



New South Wales Government

NSW Government Procurement Guidelines

Draft Capital Project Estimating (for Construction)

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<http://www.treasury.nsw.gov.au/procurement/procure-intro.htm>

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Related Guidelines

This is one of the 'basic' guidelines applicable to procurement or capital projects by NSW Government agencies.

Refer also to:

Business Case Guidelines

Economic and Financial Appraisal Guidelines

Tendering Guidelines

Preface

These Guidelines apply to all NSW budget-dependent general government agencies. Other agencies and State Owned Corporations are encouraged to apply the principles in the Guidelines.

These Guidelines are provided to assist agencies obtain best value for money from capital investments by providing agencies with a structured approach to developing construction estimates and budgets for inclusion in the NSW Budget and for their management of project performance to meet the agreed budget. Throughout, the need for appropriate project management is emphasised. This is for application from the development of the earliest project and program construction estimates to the preparation of the project budget. The aim is to ensure that the project budget is only exceeded in exceptional circumstances.

The Guidelines are not intended to take the place of appropriately experienced expertise being applied to developing project estimates or budgets. They are intended to provide guidance regarding the key aspects of the processes required.

The NSW Government Procurement Policy, documented on the NSW Treasury website www.treasury.nsw.gov.au sets out the NSW Government's overarching policy for procurement. It is designed to improve the procurement outcomes of NSW Government agencies. Other assistance is available to agencies not accredited in the Agency Accreditation Scheme which is part of this policy in developing and managing estimates and budgets as part of the approved delivery system for projects valued at \$1 million and above.

[The New South Wales Budget Paper 4 Infrastructure Statement](#) provides details of the General Government Sector and Public Trading Enterprise Sector Infrastructure Programs. The funding identified is allocated to approved projects and programs. These Guidelines assist agencies prepare budgets for submission to Treasury for the future inclusion of projects in the Infrastructure Statement.

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1 Budget development overview

The [NSW Government Procurement Policy & Guidelines Paper](#) (TPP 04-1) is implemented as a Treasurer's Direction under Section 9(1) of the [Public Finance and Audit Act](#). It assists agencies make appropriate and informed procurement decisions, and emphasises agency accountability for outcomes and greater upfront planning and stronger linkage with the State Budget process prior to allocation of capital funding.

Under the [Treasury Appraisal/Monitoring for Construction Projects](#) requirements major capital projects require the approval of the Budget Committee of Cabinet. Capital works bids must be timely and include the business case, with economic appraisal and technical reports as relevant. It also emphasises the importance of a quality business case including the economic appraisal supporting funding investment. These requirements increase for projects with higher value and risk.

The Policy includes a [Major Capital Projects Reporting System](#) (MCPRS) for monitoring projects with a value greater than \$250,000. Agencies are required to report time and budget performance to MCPRS which is submitted to Cabinet.

Section 4.6 of the [Construction Procurement Process Map](#) available on the Treasury website sets out the overall actions required to obtain funding approval.

The Guidelines recommend the actions in developing and monitoring project estimates and the project budget whilst undertaking the steps in the [Construction Procurement Process Map](#). These actions are summarised in Table 1 with the ten steps in the Process Map.

In general, estimates are prepared through the various stages of project planning and then through project delivery, allowing for decreasing uncertainty as to the expected final cost as the project proceeds. When the budget is set, reasonable contingency allowances are included, and the project will be managed to ensure costs are kept within the budget. An allowance for unforeseeable risks should not be included in the budget but the budget reassessed when these events become apparent.

Table 1 Context of Project Budgeting and Estimating in the 10-step Construction Procurement Process Map

Procurement Step	Related project activity	Estimate/budget
1 Service demand identification	Service demand identified and quantified in strategy, in line with agency strategic objective and results and services plan.	
2 Service delivery options	Project delivery objectives identified/approved and delivery options identified with estimates. Economic appraisal commenced,	Indicative estimate High-level of uncertainty allowed for in a substantial general contingency.
3 Justification of proposed options	Options evaluated and compared. Agency may need to confer with Treasury Analyst on rationale for preferred option. Use a range of guidelines to help justify proposed option.	Preliminary estimate Significant level of uncertainty allowed for in contingencies apportioned to project components.
4 Project definition	Appoint governance team and establish roles, scope, brief and risk analysis in line with service priorities. Business Case submitted to Treasury. Authorisation limit approved by Budget Committee.	Budget Minimal level of uncertainty allowed for in allocated contingencies. <i>Project must be managed to this budget.</i>
5 Procurement strategy	Procurement strategy identified and authorised. Report to MCPRS for projects \$250k or greater or listed in Budget Paper Number 4.	Strategy is allowed for budget estimate and estimate and budget.
6 Specification (Contract documentation)	Pre-tender Estimate Report to Treasury for projects above \$10m. Prepare estimate updates during the development of the contract documentation.	Pre-tender estimate (Project cost checks done as documentation proceeds)
7 Service provider selection	Post Tender Review Report provided to Treasury for projects above \$50m.	Forecast project cost estimates including contingency.
8 Implementation (contract management)	Major Variations Reports to Treasury for projects above \$50m.	Project payments and variation costs tracked against budget
9 Operation	Agency responsible for handed over project.	Operation and maintenance cost estimates, budgets and funding arranged.

10	Evaluation	Final costs compared to budget.	
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Note this table only identifies key project estimating and budget related matters, and all the other required project actions, such as any Gateway Reviews are not covered.

2 Budget development and management principles

The following principles apply to the development and monitoring of project budgets.

- 1 Project objectives derived from agency service requirements and agreed prior to developing the project estimates and the budget.
- 2 Project estimates and budget include an adequate allowance for foreseeable risks, decreasing as new information is obtained.
- 3 Suitable project governance measures applied from project inception, including financial delegations and authorities with respect to agency budget development, approval and monitoring.

Agency governance responsibilities cannot be transferred to suppliers or consultants.
- 4 Recurrent funding implications of 'whole-of-life' costs of the project investment included in the economic appraisal of project options.
- 5 The Budget clearly communicated to those accountable for delivering against it.
- 6 Budget monitoring to ensure that expectation of project demands exceeding the budget are identified and reported in a timely manner, with options to reduce demands.
- 7 Budgets calculated on an end of project cost that includes forecasted price rises up to project completion.
- 8 Plan for a reduction in project scope if the costs exceed the budget, mindful of overall service priorities.
- 9 Project budget not exceeded unless additional funding is approved.
- 10 Contingencies allocated for identified risks are not to be used to fund project scope increases.
- 11 The budget to comply with NSW Government accounting requirements available on the www.treasury.nsw.gov.au website.

- 12 Where unforeseeable events occur the budget needs to be reassessed for adequacy and if necessary additional funding sought.

The NSW Treasury website www.treasury.nsw.gov.au includes details of the Australian Equivalents of International Financial Reporting Standards (AEIFRS) together with Treasury's Mandates which have applied to the reporting on capital projects since 1 January 2005.

Particular matters to note with budget preparation, cost management and accounting include:

- the impact of accrual accounting on the recognition of commitments and obligations
- the effect of the International Accounting Standards on the definition of capital and recurrent funds
- the effect of a project on the agency's balance sheet
- depreciation of the asset and funding to accommodate future refurbishment, maintenance and disposal
- reporting obligations related to capital recognition.

3 Project governance and management

Project governance addresses what is done within an agency to ensure that its obligations with the management of, and accountability for, the expenditure of funds to suit budgets are properly discharged.

A governance team is usually established to ensure this occurs.

For projects less than \$1 million, the governance team may be the project sponsor who reports to the CEO and the project manager.

Larger projects might use a steering committee as the governance team.

For projects greater than \$15 million, or those that are complex or unusual, a strategic reference group could be established to advise the project team and steering committee.

The governance arrangement would operate for the life of the project.

Governance responsibilities generally comprise:

- ensuring there is a clear definition of the roles and accountabilities of governance groups and individuals in a project team including authority delegations;
- overseeing the identification and achievement of project objectives, project planning, scope development and delivery;
- monitoring the development of estimates, the budget and cost management;
- authorising a funding submission for the project to the Treasury with a business case;
- reviewing project risks and any emerging concerns, and their management;
- overseeing the implementation of the corrective actions needed to achieve the budget;
- overseeing project management performance generally;

- reviewing and processing reports on recommended tenderers prior to contract award approval by the delegated approving officer and the Treasury, where required;
- ensuring the signing of confidentiality agreements by participants as part of the tender process;
- reviewing and undertaking necessary actions on reports prepared by the project manager;
- reviewing and ensuring the provision of reports for the government's Major Capital Projects Reporting System (MCPRS);
- monitoring the project cash flow and its management relative to the targets set; and
- seeking, in exceptional cases, additional funding from the Treasury.

Governance arrangements generally use existing agency protocols including authorities to approve actions, and commit and expend funds. However, for more complex projects and larger projects additional governance arrangements for any other participants may be required.

Agency governance responsibilities cannot be transferred to the private sector.

Appendix 3 includes sample report forms that may be used in submissions from the project manager to the sponsor or steering committee.

The project management team is responsible for project delivery and reporting on progress, cash flow and expenditure, including statements and rationale for project performance forecasts.

It is paramount that the project management team keep the governance team informed about any matters likely to lead to the budget being exceeded and other performance issues.

The project management team would report to the governance team through the project manager.

4 Project objectives, options and budget scope

The project objectives must be agreed before the scope, project options and estimates are developed and the project budget is set. Consideration of the objectives should include the purpose of the project, initially asking can they be achieved without committing to a construction project.

Capital budgets are set to enable the project to meet its agreed objectives. They do not include works or services that are in addition to those objectives.

The development of project objectives must involve the considerations of the users, broader stakeholders together with the parties responsible for the delivery of the project, where possible.

Following the development of project objectives the range of suitable project options is considered under Step 2 of the Process Map for Construction on the www.treasury.nsw.gov.au website.

The options must address environmental, social, and maintenance factors as well as financial costs to allow the options to be compared.

An report, considering the options and including a recommended option, should be prepared.

Accounting considerations

Agencies need to be aware which costs in tendering and service provider selection can be capitalised. The NSW Government has adopted the Australian equivalent of the International Financial Reporting Standards (AEIFRS) from 2005-06.

Although not mandatory for budget reporting, the 2005-06 Budget Papers have been prepared assuming:

- existing Australian Accounting Standards (AGAAP) for all years up to and including 2004-05; and
- AEIFRS for 2005-06 and all forward years.

5 Budget estimating and contingencies

Estimates

There are five stages of estimates that need to be developed through the project.

1. indicative (order of cost) estimate
2. preliminary estimate
3. budget
4. pre-tender estimate
5. forecast project cost estimate

Each estimate would include, with increasing detail, estimates against the following categories of capital expenditure:

- agency project preparation and management
- local government planning applications and contributions
- land acquisition (including any re-zoning, legal fees, etc.)
- land preparation (temporary works, access works, protective structures), demolition; site remediation and other site works
- project investigations and consultants (reports, studies including those undertaken by consultants, and project development and consultancies for project management, design engineers, architects, estimating, etc.)
- construction
- site works
- furniture and equipment
- occupation and commissioning (re-location, publicity, any staff training, temporary works)

Other costs can be incurred in:

- tendering and service provider selection

- contract legal costs
- accounting; and
- escalation costs to allow for inflation up to the completion date.

Refer to appendix 2 ‘estimating aid’ for a more detailed list.

A fundamental aspect of all estimates is risk assessment, including quantification of the financial impact of risks (their expected cost) and allowing for this in the project estimates and budget.

The implications for agency financial planning of asset operation, maintenance, periodic refurbishment and any planned disposal action must also be considered, documented and managed. The ‘whole-of-life’ costs including these asset costs are also considered in the economic appraisal of project delivery options and the business case of the preferred option.

The estimates against these general categories are discussed below. (These are to be read in conjunction with Table 1).

1. Indicative (order of cost) estimate

The indicative estimate is the first level of estimate developed for proposals to meet the project objectives agreed to during Procurement Process Map Step 2. It assists with the initial comparison economic analysis of the options by providing the capital cost magnitude for each. It is not normally detailed against the estimating categories, although they can guide its formulation.

This estimate may be based on the overall cost of similar works or ‘rate per service unit’ estimates.

The type of rates per service unit estimates used for such estimates include a cost per bed for a hospital, cost per pupil for a school, cost per kilometre for a road, and cost per person or user for a water treatment plant. Project specific factors that would influence cost must be identified and removed before calculating a rate per service unit.

A substantial general contingency sum is included in this estimate, based on the level of foreseeable risks. This may be in the order of 25%-50% of the estimate in total and would be expressly identified and developed to suit an outline ‘risk assessment’ study.

2. Preliminary estimate

The preliminary estimate is established as part of the assessment of each project option during Procurement Process Map Step 3 and then during Step 4. At this stage, the definition of the options would be

sufficiently advanced to base cost estimates on the broad work categories for the project as outlined in Appendix 2.

Separate contingencies would be identified for the individual foreseeable risks with the major elements, such as investigation, development approval, EIS response, design and construction.

The overall contingency may be of the order of 15%-25% of the estimate in total, but must be based on an informed analysis of delivery option risks which may increase the contingency allowance beyond this range.

The preliminary project estimate assists with the comparison and economic analysis of the options, and the reasonableness of the totals should be checked against the cost (adjusted for cost inflation and specific project factors) of other comparable assets the agency uses for its service delivery.

The estimates would be further developed as part of the business case required in Step 4 for high risk projects and projects with a value greater than \$1 million. Note that for projects valued at more than \$1 million, the agency accreditation requirements apply. Refer to the [NSW Treasury Guidelines Paper TPP 04-1 July 2004](#).

The business case should include the documentation listed in the [Treasury Appraisal/Monitoring for Construction Projects](#).

This documentation includes environmental reports, a brief, and risk and benefits analysis. It is the role of agencies to ensure these reports consider and compare options using 'whole-of-life' cost estimates. The business case may argue that a higher cost option provides better value for money because of the lower life cycle cost involved and other advantages over a lower capital cost option.

3. Budget (detailed estimate)

The budget estimate and project budget are developed once the full scope of the project has been defined during Procurement Step 4. The cost implications of the anticipated procurement strategy should be allowed for in the estimate.

The services of an estimating professional such as a quantity surveyor in the case of building works or civil engineer/cost estimator in the case of civil works should be engaged for the development of the detailed budget estimate. However, the agency has the overall responsibility for the development of the budget.

In some cases the budget estimate will be based on advanced documentation which will identify matters which could be subject to further analysis and development.

The budget estimate would include cost estimates in the funding submission to NSW Treasury if this is relevant to an agency's funding or required by Treasury's Guidelines. If the recommended funding is approved, the proposed budget will be reflected in Budget Paper Number 4 and captured in the forward estimates where included in the financial information provided to the Treasury.

It is imperative that the budget covers the full scope of the works required, including all the expected project costs. The budget is not to be exceeded unless additional funding is approved for the project.

The expected contingency may be of the order of 10%-15% of the estimate in total, allocated against specific identified uncertainties such as site conditions, design development, contract claims generally, and unavoidable and unforeseen delays. For low risk well understood projects, the contingency might be as low as 5% of the estimate. Refer to Appendix 1 for an approach to estimating the cost risk with project uncertainties.

4. Pre-tender estimate

This is the estimate prepared before calling tenders for each contract, including consultancies, and following the preparation of contract documents in Procurement Process Map Step 6.

The tender documents would include the project brief and/or some design for the contract work.

The pre-tender estimates for all the proposed contracts, plus estimates of all other project costs, give the forecast final cost of the project at the pre-tender stage for comparison with the budget.

The pre-tender estimates would include contingencies for the uncertainties involved that may be of the order of 5%-10% of the estimate in total.

5. Forecast final cost estimate

This is the regularly estimated cost to deliver the project inclusive of all project costs including the estimates for contracts let, estimates for contracts not let, consultant and project management engagement prices or cost estimates, other direct agency cost estimates and all related consultant and project management costs, agency administrative costs and occupation costs. This sum would include any specific or general contingencies required for the remaining uncertainties, with the amounts included reducing as the uncertainties reduce.

A protocol would be established for the commitment and use of contingencies for realised risk events, and with the project sponsor and/or steering committee early in the life of the project.

Project uncertainty and contingency allowance

The development of project estimates requires judgement and the application of proven techniques to allow for the cost of foreseeable risks related to the project. All foreseeable risks are treated as either a single or a group of contingency sums. Many of the foreseeable risks will be eliminated or clarified as the project develops and others may arise.

Inadequate identification and allowance for foreseeable risks can be a major source of budget overruns.

There may, for example, be foreseeable risks in the pre-tender phase of the project relating to the availability of contractors and specialist subcontractors to tender when this is required and the additional costs of constructing in regional areas. Many foreseeable risks may also apply in the construction of a project such as costs of variations and disputes arising from contract documentation, unforeseen site conditions, the cost of unknown site conditions or changes in industry or supply markets.

Contingencies are allowed in estimates to cover the foreseeable risks, which should be neither unrealistically low or excessive as this would lead to misleading economic appraisals and insufficient or inefficient fund allocations.

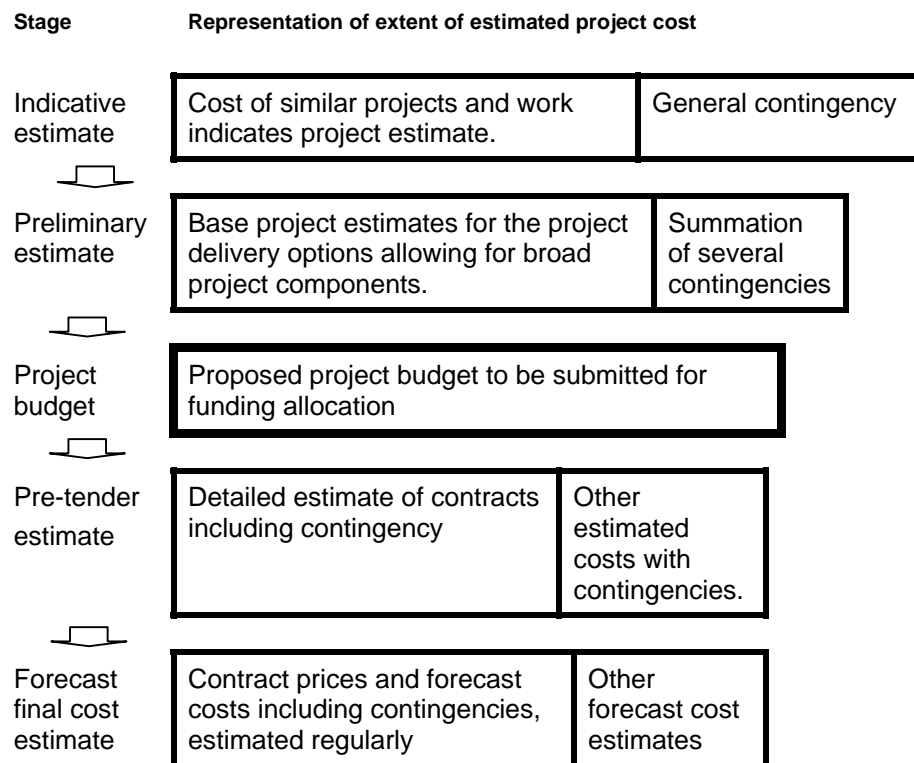
In an 'indicative estimate' it is usual for an overall amount to be allowed for project uncertainty. With a 'preliminary estimate', some of the unknown factors become apparent allowing separate contingencies to be allocated for particular project uncertainties and major elements of the project is appropriate. These contingencies together are the total project contingency.

The contingencies allowed for particular uncertainties must be separately managed to ensure they are not used inappropriately to fund scope increases.

An example of a method to develop a more rigorous contingency called Estimating Risk Analysis (ERA) used by the Hong Kong Government. This is summarised in Appendix 1. Other methods are also used.

ERA initially involves categorising the identified risks as either fixed or variable and applying different risk treatment in each case. An example of a fixed risk is the uncertainty about whether a project component, such as a new substation, will be needed. Variable risks are those with events that will occur but the extent is uncertain so the cost is variable. An example of this is the depth required that piles are to be driven.

Figure 2: Project estimates and forecast cost



In addition to the types of estimates outlined above, other intermediate estimates with the characteristics of two or three of the types are usually necessary in the development of the project budget and to effectively monitor and manage costs.

Estimates, and in some cases the business case, will require revision as the scope is developed and if there are scope changes or changes in demands to be met by the project.

Where the project estimate at any stage up to budget approval exceeds that envisaged earlier to meet the service demand and objectives, the project scope and delivery options would be reassessed.

Budget and other estimates would include allowances for cost escalation for movement in equipment, labour or material prices. Extra costs are incurred with time lags before the project commences and the effects of inflation are greater with longer project delivery.

Building price indices allow for price adjustment based on forecast cost escalation. The Roads and Traffic Authorities Index can be used, where appropriate, in the case of civil works estimating.

These indices must be applied to suit the proposed project program allowing for the different timing of, and effects on, the various stages of a project.

6 Influences on estimates, budget development and cost outcomes

Common influences on estimates, budget development and cost outcomes are addressed below with each of the Procurement Process Map steps.

Step 1. Service demand identification

The project estimates and budget are to cover everything required to satisfy a service demand with a genuine need for a capital investment.

The need should be carefully considered for both short and long term perspectives. In some cases rationalising current asset use or leasing property may overcome a short term need for accommodation.

The need should be supported by evidence such as cost from the overuse of extra capacity requirement, which cannot be addressed by combining or otherwise rationalising existing services.

The assessment and decision tools in the [Total Asset Management Manual](#) would be used in the identification and confirmation of the asset delivery need.

Step 2. Service delivery options

The development of delivery options to match the service demand identified would only proceed after the project objectives have been identified and agreed.

Both the development of the project objectives and the delivery options require user and other stakeholder consultation including in many cases members of potentially affected local communities and other interest groups.

A report is prepared that describes the options which would include alternative service delivery strategies, indicative estimates and a preliminary risk analysis.

It is important that the consultation is conducted in a way that draws out all issues that could have an affect on the project and estimates. This may include potential OHS and environmental impacts.

Indicative capital and operational cost estimates for each option together with the estimated delivery times and impacts on current services would be considered in comparing options.

Step 2. Service delivery options (continued)

The consultancy services and stakeholder consultation costs involved would be included in the project estimates. The estimates would also include a contingency allowance for project foreseeable risks.

Step 3. Justification of proposed options

The selection of a preferred delivery option would be made with the assistance of the Government guidelines identified in the Construction Procurement Process Map.

A Value Management workshop is an effective way of helping to identify and review how best to meet a service demand; the significant project risks and drivers; and delivery options as part of determining the best option.

Economic appraisal reports required as part of the Business Case to be prepared for Treasury should assist decision-making and budget estimating.

Of particular importance are geotechnical and other site investigations, heritage studies of sites and existing assets, and consideration for future expansion of the delivered asset.

The recurrent funding implications of estimated 'whole-of-life' costs of the capital investment would be included in the economic appraisal of the preferred and other options. This to include the cost of operational maintenance, management and disposal, relocation, training and publicity.

The level of contingency included in the the estimates would allow for the individual and general project foreseeable risks.

Step 4. Project definition

A business case would be provided to the Treasury supporting the preferred option (including an economic appraisal and refined preliminary project estimate), proposing a budget and seeking approval.

There is usually an extensive amount of work required to define the project in more detail to suit the agreed project delivery option. Much of the detailing occurs after the preferred option is agreed.

Comprehensive investigation of the requirements with the preferred option reduces the level of risk with the project progressively defined.

However, some foreseeable risks will remain requiring some contingencies in the project estimates and budget. The project estimates would allow for the cost of the investigation, together with the cost of complying with planning, OHS and legal obligations arising from defining and delivering the product.

Step 5. Procurement strategy

This strategy identifies the procurement method for delivering the asset required. Identifying the method involves decisions on the packaging of contracts and the role of the agency and others in the delivery. For example, contractors may be engaged to design and construct the asset after a consultant is to be engaged to complete an initial design concept and/or design brief.

Refer to the [Procurement Methodology Guidelines for Construction](#) for an outline of the various procurement options. Lower risk options reduce the uncertainty and may mean a smaller contingency can be allowed. Conversely, higher risk options require a larger contingency.

The roles of the agency and others in the delivery need to be identified and allowed for in the project estimate and budget. For example, agencies eligible to undertake construction delivery under the [Agency Accreditation Scheme](#) can project manage the work or engage a project manager. Both approaches have risks for the agency which need to be allowed for in contingencies.

The type of tender method chosen (refer to the [NSW Government Tendering Guidelines](#)) can have an impact on the project risk. For example, using a prequalified tender system over an open tender system is more likely to result in a tried and proven constructor.

Step 6. Specification (incl. Contract documentation)

Actions taken in relation to tender and contract documentation can substantially affect budget certainty.

Inadequate briefing of consultants and work descriptions may increase the contract payments required. The use of consultants without the skilled people needed or adequate professional indemnity insurance may expose the agency to more costs arising from poor documentation or construction problems.

Refer to the [NSW Government Tendering Guidelines](#) for guidance on the preparation of tender documents.

Standard and cooperative based conditions of contract should be used to minimise the likelihood of disputes such as the GC21 contract form for works generally with a value of \$1m, or greater. This form is available from the Procurement System for Construction section of the Department of Commerce website www.commerce.nsw.gov.au.

Documents should be reviewed by a party not involved in the project in accordance with a quality management system.

Project cost estimates would be prepared at regular intervals while developing design documentation for the project to ensure that the asset defined will not cost more to deliver than the budget allows. A pre-tender estimate of the costs of each contract, allowing for the work described in the tender documents, is to be prepared before seeking tenders, to confirm it is within budget.

Seeking unnecessary information in tender documents adds to the

cost of tenders and the agency costs in their evaluation, and is to be avoided.

Step 7. Service provider selection

The [NSW Government Code of Practice for Procurement](#) and the [NSW Government Tendering Guidelines](#) provide advice on the selection of consultants and contractors.

The Tendering Guidelines stress the importance of planning each tender process. Some tendering aspects that need to be considered in preparing project estimates include:

- ◆ planning in probity to avoid legal action from aggrieved tenderers;
- ◆ having a reasonable tender period duration to allow for proper pricing;
- ◆ using appropriate non-price criteria (identified in the tender documents) to compare and obtain value for money;
- ◆ allowing and considering alternatives that can enhance value for money;
- ◆ assessing and ensuring the capability and financial viability of tenderers in contention for a project;
- ◆ preparing an appropriate pre-tender estimate to allow the value for money offered in the tenders to be assessed;
- ◆ using experienced personnel to properly evaluate tenders; and
- ◆ not accepting unreasonably low tender priced bids.

Step 8. Implementation/contract management

Most of the project budget is usually expended through the contracts used and contract management would focus in keeping costs within budget in various areas. The costs are managed and may be reduced to some extent by:

- ◆ proper record keeping to support the agencies position in the event of a dispute between the contractor and the agency;
- ◆ Ensuring obligations in the OHS Act 2000 and OHS Regulation 2001 are complied with;
- ◆ Inadequate construction works insurance; and
- ◆ Ensuring that adequate documentation has been provided to the contractor and that agency requirements are properly represented in the documentation.
- ◆ Managing emerging disputes in accordance with the [Dispute Resolution Guidelines](#).
- ◆ Timely interaction with the contractor during the project commissioning process.

Contingency allowances would be included and managed to deal with the current and realised foreseeable risks, and to avoid any inappropriate allocation of funds to changes in project scope.

Any contract variations and cost changes generally must be carefully assessed and managed with funding implications forecast

to the project sponsor and steering committee with recommended actions.

Step 9. Operation

Planning is required of how an asset is taken into operation and how the asset is operated and maintained. This includes identifying recurrent finding estimates and budgets and obtaining the funds required, putting in place the asset insurance policies and asset/operating plans needed, and using the operation and maintenance manuals and service provider warranties provided with the asset delivery.

Step 10. Evaluation

Agency evaluation of performance are needed with estimate and budget development and cost management for each project to identify areas for improvement in planning and delivering future projects

Appendix 1 - Estimating risk analysis (ERA) method for contingency evaluation

ERA is used to estimate the contingency of a project by separately treating and costing risk events associated with the project. The contingencies as determined by ERA are added to the base estimate.

Risks identified by the project team are categorised as either fixed or variable.

Fixed risk events are those that either happen (full cost) in total or not at all (no cost). An example of a fixed risk is the possible need for an access road. The maximum risk allowance is the cost of constructing the access road. The average risk allowance is the probability of the client requiring the road multiplied by the maximum risk allowance.

Variable risks, on the other hand, are those events which will definitely occur but the extent they will occur is uncertain. An example is the depth that piles are required to be driven. The maximum risk allowance is the most expensive piling being required at the maximum length. This is estimated by the project team based on past experience. The average risk allowance can be estimated with an assumption of a 50% chance of being exceeded or it can be independently estimated.

The 'total average risk allowance' can be calculated by adding the average risk allowances for each risk.

The spread (or difference) between each maximum and average risk allowance is squared and summed and the square root taken to give a 'maximum likely addition' (every risk occurring).

The 'average risk estimate' can be calculated by summing the 'base estimate' and the 'total average risk allowance'.

The 'maximum likely estimate' can be calculated by summing the 'base estimate', the 'total average risk allowance' and 'the maximum likely addition'.

The 'average risk estimate' or the higher 'maximum likely estimate' can be used.

The calculation of the ERA should be updated a range of times during the course of the project as the risks become known.

Estimating Risk Analysis contingency calculation

(1) Risk	(2) Type	(3) Probability (fixed risks only)	(4) Average risk allowance \$	(5) Max. Risk allowance \$	(6) Spread (5)-(4) \$	(7) Spread Squared \$m
Access road	Fixed	0.7	700,000	1,000,000	300,000	0.090
Piling	Variable		150,000	400,000	250,000	0.063
Market conditions	Variable		200,000	800,000	600,000	0.360
Additional space	Fixed	0.3	150,000	500,000	350,000	0.122
Contract Variations	Variable		100,000	300,000	200,000	0.040
Total			\$1,300,000			0.675
					Square root	0.821

Maximum likely addition =
\$821,000

Base estimate = \$10.7m

Average risk estimate = Base estimate + Total average risk allowance

$$= \$10.7m + \$1.3m$$

$$= \$12m$$

Maximum likely estimate = Base estimate + Average risk allowance + maximum likely addition

$$= \$12m + \$0.821$$

$$= \$12.821$$

After calculation of the likely estimates, it is prudent to compare the allowances developed with recent similar project experience. Any departures from recent experience should be carefully considered and the reasons made patent.

Appendix 2 - Estimating aid

Note: Estimates would be done with the assistance of a quantity surveyor or other professional cost estimator.

Project name	
Sponsor	
Delivery unit (of agency)	
Project Manager	
Date of this report	
Target completion date	

Budget Element	Sub-element	Explanation	Cost estimate
Agency management		Only include employee and other expenses that will be capitalised in the project.	
	Project management by agency	Includes accounting, payment and cost management estimating.	
	User needs analysis		
	Strategic and project planning	Includes business case and Treasury liaison	
	Staff/user re-location		
	Temporary premises		
	Project research		
	Development application		
	Local government development contributions and fees		
	Agency participation in tender processes		
	Contract administration by agency	Includes any dispute management	
	[add more]		
Land and services costs			
	Land acquisition	Including purchase cost, conveyancing fees, etc.	
	Re-zoning (if		

Budget Element	Sub-element	Explanation	Cost estimate
	required)		
	Local government services payments and fees		
	Services head works	Contributions to providers may be required to ensure services have the capacity for the development. This may include increasing the service main size, water treatment or sub-station capacity.	
	Services connections	For remote or undeveloped sites, it may be necessary to extend services mains (water, sewerage, power, gas) to enable connection to services for the proposed facility.	
	[add more]		
Site preparation			
	Site preparation	Clearing vegetation, bulk excavation, etc.	
	Enabling works	Demolition, services re-location, etc.	
	Access works	Temporary roads, related excavation and retaining structures	
	Temporary and protection works	Includes retaining structures, support for adjoining structures	
	Site and soil remediation	If soil is contaminated with hazardous substances	
	Site security		
	[add more]		
Building/asset construction			
	Foundations/Footings	Footings are involved with buildings	
	Structure and enclosure	Includes building structures	
	Services		
	Fittings and fixed furniture and equipment		
	Lifts & escalators		
	Finishes		
	Other structures	May involve bridge, roads, wharf dredging, pump stations, dam, plant, pipelines etc	
	[add more]		

Budget Element	Sub-element	Explanation	Cost estimate
Site works & services			
	Landscaping		
	Paving		
	Site services		
	Fencing and perimeter security		
	Site structures	May involve permanent retaining walls, minor shelters, etc.	
	[add more]		
Commissioning			
	System testing and adjustment	Typically for air conditioning, but could apply to communications, data trunking, security systems.	
	Trial operations	As required	
	[add more]		
Occupation			
	Loose furniture and equipment		
	Re-locating staff/users and service areas		
	Training for new asset takeover, operation and use		
	Publicity to users, community, and other stakeholders.		
	[add more]		
Investigations			
	Land survey		
	Soil testing		
	Geo-technical survey & testing		
	Archaeological study		
	Social study		
	Transport study		
	Species impact statement		
	EIS, or SEA for planning approval		

Budget Element	Sub-element	Explanation	Cost estimate
	Heritage study		
	[add more]		
Consultants (Design)			
	Manager/director		
	Architect		
	Engineering consultants (various)		
	Cost adviser		
	Landscape architect		
	Planner	May be required to assist in preparation of local government approval documents, or review site landuse zoning.	
	Traffic engineer		
	Environmental consultants		
	Compliance certifiers	May be required for buildings, services or generally.	
	[add more]		
Special factors			
	Regional consideration	Is the site remote from potential suppliers or services that suppliers would need to use in construction?	
	Project special needs	Assessed per project.	
	Market capability or capacity	Is there sufficient market capacity for suitable suppliers to offer competitive prices?	
	[add more]		

Appendix 3 – Estimate/Budget Report Pro-formas

The following report pro-formas are provided to assist project managers prepare reports for submission to project sponsors and/or steering committees. They are designed as indicative of the information typically relevant to project decision making, with the user to add rows to any tables to complete reporting for their project.

1. Indicative Estimate Report
2. Preliminary Estimate Report
3. Budget Report
4. Project Cost Report
5. Pre-tender Estimate report
6. Forecast Project Cost Report
7. Project Cost Report

1. Indicative (order of cost) Estimate Report

Project details

Project name	
Sponsor	
Delivery unit (of agency)	
Project Manager	
Date of this report	
Target completion date	

Service dimensions

Service	Service Element	Dimensions
		[number of users, volume of supply, etc.]

Special factors

Factor	Description	Cost implication
Price escalation		
Regional location		
Labour supply		
Materials market		
Market capacity		

Quantification approach

[Similar recent project evidence, price per service unit may be a suitable approach, e.g. \$ per pupil, per user, per unit of production, per patient, etc. Adjust final cost for special project specific factors to derive a cost per unit of service for the base asset, and then apply this to the cost of the service to be provided by the asset delivered with the project, escalated to current dollars or end cost dollars for the life of the project.]

Reference Project Completion date Final cost	Size in units of service Special project factors	Final cost adjusted for special factors	Cost per unit of service
Rankin Springs Depot (eg) March 2005 \$4,000,000	5 depot work teams provided for - regional location - concrete batch plant built - manager's residence	\$3,450,000 allowing for escalation in prices since 2005 to completion of project.	\$690,000 per depot work team

Base indicative estimate range

[Derived from service dimensions and quantification approach.]

[Cost rates would be applied to all the identified project parameters, that is, the floor areas and other quantification of the project]

Project Component	Likely quantity (service unit, etc)	Cost rate (\$ per unit)	Component cost

Specific risks

The specific uncertainties listed are additional to the general contingencies allowed for the overall uncertainty with the indicative estimating and would typically be at the low end of the likelihood scale.

Factor	Cost impact range \$	Likelihood (Improbable, Low, Medium, High, Probable)	Expected cost

[Identify each uncertainty and estimate ranges for each, with a likelihood of likely/probable high, medium, low unlikely/improbable, and the expected possible cost to suit the likelihood.]

Indicative estimate range

[Estimates are assumed to be in current dollars with a separate escalation allowance; if escalated or end cost dollars are used, annotate the table appropriately]

Lowest project cost	Most likely project cost	Highest project cost	Note

Project target cash flow

Quarter	Expenditure in current dollars	BPI	Escalated predicted expenditure

Indicative estimated total cost at completion

Project base cost in current dollars	
Uncertainty range	
Contingencies	
Completion cost in (escalated) end cost dollars	
Likelihood of achieving this completion cost	

2. Preliminary Estimate Report

Project details

Project name	
Sponsor	
Delivery unit (of agency)	
Project Manager	
Date of this report	
Target completion date	

Service dimensions

Service	Service Elements	Dimensions
		[number of users, volume of supply, etc.]

Project components

Component	Matters considered	Note
Agency management planning & governance		
Land acquisition		
Investigation		
Design		
Site preparation		
External works		
Construction		
Commissioning		
Occupation		

Project dimensions

[This would identify, for example, the gross floor area of the major components of a building project, and the major non-building costs to be met, e.g. site acquisition and preparation, investigations and project consultants, etc.]

Project Component	Measure (m ² , m, unit, etc)	Range of quantity for component	Likely quantity

Special factors

Factor	Description	Cost implication
Price escalation		
Regional location		
Labour supply		
Materials market		
Market capacity		

Preliminary estimate for this project

[Cost rates would be applied to all the identified project parameters, that is, the floor areas and other quantification of the project]

Project Component	Likely quantity (m ² , m, unit, etc)	Cost rate (\$ per unit)	Component cost

Risks

Factor	Cost impact range	Likelihood (Improbable, Low, Medium, High, Probable)	Expected cost

[Identification of the unknown and quantification of estimate ranges for each unknown, with probability of likely, high, medium, low, unlikely]

Preliminary estimate range

[Costs are in current dollars; if escalated dollars are used, annotate the table appropriately]

Lowest project cost	Most likely project cost	Highest project cost	Note

Project cash flow forecast (project cash moving usually 28 days after receipt of the statement of claim from the Contractor)

Quarter	Expenditure in current dollars	BPI	Escalated expenditure

Preliminary estimated total cost at completion

Project base cost	
Uncertainty range	
Allocated contingencies	
Completion cost	
Likelihood of achieving completion cost	

3. Budget Report (expenditure not to exceed)

Provided for internal agency approval prior to a formal submission for funds being made.

Project details

Project name	
Sponsor	
Delivery unit (of agency)	
Project Manager	
Date of this report	
Target completion date	

Service dimensions

Service	Service Elements	Dimensions
		[number of users, volume of supply, etc.]

Project components

Component	Matters considered	Note
Agency management planning & governance		
Land acquisition		
Investigation		
Design		
Site preparation		
External works		
Construction		
Commissioning		
Occupation		

Project dimensions

[This would, for example, identify the gross floor area of the major components of a building project, and possibly some other details, and the major non-building costs to be met, e.g. site acquisition and preparation, investigations and project consultants, etc.]

Project Component	Measure (m ² , m, unit, etc)	Range of quantity for component	Likely quantity

Special factors

Factor	Description	Cost implication
Price escalation		
Regional location		
Labour supply		
Materials market		
Market capacity		

Estimate for this project

[Cost rates would be applied to all the identified project components, that is, the floor areas and/or other details, dimensions and components of the project, including a general contingency]

Project Component	Likely quantity (m ² , m, unit, etc)	Cost rate (\$ per unit)	Component cost

Project contingency allowances for risks and uncertainties

[These are managed by the agency, and applied to variations, not scope increases.]

Item	Probability (range)	Allowance

Risks and uncertainties

Factor	Cost impact range	Likelihood (Improbable, Low, Medium, High, Certain)	Expected cost

Project estimate range

[Estimates are assumed to be in current dollars with a separate escalation allowance; if escalated or end cost dollars are used, annotate the table appropriately, and allow for in target cash flow.]

Lowest project cost	Most likely project cost	Highest project cost	Note

Project target cash flow

[Allow for project expenditure usually being 28 days after receipt of the statement of claim or invoice from a contractor or other service provider.]

Quarter/month	(1) Predicted expenditure in current dollars	(2) BPI/Base BPI	(1) x (2) Predicted escalated expenditure

Estimated total cost at completion

Project base cost in current dollars	
Uncertainty range	
Contingencies	
Completion cost (in escalated) end cost dollars	
Likelihood of completion at this completion cost	
Funds held separately as agency contingency for the special risk identified, and in funds sought	
Funds sought	

4. Project Cost Report

This report would involve a professional 'cost check' by the project team, possibly with the assistance of a quantity surveyor or other professional cost estimator. A cost check is done to ensure that the asset described in the design can be delivered for a cost within budget, and to compare the costs incurred and forecast regularly during project delivery generally. Where forecast costs are over budget this would require a reduction in the scope or performance quality level of elements in the asset or adjustments in the choice of materials or components, requiring a plan for alternatives to be priced by tenderers or a reassessment of the design approach, in the more extreme cases.

Project details

Project name	
Sponsor	
Delivery unit (of agency)	
Project Manager	
Date of this report	
Date of cost check	
Date of current estimate	
Target completion date	
Project budget	
Total contingency in budget	

Special factors

Factor	Description	Cost implication
Price escalation		
Regional location		
Labour supply		
Materials market		
Market capacity		

Project cost estimate and forecast cost

[This summarises the cost check prepared by the professional consultant, depending on the maturity of the project it may be done on an area or elemental estimate basis, or by detailed measure of drawings.]

Project element	Budget allocated	Cost as checked

Project contingency allowances (allocated)

[These are managed by the agency, and applied to variations, not scope increases.]

Item	Probability (range)	Allowance

Risks

Factor	Cost impact range	Likelihood (Improbable, Low, Medium, High, Probable)	Expected cost

5. Pre-tender Estimate Report

Attach pre-tender estimate from quantity surveyor or cost engineer.

Project details

Project name	
Sponsor	
Delivery unit (of agency)	
Project Manager	
Date of this report	
Date of estimate	
Target date to invite tenders	
Target date to let contract	
Target completion date	
Estimate of contract price	
Total allocated contingency	

Special factors

Factor	Description	Cost implication
Regional location		
Labour supply		
Materials market		
Market capacity		

Project contingency allowances (allocated)

[These are managed by the agency, and applied to variations, not scope increases.]

Item	Probability (range)	Allowance

Risks

Factor	Cost impact range	Likelihood (Improbable, Low, Medium, High, Probable)	Expected cost

6. Forecast Project Cost Report

A project funds report would be completed for each contract let in a project. For projects with multiple contracts a consolidated project funds report would be provided summarising all contract packages, updated as contracts are let.

Project details

Project name	
Sponsor	
Delivery unit (of agency)	
Project Manager	
Date contract let	
Contractor	
Target completion date	

Price

Contract price	
Identified costs (included in contract price)	[tabulate as required]
Project contingency allowance	[tabulate allocated contingencies against each risk item]

Project contingencies (allocated)

Managed by agency, applied to variations, not scope increases.

Item	Allowance	Actual

Cash flow forecast

Month	Amount

Risks

Factor	Cost impact range	Likelihood (Improbable, Low, Medium, High, Probable)	Expected cost

7. Contract Cost Report

A report would be completed monthly, for each contract with progress payment claim. A consolidated project cost report would also be prepared allowing for all contract packages, updated as contracts are let, and other project components.

Project details

Project name	
Sponsor	
Delivery unit (of agency)	
Project Manager	
Budget (as approved for project or contract)	
Date contract let	
Contractor	
Target completion date	

Price

Original contract price	
[add details and amounts specified in contract, add lines as required]	
Total identified price components (included in contract price)	[total identified price components]
Total of additions agreed	
Current contract price	

Contract variations and claims agreed *Variation amount*

[insert variation, add lines as required]	
Total additions agreed	

Contract variations and claims not agreed *Amount (\$)*

Total contingent liabilities	
[insert claim or expected claim, add lines as required]	

Contract contingencies

Managed by agency, applied to risk events, variations, not scope increases.

Item	Allowance	Actual

Cash flow

Month	Forecast	Actual

[These are additional to the above contingencies. The risk events need funding only when they eventuate].

Uncertainty	Cost impact range \$	Likelihood (Improbable, Low, Medium, High, Probable)	Expected possible cost \$

Appendix 4 – Example of the application of Building Price Indices (BPI) to cash flow

Building Price Indices are used to forecast movements in prices of building construction works in the Sydney metropolitan area based on expected changes in labour and material costs. The indices have a base of 100 at 1 January 1988.

The following example shows the application of BPI to the estimate of costs for each phase of a project that will be available for service in two years from 1 July 2005.

The total estimated cost is \$5 million in 1 July 2005 dollars and the BPI applicable for that month from the *Building Industry Review* is 139.1.

Escalations in this case are estimated on quarterly basis using the BPI for the mid period when the expenditure will be committed.

The calculation are shown on a quarterly basis, but the same principles apply if monthly cash flow or expenditure steps and indices were used.

Quarter	Project component	Estimate \$'s 1 July 2005	BPI (forecast) at mid point of expenditure	% change from base BPI to mid-point of expenditure	Estimate end cost \$'s
1	preliminary planning and investigations	50,000	139.2	0.07%	50,035
2	project design	100,000	139.2	0.07%	100,070
3	project documentatio n	150,000	140.4	0.07%	151,402
4	supplier selection	25,000	140.9	1.3%	25,323
5	construction	1,250,000	141.8	1.94%	1,274,263
6	construction	2,750,000	144.1	3.59%	2,848,850
7	construction	575,000	145.7	4.74%	602,282
8	moving in	100,000	147.0	5.67%	105,679
Total		5,000,000			5,157,904

Glossary

Agency	A New South Wales Government Department or Declared Authority within the meaning of the NSW Public Sector Employment and Management Act 2002 , or an entity established by a separate Act of the New South Wales Parliament, whether or not that entity is expressed to represent the Crown, except (for the purposes of the NSW Government Procurement Policy) for State-owned Corporations within the meaning of the NSW State Owned Corporations Act 1989 .
Agency Accreditation Scheme	The NSW Government Scheme whereby Budget dependent General Government agencies are accredited for a particular procurement phase if it is considered to have all the capabilities necessary to carry out that phase for a project at that level of procurement risk without external support. Refer to details on the Scheme in the Procurement Policy area of the www.treasury.nsw.gov.au
Brief	A statement (and the document containing it) developed by the agency, describing end user, functional and operational requirements for the proposed capital investment or delivered asset, and project quality, performance, function and scope objectives; also known also as the project or functional brief. A design brief also covers this and design requirements.
Budget	The approved funds allocated for a project required to achieve the identified business case objectives, based on an estimate of the final (or end) cost of the project, including provision for all costs from inception to completion. Also referred to as a project or end-cost budget. This would be prepared in conformity with NSW Treasury or agency requirements for capital project budgets. In some cases the approved funds may contain an unallocated contingency.
Budget Paper 4	The Paper provides expenditure and budget details of the General Government Sector and Public Trading Enterprise Sector Infrastructure Programs including the approved projects and their budgets. Expenditures are provided on an accrual cost basis.

Concept design	A representation of (and process of developing) the adopted design responding to the requirements of the brief, in a form understood by the stakeholders, where the functional relationships are resolved and the asset form, envelope and fabric are described in line drawings, models or images.
Construction	Includes all organised activities concerned with delivering demolition, building assets, landscaping, maintenance, civil engineering, process engineering, heavy engineering and mining.
Construction agencies	The agencies responsible for construction procurement and represented on the NSW Government Construction Agency Coordination Committee (CACC).
Consultant	A professional person or organisation that contracts to provide design, management or other services.
Contingency	An allowance for possible eventualities based on a thorough assessment and quantification of project risks.
Contract	An agreement between two or more parties to do something that is legally enforceable. The agreement may be written, oral or inferred by conduct.
Contract documents	The written documents agreed to, as representing the basis of the contract, and that are legally binding between the Principal and a contractor or consultant.

Contractor	An organisation (including a supplier) that contracts with a Principal and is responsible for the performance of the work under the contract.
Design	The process (and product) of converting a brief into a asset details ready for documentation in drawings, models and written documents of the form, arrangement, components, materials and finishes to be used to construct an asset. Design involves concept design and design development. Design development is the part of the process after concept design. The term design may also be used to mean design and documentation.
Documentation	The process (and product) of developing sufficient co-ordinated detail from a design of an asset, by way of drawings, models and written documents, to permit the identification of materials, components, their relationships and quantities, quality standards and configuration such that the asset can then be reliably constructed. The term design and documentation may also be used to describe the whole process (and product) of converting a brief into the above.
Estimate	A calculation of the expected funds required to effect a capital investment based on the investment requirements, location, delivery method, performance standards and including an allocation of contingency sums to meet identified project related uncertainties.
Management	The planning and interactive controlling of human and material resources to achieve time, cost, quality, performance, functional and scope requirements. It involves the anticipation of changes due to changing circumstances and the making of other changes to minimise adverse effects.
Operation	The phase between the completion of delivery of an asset and its eventual replacement after it has reached the end of its useful life.
Pre-tender estimate (PTE)	An estimate of the cost of, or an estimate of the income to be generated through, a proposed contract prepared before the tender (or RFT) documents are issued and updated as necessary before tenders close.
Principal	The legal entity that awards and enters a contract, and for whom the contract work and services are done under the terms of a contract. It would be the relevant Minister on behalf of the Crown, or the agency where it is a state owned corporation or authority.
Procurement	The collection of activities performed by and for an

agency to acquire services, products and other assets, beginning with the identification/detailing of service requirements and concluding with the acceptance (and where applicable, disposal) of the products and other assets.

Program	A sequential listing of activities and dates they are expected to occur and their interdependencies that are required to complete a project.
Project	An undertaking with a defined beginning and objective by which completion is identified. Project delivery may be completed using one contract or more contracts.
Qualifications and departures	Conditions set by a tenderer in its tender that are not consistent with the requirements of the tender documents.
Request for Tender (RFT)	The issuing of an invitation, by advertisement or directly, to respond to tender requirements by lodging a tender. It covers all forms of tendering, including an invitation or request for quotations (RFQ), for offers, for EOI, for pre-registration, for applications for prequalification, and for proposals (RFP). Other terms commonly used include 'call tenders', 'invite tenders', 'call for detailed proposals'.
Risk management	The systematic application of management policies, procedures and practices to identifying, analysing, assessing, treating and controlling risks, and monitoring the outcomes. Risk management is used to ensure that project objectives and goals are achieved. See the <i>Total Asset Management Risk Management Guidelines</i> (TAM 04-12) available through the NSW Treasury website at www.treasury.nsw.gov.au .
Service providers	Includes contractors (including suppliers), subcontractors, consultants (including agencies advising others) and sub-consultants, and their service providers, that contract to carry out construction, build assets or provide other products (including goods) and/or services.
Tender	Includes a price, bid, offer, quotation, consultant proposal or expression of interest, or the like, and any other information required, lodged in response to a Request for Tender.
Tender evaluation	The evaluation of tenders to determine the tender(s) offering the best value or value for money, including the tenderer(s) that is the most capable and has the best capacity, particularly where prices are not involved, for the tendered work.

Tender period	The period between the common initial issue date or date of availability of the RFT documents and the closing date and time for tenders.
Value for money	<p>The benefits of an expenditure considered on the basis of whole-of-life costs and alternative uses of funds.</p> <p>Relative value for money may be determined with tenders by considering and comparing the benefits they offer for their prices and other costs involved, taking into account all the factors relevant to the contract outcomes required, such as:</p> <ul style="list-style-type: none">◆ price with whole-of-life costs, including cost of disposal;◆ relevant tenderer experience and previous performance;◆ tenderer capability, capacity and practices;◆ tenderer ability to meet requirements;◆ tender conformity;◆ product quality proposed;◆ product reliability proposed;◆ timeliness of delivery;◆ certainty of delivery;◆ innovation;◆ product servicing proposed;◆ fitness for purpose; and◆ value adding components such as meeting the economic, social and environmental objectives, where relevant.