team-focused approach.

Please consult Project Management and Delivery Infrastructure Procurement for extended partnering on ETI / ECI process. In some CPA Contracts, non-price criteria (relating to relationship management) may be included.

Figure B2 – The extended partnering process



Appendix C – Relationship and Collaboration Workshop

C1 Purpose

To provide the Principal, Administrator, Contractor, Subcontractor team with team-communication and interpersonal skills to assist in maintaining an ongoing collaborative, 'best for project' approach to project delivery.

C2 Timing

The Relationship and Collaboration Workshop is held within 2 months of the Date of Acceptance of Tender.

Specific clauses relating to the commitment to relationship and collaboration, are included in the TIC-CO General Conditions of Contract (GCoC). These clauses discuss relationship and collaboration principles, the workshop, protocols and monitoring requirements. If delivering a project using a TIC-CO, the points which follow should be read in conjunction with the TIC-CO GCoC.

C3 Objectives

- to further develop an integrated project team
- to provide members of the project team with interpersonal skills for the project
- to develop motivators specific to the project, and
- to develop techniques to resolve issues that may arise during the project.

C4 Workshop content

C4.1 Introductions and icebreakers

- what is going well for each individual – both on the job and personally?

C4.2 Moments of truth

- the influence of positive and negative experiences
- levels of learning, and
- levels of service.

C4.3 Exercise (levels of service)

- each party records:
  - what they are currently doing that they consider impresses the other party, and what they could do in the future
  - what the other party is currently doing that is impressing them, and what they could do in the future, and
- comparison and discussion.

C4.4 Motivation

- what are the parties' motivators?

C4.5 Exercise

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

C4.6 Conflict resolution

- what influences behaviour, and
- identifying and/or addressing assertive, passive, aggressive and aggressive / passive behaviour.

C4.7 Team dynamics

- theory, and
- what level the team thinks it has reached.

C4.8 Team exercise

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

C4.9 Problem Solving

Exercises in group synergy

- de Bono's Six Hats, and
- other creative problem-solving techniques.

Exercise

- exercise in problem solving using de Bono's Six Thinking Hats[25]
- fictional
- issue regarding the project
- decision making
- decision making theory
- exercise in decision making, and
- ultimate team challenge.

C5 Workshop participants

- Representatives for the Principal, the Administrator, the Contractor and major subcontractors, and the Contract Leadership Team (if any).

C6 Duration

- Half a day to one day.

[25] The de Bono Group, https://www.debonogroup.com/services/core-programs/six-thinking-hats/.

Appendix D – Group problem solving

D1 Introduction

The group problem solving process provides 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.

D2 Definition

Group problem solving processes are structured, systematic and analytical. A group of interested parties (decision makers, stakeholders, technical specialists, industry representatives, suppliers 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 and Management, Partnering including Relationship Contracting and Post Construction Reviews.

D3 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.

D4 Benefits

A number of benefits arise from group problem solving processes:

- shared understanding among a wide range of stakeholders
- savings in lifecycle 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 learnings transferred to future projects.

D5 Appropriate use

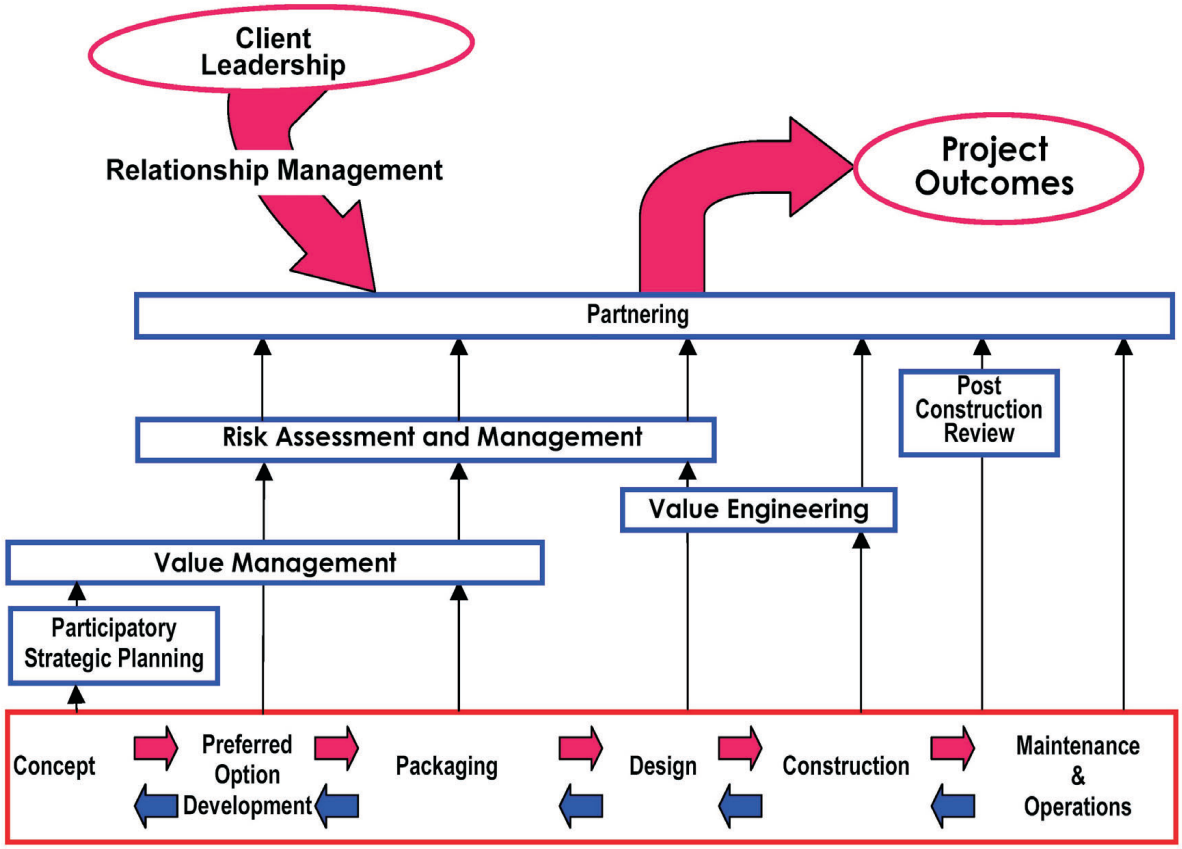
Use of group problem solving processes will vary with the project's scale and complexity.

Group problem solving processes can be used in various phases of a project and for various reasons, for example:

- 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 D5 – Group problem solving processes



The most appropriate use of the varying group solving processes is shown in Figure D5, that is:

- 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 represent a more diverse background in the earlier phases of a project, rather than the latter phases.

D6 The process

Although the process differs slightly for the different workshop types, underlying principles are similar. One of the major differences, are the types of groups or individuals that 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 then prioritised, with ideas being generated around how the objectives can be achieved.

D7 Collection of information

The more information and context, project parameters and known constraints that can be provided to the workshop participants, the broader the knowledge base on which to start generating options, to challenge fixed thinking. This approach assists in creatively problem solving and actively contributes to workshop success. When collecting information, consider the following:

- present any project information such as current design proposal and cost estimates:
  - define any givens
  - identify the known assumptions, and
  - define the importance around the subject of the study.
- analyse functions:
  - define the primary intended purpose, and
  - identify functions to be performed.
- generate alternatives
- reflect on alternatives
- evaluate alternatives
- develop selected alternatives, and
- provide conclusions, recommendations, and action plans.

D8 Critical success factors

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

- conducting the workshop prior to strong opinions being generated around decisions
- if any non-negotiables have been decided, stating these at the beginning of the process
- limiting the issues to be addressed at a workshop to one key issue, do not attempt to address, for example, functionality and project packaging in the one workshop, and
- dissemination of the information, implementation plans and final decision to the participants of the workshop outcomes at the earliest opportunity.

The process is best facilitated by facilitators trained in group problem solving techniques.

Appendix E – Design and *then* Construct (Traditional) compared to Design and Construct

No.	Feature		Design and *then* Construct Delivery Model	Design and Construct Delivery Model	
			Traditional Contract	**Design and Construct (DC)**	**Early Contractor Involvement (ECI)**
1	**Tender process**		Complex projects: 1. Expressions of interest called from prequalified Contractors. Selection made to reduce to 2 or 3 tenderers after assessment against pre-set criteria. 2. Selection of preferred tenderer against price. Less complex projects: 1. Suitably prequalified Contractors all able to bid.	1. Expressions of interest called for prequalified Contractors. Selection made to reduce to 2 or 3 tenderers after assessment against pre-set criteria. 2. Selection of preferred tenderer after further evaluation against pre-set criteria.	1. Expressions of interest called for prequalified Contractors and Designers. Selection made to reduce to 2 or 3 tenderers after assessment against pre-set criteria. 2. Further shortlisting to 2 tenderers, each to develop design and provide preliminary pricing. 3. Selection of a preferred tenderer after further evaluation against pre-set criteria.
2	**Tendering costs**	**Principal**	Moderate	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 must be passed on to a client at some point.	Significant for the Principal in Stage 1 due to assessment of non-price criteria, workshops with competing tenderer teams and external independent auditors and verifiers.
		Contractor	Low, as quantities and design are prepared by Principal.	Expensive as design needs to be developed to allow determination of risk and costing. Can be reduced if client offers a design fee.	Moderate. Some aspects can be addressed in Stage 1.
3	**Basis of selecting Contractor**		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.	Selection based on 3 components: 1. Tenderer's design 2. Tenderer's non-price criteria, and 3. Tenderer's price.	Assessment of non-price criteria, proposals and structured workshops of competing tenderers.
4	**Number of contested designs**		One but selected by Principal from options developed by one Designer.	Concept Design developed to a more advanced design by 2 to 3 Tenderers, using the Principal's design brief. Potential for Principal to use components of unsuccessful designs in the final design.	Single preliminary design to Design Brief, then developed by 2 tenderers through interaction with the Principal. Scope for innovation.

No.	Feature	Design and *then* Construct Delivery Model	Design and Construct Delivery Model	
		Traditional Contract	**Design and Construct (DC)**	**Early Contractor Involvement (ECI)**
5	**Collaborative design**	Not applicable. Principal owns the Design. Contractor bids on the project as designed.	Some Constructor / Designer synergy. Possible to include partnering as part of the D and C Contract.	Final design to Design Brief by Contractor / Designer and Principal. Designer synergy.
6	**Constructability**	Designer not necessarily aware of successful Contractor's strengths or their latest construction methods.	Design tailored to Contractor's equipment and methods.	Design tailored to Contractor's equipment and methods.
7	**Principal's control of standards**	Documentation of design and specifications and then surveillance during construction by Administrator's team.	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.	As a member of the team during Stage 1 plus auditing of construction during Stage 2.
8	**Design management**	Principal Contracts with Designer separately.	Principal's Representative deals directly with Contractor.	• STAGE 1 (preliminary design): Project focused – controlled within Principal / Contractor / Designer teams. • STAGE 2 (final design): Principal deals directly with Contractor.
9	**Intellectual property**	Owned by Principal.	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 may also 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.	Principal owns the intellectual property rights, which are given to the Contractor for the duration of the Contract.

No.	Feature	Design and *then* Construct Delivery Model	Design and Construct Delivery Model	
		Traditional Contract	**Design and Construct (DC)**	**Early Contractor Involvement (ECI)**
10	**Design and construction timing**	A sequential process with no potential for overlapping design and construction.	Detailed design is developed during construction with potential time savings. Design is programmed to Contractor time requirements.	Overlapping of design and construction is possible.
11	**Risk allocation – design**	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.	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.	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.
12	**Risk allocation – construction**	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).	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).	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).
13	**Defects liability period**	Typically – 3 months.	Variable – 1 - 5 years.	Variable – 6 months - 2 years.
14	**Certainty of final cost**	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.	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.	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.

No.	Feature	Design and *then* Construct Delivery Model	Design and Construct Delivery Model	
		Traditional Contract	Design and Construct (DC)	Early Contractor Involvement (ECI)
15	**Dispute management**	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.	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. Tender documents define selected option for dispute resolution, including Issues Resolution Advisor, Dispute Resolution Board, Arbitration and Litigation.	Dispute defined in Contract documents. Dispute referred to Dispute Resolution Board as defined by the Contract.
16	**Conflict of interest**	Principal focused on quality while Contractor will not stay in business long if he loses money.	Contractor tendency to under-design with Principal concerned about the design meeting Design Brief.	All participants project focussed to the extent permitted by the Contract documents.
17	**Insurance**	See Appendix F for project delivery options, risk allocation and insurance.		
18	**Staffing**	Steady input of Principal's staff throughout Works. Staffing needs could increase as variations and claims arise.	Principal's staffing inputs required for auditing of work, progress payment assessment and design checking.	Principal's staffing inputs heavy throughout the selection, evaluation and RAP phases but reduced during the construction of the Works.
19	**Management process**	Success can depend upon relationship between Principal, Administrator and Contractor.	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.	Minimum scope for confrontation after design is agreed. Design Brief becomes critical to avoid issues on final design.
20	**Innovation**	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.	Contractor can incorporate innovation, constructability, and efficiency into design as it's under its control.	Contractor can incorporate innovation, constructability, and efficiency into design as it's under its control.
21	**Value for money**	Open tender, transparent competitive market environment coupled with the ability to select Contractors using price and non-price components where justified.	Open tender, competitive market environment coupled with the ability to select Contractors using a non-price criteria component.	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 RAP is being developed.

Appendix F – Risk allocation and insurances for various Delivery Models

Ref No.	Risk Description	Design and *then* Construct Delivery Model	Design and Construct Delivery Model	
		Traditional Contract	Design and Construct (DC)	Early Contractor Involvement (ECI)
1	**Site Assessment**			
	Relocation of public utility plant	Principal	Principal and Contractor shared.	Principal and Contractor shared.
	Latent Site conditions	Principal and Contractor shared.	Contractor	Principal and Contractor shared.
	Wet weather and effects of	Contractor	Contractor	Contractor
2	**Tendering**			
	Documentation – sufficient, clear, easily understood	Principal	Principal and Contractor shared.	Not applicable to Stage 1 and 2 deliveries.
	Tendering costs	High-cost Principal, Low-cost Contractor but no payment made for bid cost.	Medium cost Principal, High-cost Contractor. May be payment for offer cost.	High-cost Principal and low-cost Contractor. May provide a contribution towards offer costs.
	Certainty of final costs at award	High risk if Design inaccurate.	Medium risk, control of variations but potentially higher in cost for each Variation.	Very high risk, as design needs to be developed after Tender.
3	**Design**			
	Design Brief – accurate, consistent and specific requirements referencing current and appropriate standards	Principal	Principal, but low if Project Brief is performance based.	Very low Principal risk, as design is being developed, shared risk with Contractor.
	Design drawings – errors, conflicts, deficiencies	Principal	Contractor and Designer	Stage 1 – shared by Principal / Contractor / Designer Stage 2 – Contractor
	Design documentation – inaccurate quantities, errors	Principal	Contractor and Designer	Contractor
	Constructability of design	Principal	Contractor and Designer	Contractor / Designer

Ref No.	Risk Description	Design and *then* Construct Delivery Model	Design and Construct Delivery Model	
		Traditional Contract	**Design and Construct (DC)**	**Early Contractor Involvement (ECI)**
	Sequencing of design with construction, delays	Principal	Contractor and Designer	Contractor / Designer
	Innovation	Low likelihood and with Principal.	High likelihood and with Contractor and Designer.	High likelihood by Contractor / Principal.
	Design interface issues	Principal	Contractor and Designer	Stage 1 – shared by Principal / Contractor / Designer Stage 2 – Contractor
	Long-term maintenance of as-constructed design	Principal	Shared Risk Principal / Contractor but can be altered to Contractor if D and C including Maintenance.	Most likely Principal but can be altered to be shared. Needs to be clear in the Contract
	Defect liability maintenance of as-constructed design	Principal	Contractor and Designer	Contractor / Designer
	Environmental standards	Principal	Contractor and Designer	Contractor / Designer
4	**Construction**			
	Construction standards	Design – Principal Construction – Contractor	Contractor	Contractor
	Supply of materials	Should the Contract include supply by Principal – Principal risk. Otherwise, Contractor risk.	Contractor. Should the Contract include supply by Principal – Principal risk.	Should the contract include supply by Principal – Principal risk. Otherwise, Contractor risk.
	Subcontractors	Should the contract include subcontractors nominated by Principal – some risk to the Principal. Otherwise, Contractor risk.	Contractor	Should the Contract include nominated by Principal – some risk Principal Otherwise, Contractor risk.
	Wet weather	Principal for specified period, Contractor after specified period.	Contractor	Principal for specified period, Contractor after specified period.
	Effects of wet weather	Contractor	Contractor	Contractor
	Works not fit-for-purpose	Design – Principal Construction – Contractor	Contractor and Designer	Shared by Proponents in design Contractor in construction
	Variations	Principal	Contractor but can be Principal if unknown at Tender stage.	Stage 1 – Principal Stage 2 – Contractor

Ref No.	Risk Description	Design and *then* Construct Delivery Model	Design and Construct Delivery Model	
		Traditional Contract	Design and Construct (DC)	Early Contractor Involvement (ECI)
	Quality assurance	Contractor	Contractor	Stage 1 – Principal Stage 2 – Contractor
	Community consultation	Principal	Principal and Contractor shared.	Shared by Proponents and Contractor.
	Environmental harm	Contractor	Contractor	Contractor
	Work Health and Safety	Contractor	Contractor	Shared by Proponents in design. Contractor in construction.
	Traffic management	Contractor	Contractor	Shared by Proponents in design. Contractor in construction
5	**Management systems**			
	Project timing and sequencing	Principal's risk for matters under its control, otherwise Contractor.	Principal's risk for matters under its control, otherwise Contractor.	Shared by Proponents in design. Contractor in construction.
	Management of project Work Health and Safety plan	Contractor	Contractor	Shared by Proponents in design. Contractor in construction.
	Management of Project Quality Plan	Contractor	Contractor	Shared by Proponents in design. Contractor in construction.
	Management of Project Traffic Management Plan	Contractor	Contractor	Shared by Proponents in design. Contractor in construction.
	Management of Project Environment Plan	Contractor	Contractor	Shared by Proponents in design. Contractor in construction
	Management of Project Communication Plan	Principal's risk for matters under its control, otherwise Contractor.	Principal's risk for matters under its control, otherwise Contractor.	Shared by Proponents in design. Contractor in construction.
	Management of Severe Weather Management Plan	Contractor	Contractor	Shared by Proponents in design. Contractor in construction.
	Management of Project Relationship Management Plan	Principal – Partnering may be offered to Contractor by Principal with mutual collaboration and expected outcome.	Principal – Partnering may be offered to Contractor by Principal with mutual collaboration and expected outcome.	Relationship Management Team on behalf of Principal, Contractor, Designer, subcontractors and suppliers.
	Management of Project Cultural Heritage Plan	Principal and Contractor shared.	Principal and Contractor shared.	Shared by Proponents in design. Contractor in construction.
	Management of dispute resolution	Shared by Principal and Contractor with arbitration a last option.	Shared by Principal and Contractor with arbitration a last option.	Shared by Principal and Contractor with referral to Dispute Resolution Board if necessary.

Ref No.	Risk Description	Design and *then* Construct Delivery Model	Design and Construct Delivery Model	
		Traditional Contract	**Design and Construct (DC)**	**Early Contractor Involvement (ECI)**
	Management of Intellectual Property rights	Owned by Principal	Owned by Contractor with rights given to Principal.	Owned by Principal
	Probity Advisor's actions	Not applicable	Principal	Principal
	Safety Auditor's actions	Safety audit carried out on design and final construction. Not part of Contract but can cause variations if issues arise.	Safety audit carried out on design and final construction. Not part of Contract but can cause variations if issues arise.	Safety audit carried out on design and final construction. Not part of Contract but can cause variations if issues arise.
	Independent Verifier's actions	Not applicable	Principal	Principal
	Partnering	Principal and Contractor shared.	Principal and Contractor shared.	Principal and Contractor shared.
	Provision of securities	Contractor	Contractor	Contractor

Guidance for Principal Arranged Insurance (PAI) construction Contract Insurance Requirements

1. Insurance is **not** about buying a policy, it is about **selling** a risk to the insurer by the proposed insured to obtain coverage at an affordable cost.
2. The certainty of insurance deductibles on major contacts is often only secured after underwriters are provided with detailed Contract documentation to assess the risk of underwriting. It is important that project managers prepare information as requested well in advance, to enable a quote to be provided and included in the tender documents for pricing the risk. The Principal Arranged Insurance does not commence until contract award.
3. In order to sell its risk, the proposed insured needs to:
    - establish a risk register for each activity on the project which includes full disclosure of all known risks
    - establish a risk management strategy to remove or reduce risk to acceptable levels
    - demonstrate risk management skills by reference to prior experience, suitably qualified staff, and management procedures
    - demonstrate risk assessment strategies for all Site activities, and
    - demonstrate risk mitigation strategies where risks are high or not fully controlled, including providing insurers with a Severe Weather Management Plan (SWMP).
4. Project managers, tender managers and Contract Administrators must refer to specific insurance, tender and Contract conditions.
5. As part of insurance arrangements, the department has 2 insurance options appropriate to a range of project values:
    i) Bulk PAI program is available for Contracts with a construction value greater than $1M and less than $200M, and
    ii) PAI Major Projects program insurance for construction Contracts is available for Contracts over $200M for roads, or $50M for bridges, or $20M for tunnel components.

    Contact the Risk Insurance Scheduling and Estimating (RISE) unit as early as possible to arrange an appointment with a broker to develop Contract-specific insurances.

    Endorsement onto this program is arranged through submission of a project-specific underwriting questionnaire to the insurer.

    Should a Contract fall outside of the threshold or eligibility criteria on the basis that Contractor Arranged Insurance (CAI) is unsuitable, discretion can be used. Visit the RISE SharePoint site information on PAI eligibility criteria and schedule of insurance requirements (‘Guidance for Principal Arranged Insurance’), or email PAI_Program@tmr.qld.gov.au for more information.
6. The PAI programs consist of 4 areas:
    i) Contract Works Insurance (Material Damage)
    ii) Construction Risks (Public Liability and Product Liability)

iii) Environmental Impairment Liability, and

iv) Professional Indemnity (Professional Risk and Indemnity).

7. Standard Contract insurance requirements include:

- The Works – includes permanent and temporary Works, structures, materials, project buildings and contents, formwork, falsework, scaffolding and documents, but excludes certain construction plant, equipment and existing property.
- Professional Indemnity – cover against failure of a professional's duty of care (provided under PAI program)
- Public Liability – cover for injury, damage or loss sustained by a third party arising from a construction activity or situation (provided under PAI program)
- Product Liability – cover for damage resulting from failure of the product to be delivered (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 (provided by Contractors), and
- Vehicle Insurance – cover of vehicles against loss or damage and Third-Party injury and damage (provided by Contractors).

8. All projects insured through the PAI program must develop and maintain a SWMP in accordance with engineering policy EP 146 *Severe Weather Management Plans (SWMP)*. Contractors are responsible for developing and maintaining the plan and the department's project managers are accountable for endorsing the plan.

9. The financial responsibility for the payment of deductibles / excesses rests 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.

10. The duration of PAI packages (apart from Public and Product Liability – Refer to the RISE SharePoint site) 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, then project-specific insurance may be required.

11. Be aware that the default value of projects automatically covered under PAI, begins at $1M. For projects < $1M, where CAI is unsuitable and PAI is required, the Insurance Team must be notified so that the project can be added to the schedule of projects covered under PAI.

Insurance is a very complex subject. Information given here is indicative only and no reliance should be placed on it for developing individual insurance plans, because insurance must be tailored to individual risk profiles. Insurance cover is generally reliant on value thresholds, not delivery methods or Contract types. Refer to the RISE SharePoint for detailed PAI eligibility criteria and schedule of insurance requirements.

Appendix G – Risk profile and delivery method options

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

Project characteristics

- a departmentally-owned design (traditional packaging)
- estimated Contract value of $20M – major Works
- construction of 4 bridges across the floodplain, and
- supply and delivery of approximately 100 precast concrete piles, deck units, etcetera.

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.

Risk profile (Works)

The following were identified as significant:

- cultural heritage issues, and
- flood damage.

Risk profile (tenderers)

- no significant issues.

Recommendation

The risk profile, with significant risks identified in the Works, led to the recommendation that a two-stage tendering process applies 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 shortlisted tenderers.

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

Project characteristics

- departmentally-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.

Risk profile (Works)

The following were identified as significant:

- traffic disruption and delays
- community consultation, and
- possible damage to adjacent buildings.

Risk profile (tenderers)

- no significant issues.

Recommendation

Because of the significant risks identified in the Works, 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 shortlisted tenderers.

or

- A single-stage process involving:
  - prequalified constructors (R4 / B3)
  - specific requirements of key personnel experience and traffic management, and
  - weighted price / non-price criteria.

Appendix H – Sole invitation justification methodology

Where projects are anticipated and catered for as sole invitation Contracts in QTRIP or in the District Delivery Plans, then justification of the sole invitation methodology is not required.

However, if the project was not anticipated, and sole invitation is the chosen Contractual arrangement, then an evaluation and justification must be provided on how a single invitee will provide value for money, given the cost and/or the risk of the project. Hence, a justification Tender Process Endorsement (TPE) form must be completed. The TPE template is available from the Principal Officer (Infrastructure Procurement).

Checklists for sole invitation, where RoadTek is the single invitee, are included at the end of this Appendix as Table H(g) and Table H(h).

There are 5 main steps in determining value for money in sole invitation Contracts:

1. identify and undertake weighting of non-price criteria to determine their importance
2. evaluate the non-price criteria by a 'Selection Process' (to quantify single invitee benefits and compare against 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 as follows:

STEP 1 – Identify and weight the non-price criteria

Non-price criteria refer to those factors important to achieving project objectives but not directly covered by the Contract price. They often relate to the way the Contract is managed, the skill sets offered by the supplier, or the methodology the supplier engages to complete the project.

For the purposes of evaluating a sole invitation Contract's value for money, 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 purchaser's broader objectives (community and social factors).

Depending on the project objectives, it is unlikely that each of the identified non-price criterion have the same importance to the project's outcome. The relative importance of each non-price criterion is considered in the evaluation by assigning weightings to the criteria. The more important the non-price criterion, the higher the weighting. A process such as the Pair-Wise Comparison method can be used to weight each of the non-price criterion.[26]

26 For information on the Pairwise scoring approach: https://www.tmr.qld.gov.au/-/media/busind/businesswithus/existing-infrastructure/smarter-solutions-mca-tool-guide.pdf

STEP 2 – Non-price evaluation

The non-price merits of the single 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 H(a).

Table H(a) – Example non-price criteria evaluation

Non–price criteria heading	Weighting (%)	Evaluation Scores = Rating x Weighting			
		Single invitee (LGs or RoadTek)		Anticipated open tender	
		Rating (1-5)	Score	Rating (1-5)	Score
Specific expertise	50	3	150	3	150
Delivery process	10	3	30	1	10
Engineering risk management	20	2	40	3	60
Broader objectives	20	4	80	1	20
Total Score	**100**		**300**		**240**

Both the single invitee proposal and the anticipated open tender result are rated from 1 to 5 for each criterion, multiplied by the weightings determined in Step 1 to calculate the score, and the results totalled. This method is consistent with the Two-Envelope System detailed in Chapter 7 of the *Consultants for Engineering Projects Manual.*[27]

The evaluation of each non-price criterion will involve some break down of the criteria into elements and a means of measuring each element. The following provides suggestions for elements within each of the non-price criterion.

Specific Contractor expertise

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 H(b) – Elements of specific expertise

Elements of specific expertise	Measurement
Suppliers	Good understanding of local supplier capability.
Utilities	Good relationships with local public utility providers and authorities.
Construction conditions	Demonstrated successful experience with conditions likely to be encountered, for example, geotechnical, weather.
Availability of plant or equipment	Contractor has appropriate plant available in the area.
Cultural heritage management	Demonstrated successful experience with local issues.
Alternative Tendering	Good alternative tender proposal offering assessable benefits in price or non-price factors.

[27] Department of Transport and Main Roads, https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Consultants-for-engineering-projects.

Delivery process (likely costs for purchase)

This criterion considers 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 single invitee negotiations on unit rates.

A Contractor with a 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 H(c) – Elements of delivery process

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

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. The department's business units 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 can 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. Relating to LG 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 H(d) – Elements of engineering risk management

Elements of engineering risk management	Element attributes	Measurement (consequence)
Informed buyer	Inadequate skills retention, knowledge management and technology transfer.	Poor management of road network.
Project management	Project management plan is inadequate or not followed.	Road unable to open on the due date, or work delayed or damaged through onset of wet season.
Quality	Quality management plan is inadequate or not followed.	Quality Nonconformance. Reworks may be required.
Time	Work not completed on time.	Unable to open road on the due date. Work delayed or damaged through onset of wet season.
Budget	Budget for Works exceeded.	Community or political backlash. Other work unable to be funded.
Safety	Workplace Health and Safety requirements not met. Poor traffic management.	Incident leading to injury, loss of life, property damage, legal proceedings and costs. Community or business costs from traffic disruption.
Environment	Environmental management plan is inadequate or not followed.	Damage to environment. Community or political backlash. Legal proceedings and costs.
Cultural heritage	Cultural Heritage management plan is inadequate or not followed.	Cultural issues not respected. Damage to cultural heritage. Community or political backlash. Legal proceedings and costs.

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

This criterion reflects the department's Strategic Plan,[28] 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 must 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 single 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 invitation Contract.

Table H(e) lists some of the options for determining the expected price for the sole invitation.

[28] Department of Transport and Main Roads, https://www.tmr.qld.gov.au/about-us/corporate-information/publications/strategic-plan.

Table H(e) – Determining expected price for sole invitation

Method	Objective	Process
Traditional estimate	To compare the price for a negotiated Contract with its estimated value, using first principles.	Use first principles to develop estimate of the Contract price.
Comparison with historical expectations	To compare the price for a negotiated Contract with its estimated value, based on recent local records.	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.
Benchmarking	To assess whether there is a significant difference between unit rates offered for open tender or single invitee.	Compare unit 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 single invitee 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 invitation arrangement.	Select Contracts for letting by open tender. Use unit rates and/or tender prices for comparison with single invitee rates / prices.
Statistical Analysis	To determine whether there is a significant price difference between Works delivered by open tender or single 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 single invitee) is one of those factors.

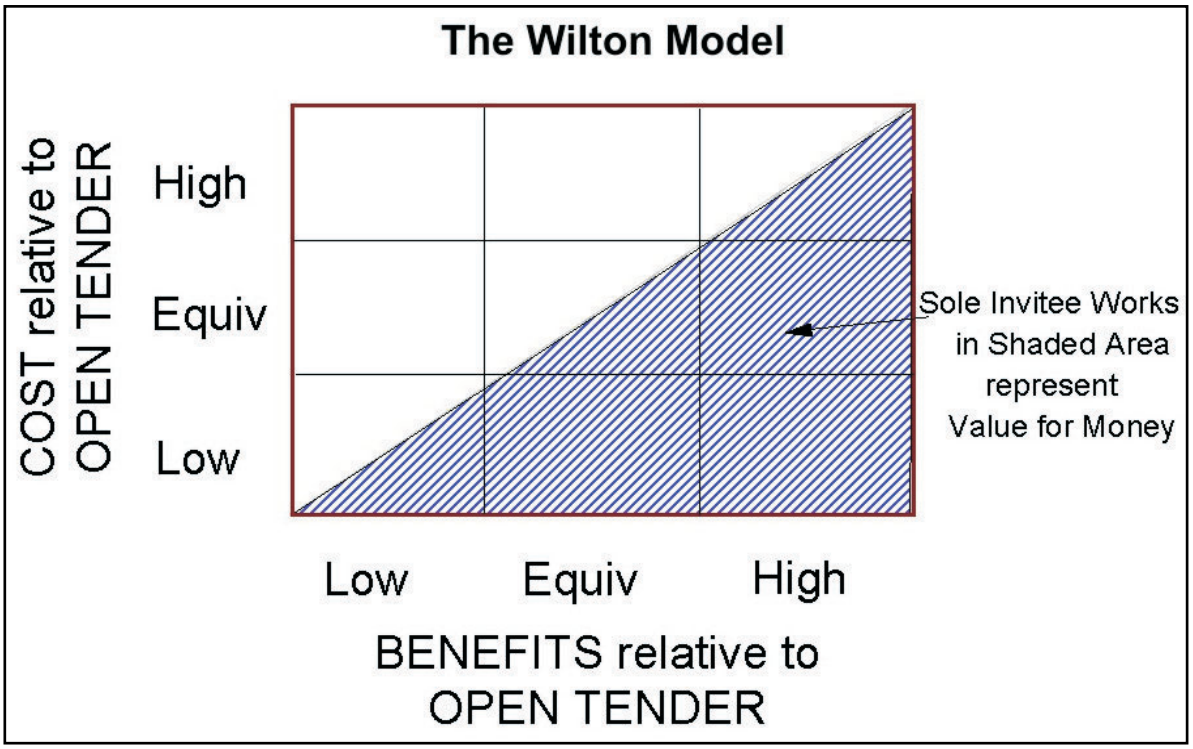
STEP 4 – Evaluation of benefits against costs

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

To evaluate relative benefits against costs, a model devised by Dr Peter Wilton[29] is used – see Figure H(a).

[29] 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.

Figure H(a) – Wilton Model



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 single 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 single 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.

The following explains how to use the Wilton Model.

STEP 5 – Document the decision

The following documentation should be retained on file, relating to each sole invitation Contract:

- the working papers (for example, Pair-wise comparison) by which the non-price criteria were weighted
- a selection form to demonstrate the comparison between the single invitee benefits and the equivalent open tender benefits, and
- a Wilton Model graph, indicating the position of the ratio of benefits to costs from the single invitee offer, compared to the position of the anticipated equivalent open tender result.

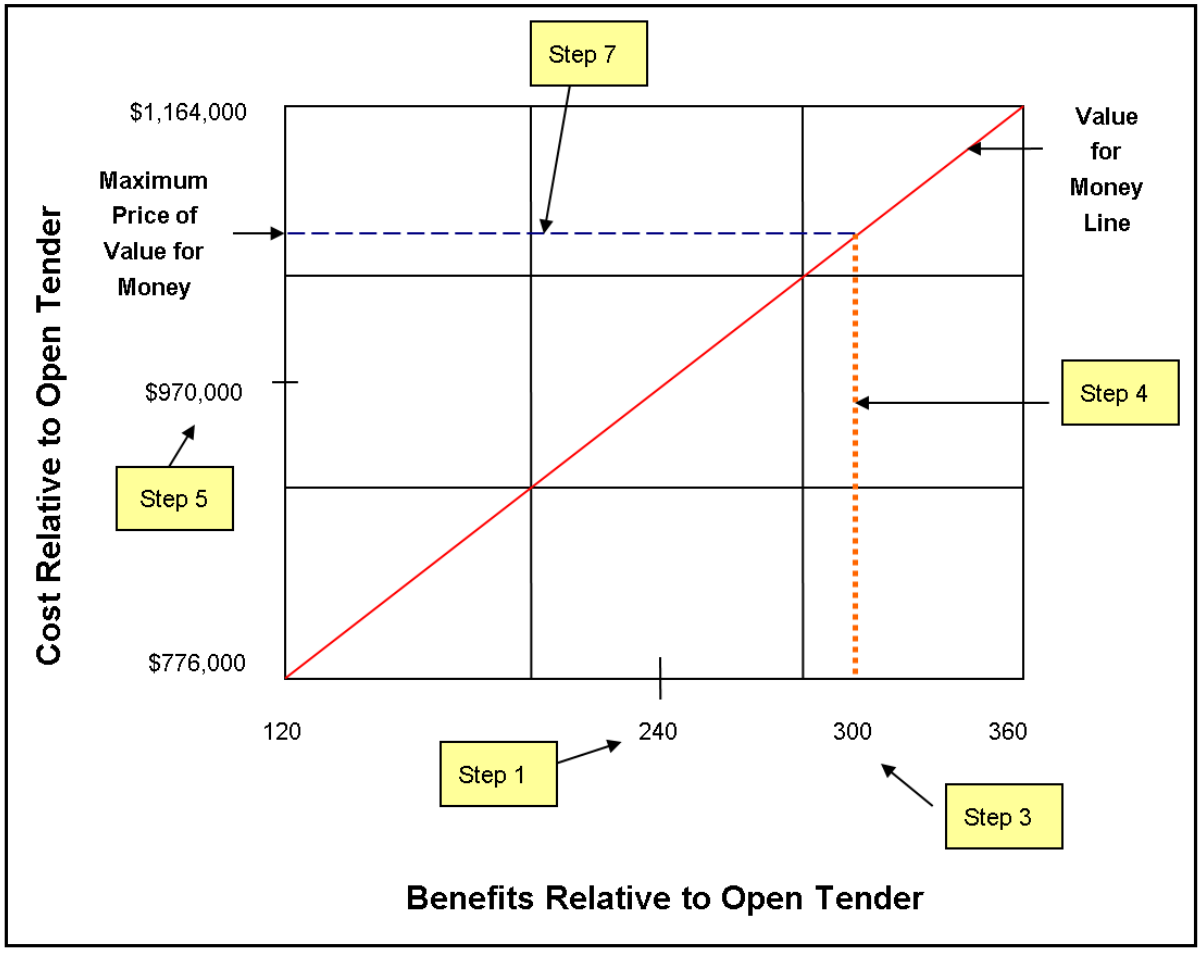
Use of the Wilton Model

A worked example of the Wilton Model follows. For the purposes of demonstrating the Wilton Model, an anticipated open tender price and a single invitee have been assumed (Table H(f)).

Table H(f) – Example project details

Example project	Single invitee (RoadTek or LG)	Anticipated open tender
Non-price criteria	300	240
Price	$1,000,000	$970,000

Figure H(b) – Example project details



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 (**note** the following)

   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 single invitee offer on the horizontal axis
4. join the single 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 (**note** the following)

   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 single 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 invitation offer plots above the value for money price upper limit, this can be used as a basis for further negotiation with the single invitee.

   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 single 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 invitation 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 of Figure H(a).

If the price limits are set too far away from the open tender estimate, the sole invitation 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 most bids for straightforward (low-risk) projects. This is a generic starting point which may be varied at the discretion of the District Director if needed for specific cases.

Table H(g) – Checklist – Application for Sole Invitation process – RoadTek

Checklist – Application for Sole Invitation process – RoadTek		
Step	**Details**	**Notes**
1. Date		
2. District		
3. Job Number / Contract Number		
4. Job Description and scope of work		
5. Value (excl GST)		
6. Contact Officer / Position		
7. Email address		
8. Phone / Mobile		

Checklist – Application for Sole Invitation process – RoadTek		
Step	**Details**	**Notes**
9. Expenditure Type	☐ Capital expenditure ☐ Operational, for example, routine maintenance, go to Section 11 – Step 1 ☐ Emergency, go to Section 11 – Step 1 ☐ Other (please describe) _____, go to Section 11 – Step 1	
10. Funding Source	☐ Commonwealth only (Steps 15/16 applies) ☐ State only (Steps 15/16 does not apply) ☐ Commonwealth and State (Steps 15/16 applies) ☐ Other (please describe) _____	
11. Proposed Procurement Method	☐ Minor Works ☐ Sole Invitation to RoadTek ☐ Other (please describe) _____	
12. Risks	☐ Financial ☐ Time ☐ Quality ☐ Technical ☐ Skill ☐ Resources ☐ Market competition ☐ Other (please describe) _____	Tick all risks which apply
13. Reasons for sole invitation to RoadTek	☐ Value of the work is of a kind for which competitive tenders are unlikely to be received ☐ Skill is not readily available in the market ☐ Scope is not fully understood (the work is of a kind for which it is not practicable to prepare adequate tender specifications) ☐ Flexibility to control the extent of work is required ☐ Work will contribute to employment in a region ☐ Other (please describe) _____	Tick all risks which apply
14. Check Point 1 – Approval of procurement approach to engage RoadTek on a sole invitation basis	☐ District Director ☐ Regional Director ☐ General Manager	Attach a copy of the email or letter where the approval is granted.

Checklist – Application for Sole Invitation process – RoadTek		
Step	**Details**	**Notes**
15. Check Point 2 – PIP Endorsement	If the project contains any Commonwealth Funding, contact Portfolio Investment and Programming (PIP) Branch – Investment Prioritisation and Evaluation, to seek a formal tender exemption (in line with the *National Land Transport Act* 2014 (Cth), Section 2(i)(c) I to vi) from the requirement to use a public tender process.	PIP will send the application to the Department of Infrastructure Regional Services (DIRS), if not carried out as a part of Business Case Approval.
16. DIRS / PIP Approval	☐ Yes ☐ No. Go to step 17	Where DIRS / PIP approval applies, attach a copy of the email or letter where the approval is granted.
17. Local confirmation of RoadTek Resources	☐ Operations Manager (RoadTek)	Attach a copy of the email or letter where the confirmation is shown.
18. Procurement Approval	☐ Appropriate Procurement Delegate Approval	Attach a copy of the email or letter where the approval is granted.
19. RoadTek Offer Documents and Tender	☐ Prepare offer documents and seek formal offer from RoadTek	Attach a copy of the offer documents and an email or letter inviting RoadTek to submit an offer.
20. Benchmark Prices	Explain how RoadTek prices are competitive when compared to other suppliers	Attach an explanation which demonstrates that value for money has been obtained, for example, traditional estimate, comparison with historical rates, benchmarking, market testing.
21. Financial Approval Required	☐ District Director $3M (including GST) ☐ Regional Director $3M (including GST) ☐ General Manager PDO $5M (including GST)	Attach a copy of the financial approval.
22. Stop	Use other procurement method.	

Table H(h) – Checklist – Operational (Routine Maintenance) or Emergency

Checklist – Operational (Routine Maintenance) or Emergency		
Step	**Details**	**Notes**
1. Expenditure Type	☐ Operational for example, routine maintenance[30] ☐ Emergency[31] ☐ Other (please describe) _____	
2. Funding Source	☐ State only ☐ Other (please describe) _____	Refer Figure 103.2.1(b), for any Commonwealth Funding arrangement
3. Proposed Procurement Method	☐ Transport Infrastructure Contract Sole Invitation (TIC-SI) ☐ Road Maintenance Performance Contract (RMPC) ☐ Road Asset Maintenance Contract (RAMC) ☐ Other (please describe) _____	
4. Risks	☐ Financial ☐ Time ☐ Quality ☐ Technical ☐ Skill ☐ Resources ☐ Market competition ☐ Other (please describe) _____	Tick all risks which apply
5. Issue Works Order	☐ TIC-SI ☐ RMPC	
6. Check Point 1 – Approval of procurement approach to engage RoadTek on a sole invitation basis	☐ District Director ☐ Regional Director ☐ General Manager	Attach a copy of the email or letter where the approval is granted.
7. Procurement Approval	☐ Appropriate Procurement Delegate Approval	Attach a copy of the email or letter where the approval is granted.
8. RoadTek Offer Documentation and Tender	☐ Prepare offer documents and seek formal offer from RoadTek	Attach a copy of the offer documents and an email or letter inviting RoadTek to submit an offer.
9. Financial Approval Required	☐ District Director $3M (including GST) ☐ Regional Director $3M (including GST)	Attach a copy of the financial approval.
10. Local confirmation of RoadTek Resources	☐ Operations Manager (RoadTek)	Attach a copy of the email or letter where the confirmation is shown.

[30] Maintenance work is exempted under *Sole Invitation under National Land Transport Act* 2014 (Cth) Section 24(1)(a).
[31] Emergency work is exempted under *Sole Invitation under National Land Transport Act* 2014 (Cth) Section 24(1)(c)i.

Appendix I – Infrastructure Procurement Delivery Form Selection Tool

Sample Questionnaire – For Information Only

2. Project Questionnaire

The goal of this questionnaire is to gather information about the project including scope, timing, staging, budget, assumptions and:

i. complete column 'C' and 'D' tilted 'Response' and 'Detailed Explanation to Response'.
ii. once the responses are completed, send the completed spreadsheet to infrastructureproc@tmr.qld.gov.au.
iii. please do not delete any of the Metric in column A.
iv. add any new criteria to the bottom of the table, and
v. avoid providing repetitive responses.

2.1 Has the District / Region made any public or non-public announcement about the Contract model or Delivery Model for this project? Yes / No. If Yes, please describe when and where the announcement was made.

[yes / no]

2.2 Which phase is the project in? (for example, Preliminary Evaluation, Business Case)?

[Preliminary Evaluation / Business Case]

Metric	Description	Response	Detailed Explanation to Response
A. Scope			
A01	Is the scope fully detailed, that is, could it go to 'Detailed Design' now? (if no, why?)		Please provide detailed explanation here
A02	Can the scope be fully detailed (in the next 6 months), that is, could the project go to 'Detailed Design'? (if no, why?)		Please provide detailed explanation here
A03	Traffic per day (AADT), and provide response on how high / low it is in your district's context		Please provide detailed explanation here
A04	What are the project's geometric dependencies (for example: a master plan, adjacent development, PUP, other vertical or horizontal constraints, flood levels, corridor width, land availability, environmental constraints and so on)		Please provide detailed explanation here
A05	Is the functionality required fixed? (if no, why?)		Please provide detailed explanation here
A06	Is the scope likely to change during construction or if more funds become available? (Please explain)		Please provide detailed explanation here
A07	Are there any specific objectives beyond normal time and cost (for example: minimise clearing)		Please provide detailed explanation here
A08	List any early Works (excluding PUP) as a separate Contract, which must be completed before this project can commence		Please provide detailed explanation here
A09	Is PUP expected to impact the scope of work? If yes, how and why, along with type of PUP (contestable or non-contestable Works		Please provide detailed explanation here
A10	Could the project be broken into smaller Contracts?		Please provide detailed explanation here
A11	If response to A10 is 'Yes', could the tenders be released at the same time or different times?		Please provide detailed explanation here
A12	(spare)		
A13	(spare)		

Metric	Description	Response	Detailed Explanation to Response
B. Time			
B01	List the estimated project timeline (for example: start date, finish date and any key milestone dates):	Start Date: Finish Date: Milestone 1 Date: Milestone 2 Date: Other:	(insert comments)
B02	Is an early completion required? If yes, provide the date and explain reasons why it is required.		If yes, explain
B03	Is there a driver to award a Contract before a certain timeframe? (If yes, what is it?)		If yes, explain
B04	Is there a driver to commence 'visible' construction? (If yes, what is it?)		If yes, explain
B05	Is there a driver to award a Contract? (If yes, what is it?)		If yes, explain
B06	Is any preloading required which could impact the timing of the project?		If yes, explain
B07	Are there any other considerations which could impact the timing of the project?		If yes, explain
B08	(spare)		
C. Risk and Mitigation			
CO1	List the high-risk construction aspects	List high risks here	Explain each risk here
CO2	List the high-risk environmental and cultural heritage aspects	List high risks here	Explain each risk here
CO3	List the high-risk design aspects	List high risks here	Explain each risk here
CO4	List the high-risk PUP aspects (specifying contestable and non-contestable Works)	List high risks here	Explain each risk here
CO5	List the high-risk geotechnical aspects	List high risks here	Explain each risk here
CO6	List land resumption risks	List high risks here	Explain each risk here
CO7	List any other high risks – Community / Political, and so on	List high risks here	Explain each risk here
CO8	(spare)	List high risks here	Explain each risk here
D. Constructability			
D01	Are there any constructability challenges? Note: This should not be a repeat of item C01 above.	Yes or No	If yes, explain
D02	Is the construction complex or straight forward?	Yes or No	If yes, explain
D03	Will the staging of the project be dependent on the location of the new alignment or assets which will not be moved (for example, a bridge)?	Yes or No	If yes, explain
D04	Are any specialist materials (including large quantities of material or precast items) required?	Yes or No	If yes, explain
D05	Are there any complexities associated with managing traffic during construction?	Yes or No	If yes, explain
D06	Does the project have multiple interfaces to be managed? (for example, adjacent Works)	Yes or No	If yes, explain
D07	(spare)		
E. Design			
EO1	Are there any design challenges?	Yes or No	If yes, explain
EO2	Is the design complex or straight forward?	Yes or No	If yes, explain
EO3	Will the design / staging of the project be dependent on the location of the new alignment or assets which will not be moved (for example, a bridge)?	Yes or No	If yes, explain
EO4	Are any specialist designs (for example, rail, tunnelling) required?	Yes or No	If yes, explain
EO5	Are there opportunities to make major changes to the design, for example, changing the alignment, location of a ramp and so on?	Yes or No	If yes, explain
EO6	How would different designers add 'value' and reduce the overall project cost?	Yes or No	If yes, explain
EO7	Would the project benefit from optioneering?	Yes or No	If yes, explain
EO8	Is the design hydraulically sensitive?	Yes or No	If yes, explain

Metric	Description	Response	Detailed Explanation to Response
F. Sensitivity			
FO1	Is the project politically sensitive?		Explain why they are sensitive
FO2	Is the project environmentally sensitive?		Explain why they are sensitive
FO3	List any sensitive stakeholders / business		Explain why they are sensitive
FO4	List any other sensitivities		Explain why they are sensitive
FO5	(spare)		
FO6	(spare)		
G. Market			
G01	Does the market have Contractors with the relevant prequalification levels to bid on the project?		
G02	Does the market have design consultants with the relevant prequalification levels to bid on the project?		
G03	Are the Contractors required to use specialist equipment?	Yes or No. Please list them	If yes, explain
G04	Are the Contractors and designers required to have any 'uncommon' specialist resources, for example, rail, tunnelling?		If yes, explain
G05	Is there a driver to package the Works to allow more than one Contract to be awarded?		
G06	What specialist departmental resources are required? For example, ECI expertise, authoring SWTC, technical specialists?		
G07	Is employment of local expertise a requirement?		
G08	(spare)		
H. Budget			
HO1	What is the current budget and describe how it is to be used?		
HO2	Is there a budget to commence detailed design now?		
HO3	Is the construction budget approved?		
HO4	Is federal funding a requirement or other special arrangement required?		
HO5	(spare)		
I. Location			
I01	Is the project a Greenfield or Brownfield Site or both?		Please explain
I02	Does the location provide any challenges not described above?		
I03	(spare)		
J. Contract Form			
J01	Is there a 'preferred delivery method'? (for example, TIC-CO, D and C, ECI and so on)	Yes or No	Preference = ?
J02	If response to I01 is 'Yes'	If Yes	Please explain why it is 'preferred'
J03	Describe any desirable specific procurement / Contract features (for example, non-price scoring, shortlisting, and so on)		Please explain why they are required
J04	Is EPBC expected to be applicable?	Yes or No	If yes, explain possible impact to the project
J05	What capacity in the scope of the Works or objectives is there for the tenderers to provide alternative designs, products, engineering standards which may lower the project cost?		
J06	How does the budget or project aspects affect the preferred delivery method?		
J07	(spare)		
K. Project-Specific Questions			
K01	(spare)	Yes or No	If yes, explain
K02	(spare)	Yes or No	If yes, explain
K03	(spare)	Yes or No	If yes, explain
K04	(spare)	Yes or No	If yes, explain

Appendix J – Characteristics Summaries – Infrastructure Delivery Contracts

These tables are a duplicate of those in the body of *Transport Infrastructure Project Delivery System Volume 1, Section 9.2*. The table referencing numbers have been retained so that their context can be sourced easily.

Table 9.2(a) – Characteristics of Construct Only contracts

Infrastructure Procurement Method	Contract Forms	Value and Risk Profile	Contract Value ($M excl GST) Thresholds	Probity Advisor / Auditor Required?	Application
Early Tenderer Involvement (ETI)	Transport Infrastructure Contract (TIC-CO)	High value, medium to high-risk projects.	$100M (minimum)	See footnote[32]	Used where the department has a partially developed design and is seeking constructability input from tenderers prior to the design being completed. The department requires design effort from tenderers. Typically, tenderers receive a contribution for their participation.
Guided Tender Alternative (GTA)		High value, medium risk projects.	$100M (minimum)		Used where the department has a fully developed design but there may be opportunities for tenderers to provide Alternative Tenders if they choose to do so (not mandatory). This can also be applied to ETI. Typically, tenderers do not receive a contribution for their participation.
Construct Only with shortlisting		High value, medium risk projects.	$100M (minimum)		Also, applies to small scale high risk Works such as geotechnical construction Works, including slope stabilisation and soil nailing.
Construct Only without shortlisting		Low to medium value, low to medium risk projects.	$1M (minimum)		

[32] For most low-risk projects, procurement staff and evaluation teams can effectively manage probity issues. Where infrastructure procurement is complex, high value, sensitive, or Offeror grievances are more likely, it may be beneficial to engage a Probity Advisor.

Note: Shortlisting is only permitted for TIC-CO projects over $100M.Table 9.2(b) – Characteristics of Construct Only contracts

Infrastructure Procurement Method	Contract Forms	Value and Risk Profile	Contract Value ($M excl GST) Thresholds	Probity Advisor Required?	Application
Minor	Small Scale Minor Works Contract (SSMW)	Low value, low risk projects.	< $250,000	No	For Contractors undertaking basic Works as a lump sum.
Minor (non-prequalified Contractor)	Minor Infrastructure Contract (MIC-CO)	Low value, low risk projects.	< $1M	No	
Minor (prequalified Contractor)	Minor Infrastructure Contract (MIC-CO)	Low value, low to medium risk projects.	$1M to $5M (Up to $10M for low risk projects)	No	For Contractors other than LGs and RoadTek. Depends on, among other things, project risk. Risk varies with estimated cost / duration as well as variability in the type, scale, complexity and number of construction activities.

Table 9.2(c) – Characteristics of Design and Construct Contracts

Infrastructure Procurement Method	Contract Forms	Value and Risk Profile	Contract Value ($M excl GST) Thresholds	Probity Advisor Required?	Application
Early Contractor Involvement (ECI)	Collaborative Project Agreement (CPA)	High value, medium to high-risk projects.	$100M (minimum)	Yes	Depends on project risk, complexity, scope and opportunity for design innovation. Low value projects can be considered where there is value in transferring risk but requires prior approval of Executive Director (Program Management and Delivery).
Design and Construct	Transport Infrastructure Design and Construct (TIC-DC)	Medium to high value, low to high risk.	Seek advice from Infrastructure Procurement	See footnote[33]	Depends on project risk, complexity, scope and time. Requires prior approval of Executive Director (Program Management and Delivery).

[33] For most low-risk projects, procurement staff and evaluation teams can effectively manage probity issues. Where infrastructure procurement is complex, high value, sensitive, or Offeror grievances are more likely, it may be beneficial to engage a probity advisor and/or a probity advisor.

Infrastructure Procurement Method	Contract Forms	Value and Risk Profile	Contract Value ($M excl GST) Thresholds	Probity Advisor Required?	Application
Design and Construct	Minor Infrastructure Design and Construct (MIC-DC)	Low to medium risk.	$1M to $5M	No	[Future Contract] Design for low value projects which contain a small design component for example, marine Works.

Table 9.2(d) – Characteristics of Maintenance Contracts

Infrastructure Procurement Method	Contract Forms	Value and Risk Profile	Contract Value ($M excl GST) Thresholds	Probity Advisor Required?	Application
Road Maintenance	Road Maintenance Performance Contract (RMPC)	Low to medium risk	No limit	No	Routine maintenance Works on a sole invitation basis only to traditional suppliers, LGs or RoadTek.
	Road Asset Maintenance Contract (RAMC)	Low to medium risk	N/A	No	Routine maintenance Works in South-East Queensland.

Table 9.2(e) – Characteristic of Sole Invitation Contracts

Infrastructure Procurement Method	Contract Forms	Value and Risk Profile	Contract Value ($M excl GST) Thresholds	Probity Advisor Required?	Application
FREW V3	First Response Emergent Works V3	Low value, low to medium risk projects.	< $1M	No	Undertake short term temporary emergent Works.
Sole Invitation	Minor Infrastructure Contract Sole Invitation (MIC-SI)	Low value, low risk projects.	< $1M	No	Replaced Minor Works Performance Contract (MWPC). For LG and RoadTek.
Sole Invitation	Transport Infrastructure Contract Sole Invitation (TIC-SI)	Low to medium risk.	< $5M	No	Replaced Road Performance Contract (RPC). Construction of all forms of transport infrastructure on a sole invitation basis only to LG or RoadTek.

Table 9.2(f) – TIC-CO stages for tendering

Contract Value ($M)	Number of stages in the tendering process
Value < $20M	Single stage TIC-CO with 100% price weighting.
$20M < Value < $100M	Single stage TIC-CO with up to 60% price and up to 40% non-price weighting (including Local Benefits Test of up to 20%, project-specific criteria). Two stages are not permitted for projects within this value range.
Value > $100M	Two stage TIC-CO including ETI, GTA. Stage One 100% non-price (including Local Benefits Test, Best Practice Principles) and Stage Two may either be 100% price weighting or be 60% price and 40% non-price.

Table 9.2(g) – Summary of Contractor / Supplier for Contract type

Contractor	Design and Construction	Construction					Road Maintenance		Emergent
	TIC-DC / MIC-DC / CPA	TIC-CO	TIC-SI	MIC-CO	SSMW	MIC-SI	RMPC	RAMC	FREW
Traditional Suppliers	Yes	Yes		Yes	Yes			Yes	Yes
Local Government			Yes		Yes	Yes	Yes		
RoadTek			Yes		Yes	Yes	Yes		

Table J1 – TIC-CO (including ETI, GTA processes) – advantages and disadvantages

Advantages	Disadvantages
Suitable for managing a wide range of construction and legal risks.	Not as flexible in changing the design after Contract award as other forms of Contract.
Widely understood by designers, constructors, Contract Administrators.	Not suitable for high-risk projects containing unknowns.
The design can be completed ahead of time giving confidence of the final outcome.	The Principal owns the design risk and provision of 'information to be relied upon'.
Produces value of money outcomes.	Liquidated damages – impact on the Contractor.
Can use either single or two-stage selection process (projects > $20M), gather constructability inputs in ETI of GTA processes, while still being able to accept Alternative Tenders.	Not suitable for transferring some PUP risks.

Table J2 – Early Contractor Involvement, Design and Construct Contract – advantages and disadvantages

Advantages	Disadvantages
Should be considered as a last resort where TIC-CO is not able to be used – for example, complex engineering projects, large value, uncertainties.	Requires high level of leadership skill, for example, highly experienced senior personnel from the Contractor and client.
Active project management (for example, Project Leadership Team, Project Management Team).	Requires design and construct skilled Project Manager, Project Leadership Team and Contract Administration Team (key roles of Administrator, Design Verifier and Construction Verifier).
Flexible design process during the tender phase, for example, add or remove scope.	Success of the project depends on personal commitment and trusting relationships, which may be difficult to develop.
Can use the concept of 'Pre-Agreed Modifications' to get prices for additional scope, subject to expiry date.	8-10 months procurement timeline followed by 6 months design before construction commences.
Used where there is room for multiple design options which could lower the overall Contract value.	Tender phase cost is at least twice the cost of comparable TIC-CO procurement process.
Suitable for transferring risk to the Contractor, where the Contractor is best placed to manage it.	The Contract administration cost is at least 50% higher than comparable TIC-CO cost due to additional resources for the design verification and financial auditing.
No liquidated damages – there are other motivators to encourage the Contractor to deliver on time.	Pressure to be price driven, which can result in undesirable minimum design standards – that is, 'minimum on top of minimum design' consequences.
The commercial model (for example, Contract, three-limb compensation model, pain / gain, KRA) drives performance.	
Open book.	
No fault, no blame, and no dispute between the ECI participants.	