QUESTION TAKEN ON NOTICE – GENERAL PURPOSE STANDING COMMITTEE NUMBER 3 - LEGISLATIVE COUNCIL TREASURY

6 December 2011

Transcript Page Reference: Page 31

Question: 'And are those peer reviewers [that are engaged during the Gateway process] chosen by Treasury or by the department or agency that you are working with?'

Question from: The Hon. Penny Sharpe

Answer:

The NSW Gateway Team, which comprises Treasury officers, seeks peer reviewers in consultation with the agency.

Peer reviewers are chosen from a wide range of experienced, independent people.

All peer review team members are required to complete a confidentiality agreement

RICHARD TIMBS
Deputy Secretary

QUESTION TAKEN ON NOTICE – GENERAL PURPOSE STANDING COMMITTEE NUMBER 3 - LEGISLATIVE COUNCIL TREASURY

6 December 2011

Transcript Page Reference: Page 33

Question: 'How long has the Gateway process been in place?'

Question from: The Hon. Penny Sharpe

Answer:

The Gateway process was introduced in 2004.

MATTHEW ROBERTS
Deputy Secretary

QUESTION TAKEN ON NOTICE – GENERAL PURPOSE STANDING COMMITTEE NUMBER 3 - LEGISLATIVE COUNCIL TREASURY

6 December 2011

Transcript Page Reference: Page 34

Question: 'Can I take you back to Infrastructure NSW and how this is going to fit together. I did not quite understand your answer. The 10-year State Infrastructure Strategies [SIS] that you currently do, are they updated annually or every second year? When is that due to run out?'

Question from: The Hon. Penny Sharpe

Answer:

The last State Infrastructure Strategy, covering the ten years to 2018, was published in 2008 and was due to be updated every two years.

Infrastructure NSW is currently developing the 20 year State Infrastructure Strategy in accordance with Part 4 of the *Infrastructure NSW Act 2011*.

MATTHEW ROBERTS
Deputy Secretary

QUESTION TAKEN ON NOTICE – GENERAL PURPOSE STANDING COMMITTEE NUMBER 3 - LEGISLATIVE COUNCIL TREASURY

6 December 2011

Transcript Page Reference: Page 37

Question: 'Another example is Dulwich Hill light rail. I am trying to think where some of the recent cost escalations occurred and the reasons behind some of the recent cost escalations. Before the recent State election Dulwich Hill light rail was costed at $120 million and the associated green way was costed at $30 million but recently the Department of Transport has costed it at $176 million and the green way at $37 million. What role did Treasury play in that cost escalation?'

Question from: The Hon. Cate Faehrmann

Answer:

Treasury played no role in the cost estimates for the Dulwich Hill light rail project.

MATTHEW ROBERTS
Deputy Secretary

QUESTION TAKEN ON NOTICE – GENERAL PURPOSE STANDING COMMITTEE NUMBER 3 - LEGISLATIVE COUNCIL TREASURY

6 December 2011

Transcript Page Reference: Page 39

Question: 'At the last hearing we were told that there is a big difference between the Victorian gateway process and the New South Wales Government gateway process—Treasury's gateway process—are you aware of how the Victorian treasury department conduct their gateway review process?'

and

'We heard at the previous hearing from Paul Forward, former head of the Roads and Traffic Authority (General Purpose Standing Committee No. 1; 21 November, 2011), that the gateway review process in New South Wales is not seen in the same constructive light as the review process in Victoria. Have you heard that the New South Wales gateway review process may not be as constructive as it should be: Is that a criticism you have heard before?'

and

'I appreciate your willingness to take this on. It featured in our last hearing and I ask whoever is responsible for the gateway project to look at the transcript from 21 November and respond to some of the criticisms within that. It goes to the questions Ms Faehrmann is asking about. Are you happy to do that?'

Question from: The Hon. Cate Faehrmann & the Hon. Penny Sharpe

Answer:

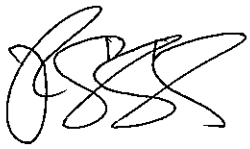
Treasury has reviewed the transcript of the Committee hearing of 21 November and notes the comments of Mr Paul Forward regarding the NSW Gateway process. I can confirm Treasury has no record of having received criticism of this nature.

Gateway is important insofar that it gives the Government a level of assurance on whether a capital investment is warranted, whether the process for identifying options is robust, and if the agency can demonstrate it has the capability and capacity to manage and deliver the project.

In order to ensure the independence and efficacy of the Gateway Process, the NSW Gateway Team, in consultation with the agency, seeks independent peer reviewers from a wide range of experienced people.

The Gateway process is widely used across NSW Government departments and businesses. In the 2011-12 Budget, the Government committed to further strengthening Gateway's coverage across all significant capital projects that meet the agreed Gateway criteria.

The Gateway Team networks and exchanges information on Gateway best practice through meetings with its counterparts in other Australian jurisdictions and New Zealand. This takes place through the Gateway National Forum. Jurisdictions also engage reviewers from each other. NSW Gateway is made aware of how the Victorian Department of Treasury and Finance conducts its own Gateway reviews through this forum.



RICHARD TIMBS
Deputy Secretary

QUESTION TAKEN ON NOTICE – GENERAL PURPOSE STANDING COMMITTEE NUMBER 3 - LEGISLATIVE COUNCIL TREASURY

6 December 2011

Transcript Page Reference: Page 39

Question:

'We have discussed the costs of tunnelling in Sydney. The costs of tunnelling have been reported as higher here than in other places. In the Sydney Morning Herald on 29 September 2009 there was an advertisement headed "A Better Deal for New South Wales Families", and it was placed by the Hon. Eric Roozendaal...It says that due to the geographical and population spread of Sydney tunnelling is one of the only options to improve transport and rail links and that the cost of tunnelling through Sydney sandstone is $400 million per kilometre. Who provided that advice to the Treasurer at the time?'

Question from: The Hon. Cate Faehrmann

Supplementary Question:

On 29 September 2009, the NSW Government placed an advertisement in the Sydney Morning Herald "A better deal for NSW families" in which it was stated that "Due to the geographical and population spread of Sydney, tunnelling is one of the only options to improve transport and rail links – and the cost of tunnelling through Sydney sandstone is $400 million a kilometre." Can the department please advise how this figure of $400 million was derived and which department/section provided the advice that $400m was a valid amount?

Answer:

Treasury received advice from the then Roads and Traffic Authority regarding the construction costs of the Cross City Tunnel and the Lane Cove Tunnel. The Cross City Tunnel cost an average of $387 million per kilometre (indexed to 2009 values) and the Lane Cove Tunnel cost $344 million per kilometre (indexed to 2009 values). These calculations were as follows:

- The Cross City Tunnel is a 2.1 kilometre twin tunnel, with a total cost of roundly $800 million (2009);

- The Lane Cove Tunnel is a 3.6 kilometre twin tunnel, with a total cost of roundly $1.2 billion (2009).

This advice was then incorporated into the Executive Summary of the NSW Government submission on the draft report into the Commonwealth Grants Commission 2010 Review of State Revenue Sharing Relativities. The

document reads, on page eight, 'Due to the geography and population spread of Sydney, tunnelling is one of the only options to improve transport and rail links, and the cost of tunnelling through Sydney sandstone is around $400 million per kilometre'.

This is contextualised on page 154 of the document, which reads: 'tunnelling in Sydney can cost up to $400 million per kilometre for dual-lane, twin tunnels'. The document is available from: http://www.cgc.gov.au/__data/assets/file/0010/17776/NSW_-Submission_to_2010_Review_Draft_Report-Final_Submission.pdf.

MATTHEW ROBERTS
Deputy Secretary

QUESTION TAKEN ON NOTICE – GENERAL PURPOSE STANDING COMMITTEE NUMBER 3 - LEGISLATIVE COUNCIL TREASURY

6 December 2011

Supplementary Question:

Can you please outline the process and timeline by which the Evans and Peck document on Best Practices Standards that has been referred to throughout this Inquiry was adopted as a Standard by Treasury?

Answer:

The Evans and Peck document *Best Practice Cost Estimation for Publicly Funded Road and Rail Construction* was not commissioned by NSW Treasury and is not specifically adopted as a standard in Treasury's policy and guidelines papers. However, to the extent that it represents best-practice in cost estimation, it can provide guidance for agencies.

MATTHEW ROBERTS
Deputy Secretary

QUESTION TAKEN ON NOTICE – GENERAL PURPOSE STANDING COMMITTEE NUMBER 3 - LEGISLATIVE COUNCIL TREASURY

6 December 2011

Transcript Page Reference: Page 40

Question: Documents to be tabled

Question from: The Chair and the Hon. Cate Faehrmann

Answer:

Five documents:

TPP08-5 *Guidelines for Capital Business Cases*

TPP07-6 *Economic Appraisal Principles and Procedures Simplified*

TPP07-5 *NSW Government Guidelines for Economic Appraisal*

TPP04-1 *NSW Government Procurement Policy*

NSWTC11/14 *Gateway Review System and Business Case Guidelines*

MATTHEW ROBERTS
Deputy Secretary

The Treasury

Treasury Circular

NSW TC 11/14
29 November 2011

Gateway Review System and Business Case Guidelines

NSW Treasury retains the responsibility for Gateway Reviews following the transfer of the NSW Procurement Policy to the Department of Finance and Services. The criteria for agency compliance with the Gateway system is detailed in the Treasury Circular *Gateway Review System* (NSWTC10/13). The *Guidelines for Capital Business Cases* (TPP 08-5) also remain the responsibility of NSW Treasury.

Summary:

In June 2011 the whole of government procurement function and various aspects of the NSW Procurement Policy were transferred from NSW Treasury to the Department of Finance and Services.

NSW Treasury retains responsibility for the Gateway Review System and the Guidelines for Capital Business Cases (TPP 08-5).

Agency compliance requirements for Gateway remain the same as detailed in Treasury Circular *Gateway Review System* (NSWTC10/13) which specifies agencies apply Gateway to the following thresholds:

Strategic Gate Review

- estimated total cost over $10 million and
- commencing in years 2 – 4 of the upcoming forward estimates period, or
- proposed for State Infrastructure Strategy publication or other public statement

Business Case Gate Review

- All projects with an estimated total cost over $10 million and commencing in the upcoming budget year, or
- Estimated total cost over $1 million and requested by Treasury.

Detailed information on the Business Case Guidelines and the Gateway Review System are available on the NSW Treasury website www.treasury.nsw.gov.au
and the Government Procurement website www.nswprocurement.com.au.

Philip Gaetjens
Secretary

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NSW Treasury Internet: www.treasury.nsw.gov.au

New South Wales
TREASURY

July 07

tpp 07-6

Economic Appraisal Principles and Procedures Simplified

OFFICE OF FINANCIAL MANAGEMENT

Policy & Guidelines Paper

Preface

This NSW Treasury Policy and Guidelines Paper provides a simplified summary of the NSW Government Guidelines for Economic Appraisal (TPP07-5). Non economists in particular may find this summary useful.

The Guidelines are subject to ongoing review and this revised edition incorporates the most recent amendments, and supersedes all previous editions.

Application of these Guidelines ensures that required reporting and appraisal standards are satisfied, which leads to better resource allocation decision making.

John Pierce
Secretary
NSW Treasury
July 2007

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Note
General inquiries concerning this document should be initially directed to:
Roger Sayers of NSW Treasury. (Tel: 9228 4641, or
e-mail: Roger.Sayers@treasury.nsw.gov.au)

This publication can be accessed from the Treasury's Office of Financial Management Internet site [http://www.treasury.nsw.gov.au/].
For printed copies contact the Publications Officer on Tel: 9228 4426.

Contents:

Executive Summary

The New South Wales public sector is a major component of the State economy. It is therefore important that Government agencies provide their services as efficiently as possible.

The NSW Government Guidelines on Economic Appraisal assist efficient public sector resource allocation. This publication summarises the main points in the Guidelines.

Economic appraisal is a way of systematically analysing all the costs and benefits associated with the various ways of meeting an objective.

The use of economic appraisal techniques is encouraged in all relevant areas of public sector activity including asset management planning, program evaluation, regulation review, in addition to new capital works. The process of undertaking economic appraisals of projects should interact with the review of strategic plans within agencies on an ongoing basis.

An important feature of economic appraisal is that various methods of achieving the stated objective are assessed.

Economic appraisal is most effective when it becomes a routine part of capital works planning, incorporated from the early stages of project development.

An iterative process may then follow, as data are updated; for example, as a result of revised more detailed construction cost estimates, or changes to the project as a consequence of the environmental assessment process. The appraisal is reassessed to ensure that the preferred option provides the best value for money outcome to meet the service objective.

All public sector agencies are responsible for undertaking economic appraisals and submitting them as part of their capital works bids.

1. Introduction

Economic appraisal of proposed new capital works was introduced as a requirement for New South Wales Government agencies in December 1988.

The objective of this requirement is to ensure the efficient allocation of resources within the NSW public sector and, through this, to contribute to the efficient allocation of resources within the broader community. The State's public sector makes a significant contribution to the NSW economy and the efficiency with which the public sector uses resources can have an important impact on the performance of the State's economy and the welfare of its residents.

The aim of this publication is to improve understanding of the principles and process of economic appraisal of capital works, particularly for the non economist.

The State's Asset Acquisition Program, which is more than $12 billion per annum, provides the economic and social infrastructure which is fundamental to the economic development of the State, the delivery of Government services and the wellbeing of its people.

Economic appraisal procedures assist selection of those projects or programs which maximise benefits relative to costs.

The economic appraisal process assists ranking of projects within particular agencies, clearer definition of project objectives, wider consideration of options to meet objectives, improved strategic planning, enhanced program evaluation, better asset management and improved resource utilisation.

Benefits of the process are outlined in Section 10 of this paper.

NSW Government Guidelines for Economic Appraisal (TPP07-5) are available to assist agencies and ensure appraisals are undertaken on a consistent basis. The Guidelines contain detailed information of a technical nature and should be consulted before economic appraisal is undertaken.

This publication summarises and simplifies the key principles and reporting procedures outlined in the Guidelines.

NSW Treasury officers are available for advice on the conduct of economic appraisals. Contacts are listed in Section 11.

2. What is an Economic Appraisal?

Economic appraisal is a systematic means of analysing all the costs and benefits of various ways in which a project objective can be met.

In essence, economic appraisal shows:

- Whether the benefits of a project exceed its costs;
- Which among a range of options to achieve an objective has the highest net benefit; or
- Which option is the most cost effective, where benefits are equivalent.

Economic appraisal is more commonly known as cost benefit analysis (CBA). CBA is in fact one of two types of economic appraisal (albeit the preferred means) for Government projects. (Refer to Section 5.)

Economic appraisals assist decision making among projects competing for limited Government funds.

Economic appraisals can assist Ministers in determining the priority order of projects within agencies under their administration, and assist the Government in determining the priority of projects across Ministerial portfolios.

Clearly the results of an economic appraisal will not be the only factors taken into account when making a decision, but they provide important information on the effects of each possible decision.

3. How does economic appraisal differ from financial appraisal?

Economic appraisal differs from a financial appraisal in several respects. For example, economic appraisal considers a wider range of costs and benefits of a project.

Financial appraisal concentrates on effects on the agency sponsoring the project, whereas economic appraisal also considers external benefits and costs for other Government agencies, private sector enterprises and individuals. See also *Guidelines for Financial Appraisal.*

A proposal put forward by one Government agency may inflict costs (or confer benefits) on other Government agencies, on private sector enterprises or on individuals. These external costs and benefits must be taken into account for Government projects through economic appraisal.

In addition, economic appraisals also:

- take into account costs and benefits which may not be reflected in monetary transactions (for example the value to the public of travel time savings from a new road), and
- assesses the real economic value of Government assets by adopting the "opportunity cost" principle (whether there is an alternative use which would yield a higher value).

An economic appraisal's methodology is such that certain concepts contained in conventional financial analysis, such as depreciation, interest, inflation and sunk or historical costs are accounted for by different means or are not relevant to the evaluation of project options.

While economic appraisal is required for capital works proposals, it does not remove the need or desirability for financial analysis which will show cash flow demands on the State's finances, and the financial rate of return from the project for commercial authorities.

Commercial authorities may also wish to separately show economic appraisal results from the agency's viewpoint, as well as from the overall community perspective, for comparative purposes.

4. When should an economic appraisal be undertaken?

Economic appraisals must have been completed and submitted in advance of agencies' making their annual Budget submissions for the next financial year.

An agency's strategic planning process (including Results and Services Plans) should identify future project requirements in broad terms to meet the agency's overall objectives. The strategic planning process may be an iterative one, with the strategic plan varying following economic appraisal of individual planned projects and vice versa.

An economic appraisal should be undertaken at the earliest possible stage in project development, before any planning commitment, real or implied, is given to a particular option. Option development and evaluation should be central to the project planning process and especially for major projects may involve an iterative process. The preferred option may potentially change in response to improved information.

A public announcement which outlines details of a proposed project prior to an economic appraisal being undertaken may constrain the Government's choice of possible options and involve significant cost penalties, and should therefore be avoided.

For example, while a new facility might be required (and subsequently supported by analysis) at a particular location in the State, there will often be a range of benefits and costs associated with different potential options relating to size, scope, staging and site location, or even provision of the service in part or whole by the private sector. Such aspects should be fully assessed before a decision and announcement are made.

Economic appraisals provided in support of a Minister's submission for consideration by the Cabinet Standing Committee on the Budget (the Budget Committee) must be of an appropriate standard, in accordance with the Guidelines and be carried out in a completely objective manner.

NSW Treasury's review of appraisals, when preparing advice for the Budget Committee, ensures they are of an appropriate standard. Those agencies with recognised in-house economic expertise may conduct appraisals themselves, while other agencies may require external assistance from a consultant. In such cases, the terms of reference should be included in the material submitted to Treasury.

Early contact should be made with NSW Treasury for advice on issues that should be addressed in a particular appraisal to ensure smooth progress when appraisals are subsequently submitted for consideration.

For example, international research has shown that there is often a tendency for project proponents to insert optimism bias into analysis, underestimating costs, overestimating benefits. Treasury and the *Guidelines* can provide advice on appropriate ways to address such matters.

It may be beneficial for economic appraisal, value management, and financial analysis of a particular project to be undertaken concurrently, particularly in early planning stages. For large projects, preliminary analysis may be required, and subsequently updated as new material and data become available.

5. Content of an economic appraisal

There are two main types of economic appraisal: Cost Benefit Analysis (CBA) and Cost Effectiveness Analysis (CEA). The guiding principle is that wherever feasible, CBA is preferable to CEA.

5.1 Cost Benefit Analysis

CBA is the more comprehensive of these two techniques. It quantifies in money terms all the major costs and benefits of project options. Thus the outcomes for a range of options are translated into comparable terms to facilitate evaluation and decision making. The technique also makes explicit allowance for the many costs and benefits which cannot be valued.

It can be applied to most public sector authorities:

- that cover costs with revenues (for example, Sydney Water)
- that do not fully cover costs with revenues but which produce traded outputs (for example, STA)
- where there are accepted methodologies for calculating major benefits (for example the RTA's road appraisals quantify such benefits as cost savings to users-vehicle operating costs, travel time costs, accident costs, etc-as well as savings in road maintenance costs)
- to varying degrees for social infrastructure such as schools, hospitals and public housing.

5.2 Cost Effectiveness Analysis

Where the main benefits of a project are not readily measurable in monetary terms (using either actual or proxy values) such as in certain areas of health, education, law and order or social welfare, it may not always be possible to apply CBA.

In areas where the main benefits of a project are not currently quantifiable, it may be desirable, depending on the significance of the project (eg. size, whether it is a recurring type of project, or similar) and ease of data collection, to undertake specific research to arrive at agreed measures and improve analysis in such areas.

Where CBA is not currently feasible, the alternative approach in such cases is to use CEA to compare the costs of each option, assuming the benefits of each option are broadly similar. Where the benefits of each option differ, CEA is less useful than CBA (where costs and benefits of different kinds of options are more readily comparable).

In both CBA and CEA all unquantifiable benefits and costs should be described. If measured costs exceed benefits in CBA or, if CEA is used to support a funding request for a project, normally it is claimed that the unquantifiable benefits exceed the project's costs. Assessment of the reasonableness of this claim should be attempted, using indirect measures.

For example, a proposal may have a Net Present Cost of $10m which may equate to a cost of $1 per user over the life of the project.

It may be considered that this amount represents a reasonable estimate of the value customers would place on the project's (free) services. In effect, users might be "willing to pay" $1, but realistically would not pay say $100. This approach assesses the lower limit of the "band" of values users place on the benefits. Hence it may reasonably be assessed that the project's unquantifiable benefits would exceed its costs.

In certain cases, eg, where the main beneficiaries of a publicly funded project may be a small number of private sector commercial enterprises, the distribution of

benefits and costs among the public/private sector parties should be assessed to assist decision making.

6. Steps in preparing an economic appraisal

This section explains in simple terms what the process involves. It is emphasised that technical guidance is contained in the *Guidelines*, and that economic appraisal should be carried out by experienced economists. Consultation with Treasury is recommended prior to commencement of an appraisal and during its conduct, for advice on treatment of particular issues.

Each of the steps is relevant to CBA and CEA, except that CEA does not express benefits in monetary terms.

6.1 Define objectives and scope of project

The worth of an investment can only be evaluated in terms of its objective(s). The objective should be clear and unambiguous and derive from the agency's strategic planning process. The appraisal should, for instance, review and evaluate forecast levels of demand for the project.

Care and judgement are required to avoid excessive project disaggregation (breaking a total project into its smaller integral components), excessive aggregation (a broad program consisting of large discrete projects) and failure to account for linkages to other projects (eg. of other agencies).

6.2 Identify options

The widest possible range of realistic options should be identified at the earliest possible stage of the planning process. An iterative analysis process may be appropriate, particularly for major projects, which may refine option development and evaluation as the detail and accuracy of data improves through the process.

The natural tendency to concentrate on the types of solutions that have been attempted in the past should be resisted, as it can lead to potentially successful options being dismissed at an early stage. NSW Treasury is available to discuss proposed options, to expedite later processing.

The first option to be considered is the Base Case of "Do Nothing", ie. what happens if the status quo is maintained. Doing nothing does not necessarily mean "spending nothing", eg. on upgrading fire safety, where the Base Case in effect becomes the "minimum essential expenditure option". The Base Case must be realistic. Doing nothing may involve cost penalties, or confer positive benefits. One of the benefits of "doing something" may be the avoidance of high maintenance costs.

Other practical options to be considered for meeting a project objective might include, for instance:

- Refurbishing existing facilities
- Various staging options in terms of timing and scale, rent, build or purchase
- Maintenance by the private sector
- Provision of the service or facility by the private sector
- Different combinations of capital and recurrent expenditure
- Various locations or site options.

Appraisals must report on all feasible options and clearly explain why potential options may not have been evaluated.

6.3 Identify quantifiable costs

All economic appraisals should be based on incremental costs and benefits associated with a particular project. Changes which would have occurred anyway should be excluded. Assumptions underlying all capital and recurrent cost estimates should be made explicit in the evaluation.

The degree of accuracy desirable will vary with the significance of the project, data availability and cost of obtaining missing data. Best estimates are often sufficient but if there is doubt as to whether such will be acceptable, advice should be sought from Treasury.

6.4 Identify quantifiable benefits

The following may be relevant:

- Avoided costs-incremental costs which are unavoidable if nothing is done, but may be avoided if action is taken
- Cost savings-verifiable reductions in existing levels of expenditure if a program proceeds
- Revenues-incremental revenues from introduction of the project
- Benefits to project beneficiaries not reflected in revenue flows-while difficult, attempts should be made to quantify these, with assumptions and methodologies clearly explained, and
- Residual value of asset (if any).

6.5 Calculate net benefits

Quantifiable costs and benefits over the project life - a 20 year analysis period is recommended for consistency - are expressed in Net Present Value terms (Present Value costs for CEA).

Costs and benefits should be valued in real terms over 20 years: that is, they should be expressed in constant dollar terms and not include nominal increases due to inflation.

The stream of costs and benefits should then be discounted by a real discount rate of 7%, with sensitivity testing using discount rates of 4% and 10%.

The discounting process takes account of the fact that initial investment costs are borne up-front, while benefits or operating costs may extend far into the future. Discounting the value of future costs and benefits brings these back to a common time dimension - present value - for the purpose of comparison. The process of discounting is simply a compound interest calculation worked backwards.

The process of discounting real costs and benefit values reflects, even in the absence of inflation, the concept of time preference for money. People normally prefer to receive cash sooner rather than later and pay bills later rather than sooner. The existence of real interest rates also reflects this time preference.

Using the discounted stream of costs and benefits the following decision measures should be calculated:

- Net Present Value (NPV)-the sum of benefits minus costs; a project is potentially worthwhile (subject to the availability of funds) if the NPV is greater than zero.
- Net Present Value per $ of capital investment (NPV/I)-the highest NPV may involve very high capital expenditure and capital availability is normally constrained. Projects with the highest ratios would be potentially worthwhile.
- Benefit Cost Ratio-a project is potentially worthwhile if the BCR is greater than 1 ie, the present value of benefits exceeds the present value of costs). It has become conventional to deduct ongoing costs from benefits to produce a net benefit stream, and to use initial capital costs as the denominator. This is the required basis on which results should be provided. In cases where BCR calculations are done on another basis, for example to satisfy requirements of other Governments for jointly funded projects, results should be shown on the two bases and clearly identified.
- Internal Rate of Return (IRR)-this is the discount rate at which the Net Present Value of a project is equal to zero (ie. discounted benefits equal discounted costs). A project is worthwhile if the IRR is greater than the test discount rate.

Sensitivity analysis should be undertaken to test the robustness of results under different scenarios, using different assumptions about some or all of the key variables.

Agencies should note that in a constrained Budgetary situation, NPV/I and BCR measures are important considerations for Budget funded projects and programs.

6.6 Identify qualitative factors and summarise results.

Quantifiable costs and benefits are only part of an economic appraisal. Other aspects such as environmental considerations, social or regional impacts, resource availability, funding, distribution of benefits and costs, etc, will also have to be taken into account in choosing between competing options and projects.

Some of these may be quantifiable to some extent but where they are not, qualitative aspects of options or projects should be discussed in the appraisal.

The report on the appraisal should include a clear summary of results, and indicate the preferred option.

The *Guidelines* contain further advice on technical issues relating to the above. Advice is also available from Treasury.

7. Budget Committee consideration of capital projects

The Guidelines establish requirements for evaluation of capital works, tailored to the characteristics and scale of projects. Appraisals for major projects (costing in excess of $10m) should be submitted to NSW Treasury, as they are completed throughout the year prior to the agency's annual Budget submission. NSW Treasury reviews those appraisals and provides advice to the Budget Committee.

While economic appraisal is required for all projects with a total cost in excess of $1m, only summaries are normally required to be submitted for projects costing between $1m and $10m.

Reports on projects costing in excess of $10m are required to be submitted in full. Certain projects costing below $10m may be identified for specific reporting requirements.

Appraisals should be accompanied by a Ministerial letter indicating support or otherwise for the findings and recommendations of the report, together with a copy of the terms of reference for the study.

Where projects are deemed by agencies to be absolutely essential (for example, due to urgent health and/or safety reasons) and no realistic alternatives are available, a full economic appraisal may not be required. However, such cases must be discussed with Treasury at the outset and will require detailed justification.

8. The role of Treasury in economic appraisal

NSW Treasury provides advice on all submissions to the Budget Committee, including advice on economic appraisals of projects.

As all Government projects are in competition for limited capital funds, Treasury ensures that economic appraisals have considered all potential options and that linkages with other agencies have been considered, that assumptions underlying costs and benefits, including demand projections, are based on reasonable grounds and that the appraisal has been conducted in accordance with the Guidelines.

For example, a review of an appraisal disclosed that an inappropriate methodology and incorrect assumptions had been used. The appraisal was revised to address these issues, resulting in a reversal of the two project options. The new preferred option which was subsequently endorsed by the Government represented a net saving of $9m (NPV) compared to the original proposal.

Recommendations by NSW Treasury to the Budget Committee are based on the review of the appraisal's content, the Minister's accompanying request and discussions with relevant agencies and consultants.

Liaison is maintained with other agencies to ensure that all relevant aspects of a project are taken into account.

NSW Treasury staff are available for preliminary discussion and advice on proposed appraisals of projects. Contact by agencies and consultants at an early stage in the preparation of an appraisal is recommended to ensure that appraisals subsequently submitted for approval are satisfactory.

9. What NSW Treasury looks for in an economic appraisal

In its review of economic appraisals to provide advice on proposed projects or programs, above all, NSW Treasury looks for objectivity in an economic appraisal. Common sense is an important guiding principle.

The economic appraisal should present an independent, unbiased assessment of all the costs and benefits of the various means of achieving the stated service delivery objective.

The economic appraisal should not be a "business case" which simply promotes a preferred approach. The economic appraisal may form part of a business case, to explain how a preferred approach came to be selected.

In providing NSW Treasury advice on the best value for money approach from the community's viewpoint to meet a service delivery objective, Treasury closely analyses the appraisal usually in consultation with the proponent agency to better understand the results.

NSW Treasury's review of an economic appraisal considers issues which include:

- Has the appraisal been carried out in accordance with the NSW Government Guidelines for Economic Appraisal? Was NSW Treasury contacted by the consultant or agency at the outset? Were the proposed methodology and the approach to any contentious issues discussed and agreed with Treasury?
- Is the service delivery objective clear and unambiguous and the fundamental need confirmed?
- Have all reasonable, feasible options been considered, costed and analysed?
- Does the appraisal represent an objective analysis of the options to arrive at a preferred option, and is not simple a case to support a predetermined option? Has there been an iterative process to option development, where appropriate?
- Is there a realistic Base Case, as described in the Guidelines, against which other options' costs and benefits have been compared?
- Have all relevant costs and benefits, quantifiable and non quantifiable, been included? Are they comprehensive and do the estimates appear reasonable? For example, if it is proposed to construct a facility in a new location, have relocation costs and remediation costs been included in the analysis as well as the new facility construction costs? If a refurbished facility is proposed as an option, have costs of any temporary accommodation etc been included?

- NSW Treasury considers how the data are produced and reviews the assumptions incorporated in the analysis. This is to ensure there is no "project bias" in the analysis, for example, in terms of overoptimistic benefits and/or underestimated costs. Treasury considers the sources and basis of estimates - are they credible, informed, independent, the latest available, etc? Such matters may be discussed with the agency and with specialists within Treasury.

- Have a range of sensitivities, including worst case scenarios, been assessed and commented on in the appraisal results? Treasury considers whether the sensitivity tests carried out are reasonable and comprehensive. For instance, to allow decision makers to be fully informed it may be appropriate to consider what impact there would be on the appraisal results if, for example, both estimated costs increase and benefits decrease, not just one or the other? What are the chances of that happening? What are the risk management strategies to address such possibilities? Do they involve additional costs that should be incorporated in the analysis? What contingencies have been allowed for?

- Changes to the scope of the project can affect results - eg changes to address public concerns as a result of the Environmental Impact Assessment process, or other factors. Such possibilities should as far as is reasonably possible be taken into account upfront in the sensitivity analysis. If the outcome of the Environmental Impact Assessment process significantly alters costs or benefits, the project should be reassessed to ensure that it is still worthwhile proceeding.

- There should be reassessment of major project parameters as project planning proceeds, and if these vary significantly reassessment of the decision to proceed with the proposed project may be necessary to avoid implementing a project that has negative net benefits.

- NSW Treasury's approach to its review of appraisals is pragmatic and practical. Common sense is adopted in interpreting results and aspects of the appraisal are clarified with agencies where necessary.

- To ensure that NSW Treasury's advice to assist decision making in Government is timely and progresses smoothly, agencies should liaise with Treasury on an ongoing basis and ensure that draft appraisals are provided informally well in advance of formal submissions.

- Advice is available from NSW Treasury to assist agencies in the preparation of economic appraisals.

10. A case study

Experience since the introduction of the requirement for economic appraisal of new capital works has shown that there is no such thing as a "standard" economic appraisal - even within individual agencies. There may be a degree of commonality of approach and content in certain areas, but more often than not each appraisal is different, because each project has its own individual issues to be considered.

Reports on appraisals should contain all relevant information (including detailed spreadsheets in Appendices), clearly set out and explained, and provide the required results for decision making in summary form.

For illustrative purposes, following is a summary of a hypothetical appraisal of a project with an Estimated Total Cost of $12m.

10.1 Objective

The appraisal considers four options to achieve the project objective of providing a specific service to the public, in accordance with the agency's strategic plan. The benefits under each option in terms of level of service are considered to be broadly similar.

10.2 Options

1. Base case: maintain existing facilities at four different locations
2. One complex at a central location
3. Reduced complex at central location and retain two smaller facilities at existing locations
4. Smaller complex at central location and retain three smaller facilities at existing locations

10.3 Costs

Quantifiable costs are:

- Capital costs (land purchase and construction at new site, relocation costs and refurbishment costs at existing locations)
- Operating costs (staff, leases, building maintenance, costs to another department)
- Travel costs for members of the public to each location.

10.4 Benefits

Quantifiable benefits are:

- Sale proceeds from existing properties
- Residual value of the new complex at end of 20 years
- Savings in leasing and staffing costs.

10.5 Qualitative aspects

- Improved working conditions for staff at new complex
- Improved comfort for public at new complex.

10.6 Results

The table below summarises results by comparing the incremental effect of each option to the base case.

Results of economic evaluation at 7% discount rate			
	Options incremental to base case 1		
	Option 2	Option 3	Option 4
Capital Costs $m (Present Value)	8.64	8.61	8.49
Benefits $m (Present Value)	9.12	4.54	-2.06
Net Present Value $m	0.48	-4.07	-10.56
NPV/Capital Costs	0.06	-0.47	-1.24
Benefit Cost Ratio	1.06	0.53	0.24
Internal Rate of Return %	7.88	neg	neg

The analysis shows that Option 2- construct a new facility at a central location-is the preferred option. Despite its high capital cost relative to the base case, cost savings could be obtained from lower leasing costs, lower staff costs, sale of properties and residual value of the new property. Qualitative aspects also favour this option.

Sensitivity tests of several variables (alternative discount rates, higher capital costs, higher property sales, higher staff levels, higher accessibility costs, different demand growth rates) do not materially alter the outcome and Option 2 remains the preferred option.

The appraisal results are then reviewed in NSW Treasury and advice prepared (see next section).

10.7 Review of appraisal in Treasury

Treasury normally discusses the results with the initiating agency and/or the consultants who prepared the study, clarifying certain assumptions and resolving any other queries. Contact would also be made with other agencies as appropriate.

An important consideration for this project from the Treasury's point of view would be that the preferred option (2) results, although positive, are only marginal compared to the Base Case of maintaining existing facilities: NPV $0.48m; BCR 1.06; IRR 7.88% (compared to 7%); NPV/Capital Costs 0.06.

This aspect, together with any other relevant considerations, including specific Government priorities, would be taken into account when making a recommendation to the Budget Committee.

It is important for initiating agencies to note that although economic appraisal of a particular project may show positive results, this does not automatically mean that it will qualify for funding in the coming Budget year. For this reason no action should be committed on any project until availability of funds is confirmed.

In this example the project might be supported, subject to availability of funds. The subsequent review of the State's Capital Budget by the Budget Committee may mean that in a constrained funding environment, other projects might be preferred for funding in the coming year. The project might be resubmitted by the Minister for funding consideration the following year.

The economic appraisal process, including review of appraisals by NSW Treasury, contributes toward ensuring that among all the worthwhile projects put forward by agencies for funding, those projects which provide the greatest net benefit to the community, in accordance with Government policies, receive priority in the allocation of available funds.

11. Benefits of the economic appraisal process

Since the introduction of the economic appraisal process for capital works in 1988, several hundred appraisals of major projects have been reviewed by the central agencies.

Ongoing review of appraisals has disclosed significant benefits at the agency level and from a whole-of-Government perspective. The economic appraisal process has reduced potential capital expenditure by hundreds of millions of dollars. For example:

- The estimated benefits of a proposed $180m dam to irrigate crops did not exceed its costs, and the proposal did not proceed as it was not economically viable.
- Updated population data for an economic appraisal of a proposed $80m regional hospital expansion showed that the bulk of demand would not occur for several years: a staged expansion of $20m was approved as the most appropriate and cost effective means of improving health care in the area.
- The cost of maintaining an existing education facility was assessed as $10m NPV cheaper over a 20 year analysis period than a proposed $40m new facility: cost effective provision of equivalent services in the existing facility, rather than a new facility, was adopted.
- Assessment of costs and benefits of alternative locations and different designs for a new jail resulted in a capital cost saving of $45m compared with an initial proposal, as well as overcoming potential community objections.
- Proposed relocation of an existing research establishment at a cost of $28m could not be justified in terms of expected benefits, and the proposal was not approved.
- Benefits relative to costs were found to be maximised with 3 new commuter vessels rather than 5 as initially proposed, resulting in a capital cost saving of $10m.
- Analytical review of service requirements for the area to be served by a proposed $200m hospital found that the scope of the hospital could be reduced without having an adverse community impact, resulting in a $20m saving for use elsewhere in the health budget.
- As an indication of savings in smaller projects, analysis of population and other data as part of two economic appraisals- a $5m school and a $2m water supply augmentation project-showed that both projects could be responsibly deferred for at least 5 years.

Besides reducing the call on limited capital funds, economic appraisal has provided other benefits, such as:

- Identifying preferred routes for new roads and rail lines to maximise benefits relative to costs; assisting in planning optimum locations for new fire stations; recommending amalgamation of water rehabilitation programs of two agencies into one coordinated program - at an estimated cost saving for the community of $16m NPV; and
- Assisting in developing a cost sharing formula for a natural resource project undertaken with another State.

12. Contact

For further advice and assistance contact:

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13. Acknowledgment

These guidelines are an update of a document originally prepared in 1990 by Roger Sayers, Senior Economic Analyst, Capital Works Unit, Premier's Department. They were compiled from material contained in NSW Guidelines for Economic Appraisal, and experience with review of economic appraisals submitted by agencies, including discussion with other agencies and private consultants.

Revisions to the document in 1997, 1999 and 2006 were prepared by Roger Sayers, Senior Economic Analyst, Treasury.

The author acknowledges comments on drafts of the original document provided by the following:

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Peter Marshall, NSW Treasury

The revision was undertaken in the context of revisions to the NSW Guidelines for Economic Appraisal following consultation between Treasury and a number of agencies.

14. Related Publications

1. NSW Government Guidelines for Economic Appraisal – NSW Treasury Policy & Guidelines Paper (TPP07-5)
2. Guidelines for Financial Appraisal – NSW Treasury Policy & Guidelines Paper (TPP07-4).

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Guidelines for Capital Business Cases

OFFICE OF FINANCIAL MANAGEMENT

Policy & Guidelines Paper

Preface

The NSW Government is committed to the ongoing improvement of public services by ensuring resource allocation decisions are directed to services that provide the greatest benefits to New South Wales. Preparing a rigorous business case is vital to inform Government decision makers that the proposal is necessary, consistent with government priorities, offers value for money and the nominating agency has the capacity to deliver the service delivery benefits outlined.

NSW Treasury Circular *Revised Project Size /Risk Thresholds for the Submission of Business Cases and Gateway Reports* (NSW TC 08/07) defines the thresholds for submitting capital business cases to Treasury. A single set of thresholds applies to all asset classes including information and communication technology (ICT).

The Guidelines for Capital Business Cases promotes a consistent approach across all public sector agencies in preparing both a preliminary and final business case for all categories of proposed resource allocations decisions for:

- construction
- goods and services
- information technology and communications
- property and accommodation.

The business case process is separated into two stages:

- The preliminary business case constitutes the planning framework for the business case and is used to demonstrate and justify the service rationale, consider service delivery alternatives and also inform internal agency priority setting
- The final business case documents a defined project that contains an updated justification of the service rationale, determines value for money, and demonstrates that the agency has the capability to implement the service.

The business case process aims to help agencies choose the best means to satisfy a specified objective and rank competing proposals and enable Government to prioritise its resource allocation decisions. The business case should clearly demonstrate the agency's capacity to implement the proposal and realise the intended service delivery benefits.

Using these Guidelines ensures robust analysis for decision making is consistently applied when considering new proposals. Quantitative evidence is preferable to support all areas of the business case for more informed decision making and will lead to better performance in the implementation of new services for NSW.

This policy and guidelines paper aims to help agencies prepare preliminary and final business cases for proposed capital investments. Feedback is invited on the guidelines and templates.

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Acting Secretary
NSW Treasury
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Note
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This publication can be accessed from the Office of Financial Management Internet site [http://www.treasury.nsw.gov.au/].
For printed copies contact the Publications Officer on Tel: (02) 9228 4426.

Contents

Executive summary

The NSW public sector's efficient use of resources affects the delivery of services to and the welfare of its residents. Increasing service delivery needs must be balanced against limited resources. The NSW Government must ensure capital related resource allocation decisions are well timed, offer value for money, provide sound management of risks and are consistent with Government priorities and objectives.

A business case provides a base for change by examining total lifecycle costs, benefits, risks and implementation requirements. It is also a reference for the procurement and implementation of a project or program. Critical parameters such as cost, schedule, quality, social and environmental issues are documented demonstrating agency capability for timely delivery of the project or program.

The purpose of these Guidelines for Capital Business Cases is to strengthen the framework and identify the requirements for all public sector agencies to undertake business cases on a consistent basis to support the:

- Contribution to the strategic priorities of Government as contained in the NSW State Plan and the NSW State Infrastructure Strategy.
- Prioritisation of resources to meet Government service delivery objectives or priorities.
- Efficient, effective delivery of planned services by agencies.

The systematic application of these Guidelines will improve resource allocation decisions and the capacity of agencies developing and delivering new capital related services.

These Guidelines provide:

1 Guidance on preparing a capital business case and the standard of evidence required

2 References to existing NSW Government policy papers, guidelines and circulars

3 Key principles for preparing a business case

4 Advice on how to:

- develop the case for change (section 3)
- analyse the proposal (section 4)
- implementation of the proposal (section 5)

5 Templates for preparing:

  - Preliminary business cases which demonstrate the rationale for a service need before project planning proceeds too far (Appendix 1)
  - Final business cases which demonstrate the case for change, value for money and capacity of the agency to implement the project (Appendix 2).

Applying these Guidelines will allow agencies submitting business cases to demonstrate that their proposal is the best option to:

- achieve the strategic objectives or priorities of Government
- use the proposed resources
- procure, implement and maintain the planned services.

The benefits to agencies and the Government include:

- Standardising the content requirements and information base to improve resource allocation decisions, assessing relative priorities, competing demands and confirming affordability.
- Reinforcing longer term State capital expenditure forecasting and strategic fiscal planning, and considering future demand pressures and longer term prevention and early intervention strategies.
- Demonstrating links to the State Plan and the State Infrastructure Strategy, Asset Strategy Plans, Results and Services Plans, Statements of Business Intent, Statements of Corporate Intent and ICT Frameworks.
- Broadening the range of options by considering alternatives to new capital including better asset utilisation, early intervention and demand management.

1 NSW Treasury guidelines for capital business cases

1.1 Purpose

The efficiency with which the New South Wales public sector uses resources affects the delivery of services to and the welfare of its residents. Balancing increasing service delivery needs with limited resources means that the NSW Government needs to ensure capital related resource allocation decisions are well timed, offer value for money, provide sound management of risks and are consistent with Government priorities and objectives.

The purpose of the Guidelines for Capital Business Cases is to strengthen the framework and identify the requirements for all public sector agencies to undertake business cases on a consistent basis to support the:

- contribution to the strategic priorities of Government as contained in the NSW State Plan and the NSW State Infrastructure Strategy
- prioritisation of resources to meet Government service delivery objectives or priorities
- efficient, effective delivery of planned services by agencies.

A business case provides a case for change by examining total lifecycle costs, benefits, risks and implementation requirements. It is also a reference for the procurement and implementation of a project or program. Critical parameters such as cost, schedule, quality, social and environmental issues are documented in a manner that demonstrates agency capability for timely delivery of the project or program.

Applying these guidelines will mean that agencies submitting business cases they will be better equipped to demonstrate that the proposal is the best:

- way to achieve the strategic objectives or priorities of Government
- use for the proposed resources
- way to procure, implement and maintain the planned services.

Systematically applying these guideline will improve resource allocation decisions and the capacity of agencies developing and delivering new capital related services.

Benefits to agencies and the Government include:

- Standardising the content requirements and information base to improve resource allocation decisions, helping assess relative priorities, competing demands and confirming affordability.
- Reinforcing longer term State capital expenditure forecasting and strategic fiscal planning, and demonstrating consideration of future demand pressures and longer term prevention and early intervention strategies.
- Demonstrating links to the State Plan and the State Infrastructure Strategy, Asset Strategy Plans, Results and Services Plans, Statements of Business Intent, Statements of Corporate Intent and ICT Frameworks.
- Broadening the range of options being considered by considering alternatives to new capital including better asset utilisation, early intervention and demand management.

1.2 What is in the guidelines?

The *NSW Treasury Guidelines for Capital Business Cases* provides:

1. Four central elements:
   - the case for change (section 3).
   - analysis of the proposal (section 4).
   - implementation of the proposal (section 5).
   - templates for preparing:
     - Preliminary business cases – which are to demonstrate the rationale for a service need before project planning proceeds too far (Appendix 1) and
     - Final business cases – which are to demonstrate the case for change, value for money and capacity of the agency to implement the project (Appendix 2).
2. Guidance on when to prepare a business case and the standard of evidence required
3. Key principles for preparing a business case and
4. Guidance on what to address when preparing a business case, which is drawn from existing NSW Government policy papers, guidelines and circulars.

These Guidelines integrate the following documents which are the foundation for preparing a business case:

- NSW Treasury Policy Paper TPP07-5 NSW Government Guidelines for Economic Appraisal July 2007 (mandatory application).
- NSW Treasury Policy Paper TPP07-6 Economic Appraisal Principles and Procedures Simplified July 2007(mandatory application).
- NSW Treasury Circular TC 06/02 Treasury Review of Financial Impact Statements (mandatory application).
- NSW Treasury Policy Paper TPP07-4 Commercial Policy Framework: Guidelines for Financial Appraisal (mandatory if applicable).
- NSW Treasury Policy Paper TPP 04-1 NSW Government Procurement Policy (mandatory application).
- NSW Treasury Policy Paper TPP08-2 Total Asset Management (TAM) requirements for updating the NSW State Infrastructure Strategy (SIS).
- NSW Treasury Circular NSW TC 08/07 Revised Project Size/Risk Thresholds for the Submission of Business Cases and Gateway Reports.
- NSW Treasury Policy Paper TPP06-10 Information and Communication Technology (ICT) Capital Investment Process.
- Premier's Memorandum 2007-20 State Plan Priority F4: Embedding the Principle of Prevention and Early Intervention.

To complete a business case these documents must be referred to and a check made for any updates which may impact on preparing or what is required to support a business case. Agencies should refer to these Guidelines at the earliest stages of project planning to appreciate the full requirements to complete business cases.

Where proposals require the introduction or amendment of a regulatory framework, agencies must comply with the requirements of the Guide to Better Regulation, including the identification of options and of the costs and benefits of each option. The Guide can be found at www.betteregulation.nsw.gov.au or by contacting the Department of Premier and Cabinet.

2 When to use business case guidelines

Key Principles:

- Public sector agencies must prepare business cases to support capital-related proposals (irrespective of funding source) and resource allocation decisions of Government.
- The extent and detail of evidence required for business cases will depend on the value and/or the risk of the project or program.
- The standard of evidence required when analysing the service need, the options and the implementation of the proposal is referenced quantitative (preferred) or qualitative data and established methodologies (as referenced in these Guidelines). The evidence and the methodologies should clearly link resources, services and results.

2.1 When is a business case required?

As a matter of course, public sector agencies:

- are encouraged to prepare business cases to support agency internally funded decisions (to support projects arising from approved funded programs) and

- must prepare business cases to support the mandatory requirements for capital related resource allocation decisions of Government (identified in Table 1).

Table 1: Mandatory requirements

Type of activity	Requirement
Construction projects	*NSW Procurement Policy TPP 04-1*
Goods and services	*NSW Procurement Policy TPP 04-1*
Information, communication and technology projects	*NSW Procurement Policy TPP 04-1* *People First – A New Direction for ICT in NSW* *ICT Capital Investment Process TPP 06-10*
Property and accommodation projects	*NSW Procurement Policy TPP 04-1*
Determining the requirements for business cases seeking capital funds	*Treasury Circular TC 08/07*
Total Asset Management (TAM) submission requirements	*TAM requirements for updating the SIS TPP 08-2*

NSW procurement policy

The objective of the NSW procurement policy is to ensure Government procurement activities achieve the best value for money in supporting the delivery of services.

TC 08/07 sets out the requirements for when preliminary and final business cases are required for proposals seeking capital funding. Agencies must to refer to this Treasury Circular early in the planning process to check relevant thresholds for preparing a business case, as well as for any updates.

As part of this Policy framework, the Treasury Circular NSW TC 08/07 Revised Project Size/Risk Thresholds for the Submission of Business Cases and Gateway Reports requires that all General Government agencies and Government businesses, including nominated State owned corporations (SOCs) are required to provide NSW Treasury with:

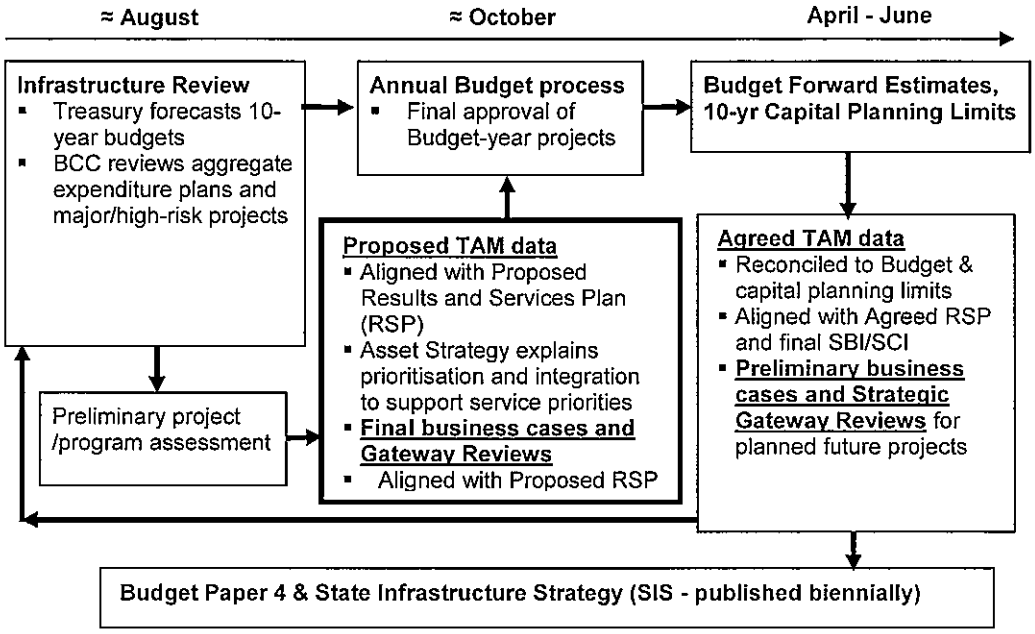
- A preliminary business case, which summarises the proposal at an early stage of development. The preliminary business case describes the high-level objectives, identifies alternatives and outlines the relevant risks, sustainability issues and costs and benefits relevant to these alternatives. Specific requirements to be provided in the preliminary business case are set out in Appendix 1.
- A final business case, which documents in detail the proposal. This includes an updated justification of the service rationale, costs, workplan and demonstration of value for money and the agency's capability to implement the service. Specific requirements to be provided in the final business case are set out in Appendix 2.

The amount of detail provided in either the preliminary or final business case should be appropriate to the proposed projects' scale, cost and risk.

Both the preliminary and the final business case templates must be followed for proposals submitted to Government for approval.

Preparation and submission of business cases should align with the timing of the NSW Budget process, as advised to agencies annually by Treasury. Business cases are submitted as part of the Total Asset Management (TAM) process as part of the yearly budget cycle. The timing of business case submissions in the Budget process is generally illustrated in Figure 1.

Figure 1: State Infrastructure Strategy / Total Asset Management process for each financial year



Reference material for preparing business cases

- NSW Treasury Circular TC08/07 - Revised Project Size/Risk Thresholds for the Submission of Business Cases and Gateway Reports
- NSW Treasury Policy & Guidelines Paper TPP 08-2 - Total Asset Management (TAM) Policy Requirements for Updating the State Infrastructure Strategy (SIS)
- NSW Treasury Policy & Guidelines Paper TPP 07-4 - Commercial Policy Framework: Guidelines for Financial Appraisal
- NSW Treasury Policy Paper TPP04-1 - NSW Government Procurement Policy
- Gateway Project Profile Assessment Tool
- Gateway Review Toolkit 2006
- *People First*: The NSW Government ICT Strategic Plan (if ICT-related)
- Agency ICT Strategic Plan (if ICT-related)
- Australian and New Zealand Standard AS/NZS 4360:2004: Risk Management
- NSW Treasury Policy Paper TPP 06-10 – Information and Communication Technology (ICT) Capital Investment Process

2.2 Difference between a preliminary and a final business case

NSW Treasury Circular NSW TC 08/07 *Revised Project Size/Risk Thresholds for the Submission of Business Cases and Gateway Reports* specifies when preliminary and final business cases are required to be submitted.

Preliminary business cases play a critical role in agency and Government decision making. They support the strategic assessment of the service need, timing, high-level costs and benefits of the proposed service and a range of realistic alternative service delivery options. Information about the early planning for a project or program enables Government to determine the rationale of the service need and if it is consistent with Government objectives or priorities before it progresses. This is a crucial stage in the planning of a project or program. The service rationale must be adequately demonstrated for the purposes of a strategic gateway review and progression to the final business case stage.

A preliminary business case is used for a Strategic Gateway Review.

Final business cases support resource allocation decisions of Government or internal funding decisions of agencies. It requires the case for change to be revisited and updated, a greater level of analysis and detail to demonstrate value for money and if the agency has the capability and capacity to implement all the components of the project or program. There are more comprehensive documents with full and complete descriptions of all elements contained in these Guidelines.

The final business case is used for the full Business Case Gateway Review.

Table 2 summarises the differences between preliminary and final business cases.

Table 2: Differences between preliminary and final business cases:

Guideline & template requirement	Preliminary business case (strategic analysis)	Final business case (defined project)
When is it required	Specified in NSW Treasury Circular TC08/07.	Specified in NSW Treasury Circular TC08/07.
Level of accuracy	Cost estimates preferably to be within 25%	Cost estimates preferably to be within 10%
The case for change Section 3	Thoroughly document the Case for the Service Need	Revisit, update and complete the rationale of the Case for the Service Need.
Analysis of the proposal Section 4	Provide a range of alternative service delivery options, comparing the: ▪ costs and benefits ▪ risks ▪ sustainability issues ▪ technical standards and ▪ legislative requirements of each option. Determine whether Part 3A of *the Environmental Planning and Assessment Act 1979* will be triggered. Consider prevention and early intervention options and demand management strategies.	Full examination and evaluation of short-listed options: ▪ costs and benefits ▪ risks ▪ sustainability issues ▪ technical standards and ▪ legislative requirements.
Implementation of the proposal Section 5	Outline the governance model planned to have the proposal successfully taken through to the final business case.	Full examination of the requirements to implement the project or program including documentation of: ▪ project plan ▪ governance model ▪ procurement strategy ▪ change management strategy ▪ benefits realisation strategy ▪ stakeholder consultation strategy and ▪ resourcing issues This material is to be detailed and should explain how implementation will be managed and delivered.
	Business case development plan Summary of the key elements, milestones and risks to achieve the final business case.	

2.3 Evidence required for business cases

A business case is an evidence-based methodology that demonstrates to Government decision makers' three key elements:

- the case for change – demonstration, justification and priority of the service need (section 3)
- analysis of the proposal offers value for money relative to alternatives (section 4)
- the agency responsible for delivering the proposal has the capacity to procure, implement and realise the benefits (section 5).

Examining these elements is the minimum level of analysis and evaluation to be undertaken for the development of a business case. This approach is not intended to supersede or duplicate existing agency processes. This reinforces the critical areas to be addressed, and enable the flexibility to include unique analysis established in agency specific business case guidelines or policies.

The extent of evidence required for a preliminary or a final business case will be proportionate to the value and/or the risk of the project or program. A high-value project will generally always require extensive evidence. A low value project may also require extensive evidence if it presents risks which require agencies to demonstrate their consequence and treatment measures. Agencies should carefully consider these issues and consult with Treasury before drafting business cases to ensure the level, extent and accuracy of evidence fits the purpose.

The standard of evidence for describing, analysing and evaluating the service need, options and implementation of the proposal is through the use of referenced quantitative (preferred standard) and qualitative data and established methodologies that assess costs and benefits and link resources to services to results via an evidence-based results logic.

The basis for and accuracy of the cost estimates in business cases should be stated. A lower level of accuracy is reasonable for cost estimates in preliminary business cases e.g. 25 per cent. Cost estimates are expected to be more accurate in final business cases – ideally within 10 percent of actual costs.

Agencies should undertake a structured internal review of business cases and with complex analysis, an independent review of the expected returns of the project or program is encouraged.

If after submitting a business case, a resource allocation has not been provided, agencies must consider the validity and accuracy of the business case before submission in following years. Business cases are likely to be out of date after one year and agencies must consider either preparing a new business case or updating a business case consistent with these guidelines.

3 The case for change

Key principles:

- The case to maintain or achieve a new service should be clear to any reader.
- Maintaining a service or providing a new service should be to meet an unmet service need or an unmet service demand and its contribution to agency service delivery and to strategic Government objectives and/or priorities.
- Cost effectiveness and the priority of the proposed service should be unambiguous.
- The scope of the service should be informed by consultation with key stakeholders.

Application:

- Preliminary business cases will complete the following requirements in full (based on current strategic planning).
- Final business cases will revisit, update and/or complete the following requirements in full.

3.1 The service need

The rationale for the service need must be identified by unmet need or demand which cannot be addressed through existing service delivery arrangements.

Another way of viewing the rationale for the service need is through a market failure or where there are clear Government distributional objectives that need to be met. Market failure refers to where the market has not and cannot of itself be expected to deliver an efficient result; the intervention that is contemplated will seek to redress this.

The rationale for the service need must contribute to:

- the services the agency provides and
- the strategic objectives and/or priorities of the Government.

The rationale for moving from the current state of Government action to a new state of action must contribute to:

- the State Plan
- a mandated priority including a service delivery related plan or policy, Intergovernmental agreement; legislative or contractual requirement(s) and/or
- agency business plans, Total Asset Management Plans, Results and Services Plans, Statements of Business or Corporate Intent, and in ICT-business cases with *People First* – the NSW Government ICT Strategic Plan and with the agency ICT strategic plan.

Agencies must clearly identify any cross-agency strategic objectives, priorities or initiatives as well as the implications for other agencies, as these factors will contribute to the case for the service need and for Government action.

These above points will help agencies demonstrate the tangible change that would be expected from the proposal (the results) both within the agency (change to business processes) and externally (change to beneficiaries). This information will inform the development of the scope of the service need in support of demonstrating and justifying the case for the service need.

Describe the scope and timing of the service succinctly and coherently so readers can easily understand the proposed service and expected service levels.

When prepared for a funded election commitment, the business case needs to demonstrate how the objectives and goals of the commitment will be achieved in a cost effective manner and the impact of the commitment on the operating costs of the agency.

Business cases should be written with the level of detail appropriate to the scale, complexity and risk of the proposal. Technical terminology/jargon should be kept to a minimum.

Consult your Treasury analyst, and other central agencies, about the business case development process and the evidence base at the beginning of the process.

3.2 Priority of the service need

A critical feature of the case for Government action is for agencies to document the priority of the service need. This underpins the need for Government action and the timing for the action. The priority of the service need should be based on:

- the State Plan
- a mandated priority including a service delivery related plan or policy, Intergovernmental agreement; legislative or contractual requirement(s)
- agency Business Plans, Total Asset Management Plans, in particular the Asset Strategy, Results and Services Plans, Statements of Business or Corporate Intent, and in ICT-related cases with *People First* - the NSW Government ICT Strategic Plan and the agency ICT strategic plan
- an election commitment
- an emerging risk or demand
- impact on results relative to the cost involved (i.e. benefit to cost ratio) and/or
- comparison with alternative options and uses of resources.

Agencies must also state whether reprioritisation of priorities has occurred to permit the proposal to come forward.

3.3 Benefits of the service need

Agencies must document the key benefits of the service and the impact upon identified beneficiaries. The beneficiaries may include the Government, the agency, other agencies, the recipient or user of the service, the profession or the workforce delivering the service, and may also include wider benefits to an industry sector or to the state or national economy.

The key benefits should contribute to the agency services as well as the strategic objectives or priorities of Government. These benefits should be described in quantitative (preferred) and qualitative terms (see section 4.3).

If applicable, the benefits of the proposal to the State economy should also be documented in the business case. For example, how the project or program will improve the productive capacity of the economy, enhance workforce participation, and/or deliver higher quality government services.

Consideration of benefits should also include preventive outcomes that are expected to generate longer term savings by reducing future demand.

3.4 Stakeholder engagement

A proposal may involve or impact a range of stakeholders including those within the agency, other agencies or external to the agency such as users or recipients of the service. If such stakeholders are relevant to the development of the service scope, agencies must identify the key stakeholders at the start of the planning process and document:

- the business or user issues and/or impacts and
- how these issues and/or impacts will influence or are integrated into the scope of the service.

For some proposals identifying stakeholders and appreciating the issues and impacts are likely to be well understood. Agencies should consult with stakeholders early in the process so necessary issues are integrated into the scope of the service. Agencies must document this consultation and clearly identify the issues that have been included or excluded from the service scope.

If the proposal involves multiple agencies then the stakeholder plan should identify major stakeholder issues and address how these will be managed.

Reference material for preparing business cases

- State Plan
- State Infrastructure Strategy
- Agency Results and Services Plan
- Statement of Business Intent.
- Statement of Corporate Intent
- Agency Total Asset Management Plans, data tables and Asset Strategy
- Related Legislative Requirements
- People First - A New Direction for ICT in NSW (if ICT-related)
- Agency ICT Strategic Plan (if ICT-related)
- Treasury Policy Paper TPP07-5 NSW Government Guidelines for Economic Appraisal July 2007
- Premier's Memorandum 2007-20 State Plan Priority F4: Embedding the Principle of Prevention and Early Intervention

4 Analysis of the proposal

Key principles:

- Evaluating options should be based on the objectives of the proposal. The objectives must be specified in terms of the result sought and not specified in terms of the services to be delivered.
- Consider the widest possible range of realistic options and resist the tendency to concentrate on past solutions.
- The base case may prove to be the preferred option adopted by Government because of investment priorities in other areas of service delivery.
- The technical requirements, risks and sustainability of the options should be understood and evaluated. Prevention and early intervention strategies should be considered. Critical assumptions or constraints should be documented.
- All business cases must include an economic appraisal (supported by a financial analysis) to determine the preferred options and a financial impact statement to evaluate the budget implications.
- Ensure the reason why the preferred option offers value for money is clear to any reader.

Application:

Preliminary business cases document:

- high-level objectives, identify alternatives and outline the relevant risks, sustainability issues and costs and benefits relevant to these alternatives and
- whether Part 3A – Major Infrastructure and Other Projects of the Environmental Planning and Assessment Act 1979 will be triggered.

Final business cases are to address the following requirements in full.

4.1 Objectives

Agencies must document the objectives of the project or program.
A project's objectives are what will be specifically achieved, or delivered, by the project, and should be expressed wherever possible, in measurable terms. These can be regarded as the project outputs. A project's results are the changes brought from what the project has delivered – how the project has affected the environment in which it operates. For example, a project's objectives may be to deliver a new system to achieve a result of improved productivity.

Objectives should be:

- Related to the performance of a particular function.
- Clearly and unambiguously stated.
- Compatible with the broader Department, group or corporate objectives outlined for example in agency Results and Services Plans or Statements of Business or Corporate Intent.

Sometimes the achievement of an objective is essential (for example, meeting the statutory requirement to provide education services). Expenditures to achieve essential objectives involves choice, as various alternative methods of meeting the objectives are usually available. It may also be possible to vary the level or quality of service provided.

Agencies may describe some or all of the objectives in terms of results logic. Results logic describes the link between the services the agency provides and the desirable impact they will have on society (results), through a series of logical steps (intermediate results).

Objectives may be expressed in the following way to also facilitate the evaluation and measurement of options:

- **Specific** – objectives should be focused and well defined and should emphasise action and the required results
- **Measurable** – objectives should be measurable so an agency can track the actions as they progress towards the objective
- **Achievable** – objectives should be attainable and commensurate with the capacity of the agency to deliver the objectives
- **Relevant** – objectives need to be relevant to the intended results and agency service priorities and practical such that the agency has the time and available resources to deliver the objectives and
- **Timely** – a time frame for achieving the objectives must be defined and will need to align with the timing required to realise the proposed benefits.

When setting objectives ensure they are not too narrow, and that they do not drive a particular proposal.

Options must be fully costed. Business cases should state the basis for estimating the set up and ongoing operating costs. State the degree of accuracy of the estimates.

Reference material for preparing business cases

- State Plan
- State Infrastructure Strategy
- Agency Results and Services Plan
- Statement of Business Intent
- Statement of Corporate Intent
- Agency Total Asset Management Plans
- Agency ICT strategic plans (where relevant)
- Related legislative requirements
- Environmental Assessment and Planning Act 1979 and Department of Planning website
- Premier's Memorandum 2007-20 State Plan Priority F4: Embedding the Principle of Prevention and Early Intervention

4.2 Options

Agencies must present and fully describe realistic options and their impacts (positive and negative).

Identify the widest possible range of realistic options at the earliest stage of the planning process. This is usually done as part of a value management study for capital projects. An iterative analysis process is appropriate for major projects or programs, which may refine option development and evaluation as the detail and accuracy of data improves through the process.

A trial or a pilot may be considered for the proposal to enhance the data available for analysis by the agency and Treasury, and as a risk mitigation measure. For a trial or a pilot the resulting data must be included in the business case. Options can be represented as scalable in the business case, so a range of incremental costs of reform can be considered. For example, showing how much funding is required to provide 50, 75 or 100 per cent of the desired result.

The first option to be considered is the Base Case. That is, what happens if the status quo is maintained? The Base Case does not necessarily mean "spending nothing", e.g. on upgrading fire safety, where the Base Case in effect becomes the "minimum essential expenditure option". The Base Case must be realistic and may involve cost penalties, or confer positive benefits. One of the benefits of "doing something" may be the avoidance of high maintenance costs.

The description of the base case is important as it may be the preferred option adopted by Government because of investment priorities in other areas of service delivery. Agencies should provide a full and accurate description of the base case.

In developing options, agencies should consider if the issue is amenable to prevention and early intervention strategies that prevent a problem from occurring or tackle the problem early in its lifecycle. Agencies should also consider demand management strategies to reduce reliance on acute (intensive high cost) service delivery.

Other practical options for meeting project or program objectives may include:

- reprioritising agency priorities or deferring development of project
- early intervention or prevention strategies
- demand management
- different service levels, scale or quality of operation
- apply alternative, and cheaper, technologies or materials
- consolidating (or disaggregating) locations for service delivery
- sequencing the development of the project into phases
- shared delivery of services with another agency, private sector or the not for profit sector or
- installation of new assets versus modifying existing assets or contracting out services.

Reference material for preparing business cases

- Total Asset Management Value Management Guideline TAM04-14
- Total Asset Management Demand Management Guideline TAM04-08
- Treasury Policy Paper TPP07-6 Economic Appraisal Principles and Procedures Simplified July 2007
- Treasury Policy Paper TPP07-5 NSW Government Guidelines for Economic Appraisal July 2007
- Treasury Policy Paper TPP08-2 Total Asset Management (TAM) requirements for updating the NSW State Infrastructure Strategy (SIS)
- Treasury Circular NSW TC 08/07 Revised Project Size/Risk Thresholds for the Submission of Business Cases and Gateway Reports
- Premier's Memorandum 2007-20 State Plan Priority F4: Embedding the Principle of Prevention and Early Intervention

4.3 Costs and benefits

A mandatory requirement for all business cases submitted to Treasury is the completion of:

- an **economic appraisal** (supported by financial analysis) to evaluate the costs and benefits of the options and to determine which option offers superior value for money
- a **financial impact statement** to evaluate the budget impact of the options and the preferred option. A financial impact statement template must be prepared for all submissions to Cabinet. Submissions must be referred to Treasury for review and sign off prior to consideration by Cabinet and
- a **financial appraisal** for capital projects of Government businesses and all projects of General Government agencies which involve a financing decision (e.g. outsourcing projects and joint public/private sector infrastructure projects) and Treasury may also request a financial appraisal be undertaken for projects that are outside these categories.

Economic appraisal

An economic appraisal systematically analyses all the costs and benefits of various options to achieve a particular service objective. An economic appraisal assists selection of projects or programs which maximise benefits to the community relative to costs, or which are the most cost effective. An economic appraisal will show:

- whether the benefits of a proposed project are likely to exceed its costs
- which among a range of options to achieve an objective has the highest net benefit and / or
- which option is the most cost effective, where benefits are equivalent.

When preparing an economic appraisal, agencies should consider these prerequisites:

- if the objectives are scoped and measurable (section 4.1)
- are the options, including the base case (section 4.2) are developed and address key risks, environmental, social, financial, technical and legal requirements (sections 4.4-4.6)
- if the options have been adequately costed and include capital costs and recurrent costs (note credible methodologies for estimating costs must be used and referenced)
- if the quantified and qualified benefits have been identified
- if early intervention and demand management strategies have been considered (section 4.2)
- if the assumptions underpinning these costs and benefits are included (section 4.4)
- if the analysis includes the appropriate discount rates, sensitivity analysis and
- if the analysis is applied over the life of the proposal – the project plus its operating life.

The major techniques used are for economic appraisals are:

- Cost Benefit Analysis (preferred) or
- Cost Effectiveness Analysis.

Financial impact statement

A financial impact statement analyses agency financial impact of the proposed project or program (savings and costs) and implications for the agency, such as additional staff, equipment or any financial impacts on other agencies where there is a joint proposal.

The financial impact statement template is available from the Treasury internet site and must be completed and submitted with final business cases. The Treasury analyst can be consulted on which parts of the template needs to completed for any specific project or proposal.

Financial appraisal

A financial appraisal is a method used to evaluate the financial viability of a proposed project. It assesses the extent to which a project will generate revenues sufficient to meet its financial obligations as measured by the Net Present Value (NPV) of its cash flows. All revenues resulting from, and expenditures incurred under, the project are taken into account. The primary features of assessment are:

- project cash flows including sources of funding
- sensitivity of financial projections to key project risks and
- adequacy of the estimated investment cost and financial impact of alternative projects.

Reference material for preparing business cases

- NSW Treasury Policy Paper TPP07-5 NSW Government Guidelines for Economic Appraisal July 2007
- NSW Treasury Policy Paper TPP07-6 Economic Appraisal Principles and Procedures Simplified July 2007
- NSW Treasury Circular TC 06/02 Treasury Review of Financial Impact Statements
- NSW Treasury Policy Paper TPP07-4 Commercial Policy Framework: Guidelines for Financial Appraisal July 2007
- Total Asset Management Life Cycle Costing Guideline TAM04-10
- NSW Treasury Policy Paper TPP 06-10 – Information and Communication Technology (ICT) Capital Investment Process
- Premier's Memorandum 2007-20 State Plan Priority F4: Embedding the Principle of Prevention and Early Intervention

4.4 Risks assessment

Agencies must apply a formal assessment of risk in planning new projects or programs. A rigorous risk assessment as part of the analysis of the proposal will inform the risk management strategy required for implementing the project or program (section 5.5).

Risk assessments identify a range of risks relevant to each of the options and identifying the effects of these occurring. These risks must be considered when evaluating options.

Agencies must document the assumptions, constraints and dependencies used in the development, analysis and evaluation of options at the earliest planning stages and continue to identify or refine these assumptions as part of the project management and delivery of the proposal.

Reference material for preparing business cases

- Total Asset Management Risk Management Guideline TAM04-12
- Department of Commerce Government Chief Information Office Project Risk Management Guideline
- Australian and New Zealand Standard AS/NZS 4360:2004: Risk Management
- NSW Treasury Policy Paper TPP07-5 NSW Government Guidelines for Economic Appraisal July 2007
- NSW Treasury Policy Paper TPP07-6 Economic Appraisal Principles and Procedures Simplified July 2007
- NSW Treasury Policy Paper TPP 06-10 – Information and Communication Technology (ICT) Capital Investment Process

4.5 Sustainability

Agencies will need to document if the project or program is sustainable. Agencies must demonstrate they have scoped and evaluated the social, economic and environmental impacts (negative and positive) that are a result of the options. Agencies should carefully consider the range of social, economic and environmental issues that may affect a proposal. Agencies need to address the following areas only if applicable, and if they have not already been included in other areas of analysis such as 4.3 Costs and Benefits.

Social

Social issues can include workforce diversity, employee well-being, corporate governance practice, integration, adverse effects on indigenous communities (such as land rights and cultural sensitivities), religious and cultural sensitivities and gender, age and cultural discrimination.

Economic

Economic issues can include economic development, local industry participation, involvement of small to medium enterprises, changes to market structure, impacts on competition, a need for increased regulation and regional and State employment.

Environment

Environmental issues can include air quality, impacts on landscape (including, townscape, heritage and other related matters), water pollutants, noise; greenhouse gas emissions and biodiversity.

Where an assessment confirms areas of significant social, economic or environmental concerns, possible intervention strategies and options should be developed to feasibly address these concerns. The costs and benefits associated with these strategies should be identified, valued or ranked and then accounted for in the economic appraisal

Reference material for preparing business cases

- Total Asset Management Sustainable Development TAM04-13
- NSW Treasury Policy Paper TPP07-5 NSW Government Guidelines for Economic Appraisal July 2007
- NSW Treasury Policy Paper TPP07-6 Economic Appraisal Principles and Procedures Simplified July 2007
- NSW Treasury Policy Paper TPP 06-10 – Information and Communication Technology (ICT) Capital Investment Process
- Premier's Memorandum 2007-20 State Plan Priority F4: Embedding the Principle of Prevention and Early Intervention

4.6 Technical standards and legislative requirements

Agencies must document any relevant technical standards or legislative requirements associated with the proposal and the options. These requirements must be scoped to enable adequate evaluation in the economic appraisal and the completion of a statement of compliance.

NSW Government agencies deliver vital services and the construction and delivery of those services may be regulated (e.g. environmental, safety, etc), or at times standardised to meet recognised industry benchmarks of quality or operability. Sometimes technical standards are reflected in legislation or policies and are administered by State and Commonwealth agencies.

Technical standards can often influence the scope, design and performance of services (such as an Australian Standard) and agencies will need to document these requirements at the earliest stages of scoping the service need, or as part of scoping the facility to meet the service need. Compliance with facility standards in particular areas, e.g. for health, education or justice facilities may be a significant driver of the level of design specification, quality and cost of a project. For ICT related business cases, industry-wide standards or the agency's own enterprise architectures may apply. Integrating these technical standards early will enable agencies to demonstrate and monitor compliance through the design process, procurement, commissioning and operation.

The provisions of the *Environmental Planning and Assessment Act 1979* are likely to apply to most construction and property and accommodation projects. Major projects can be considered under different parts of the Act and this can significantly impact on the planning and management of a project, particularly Part 3A of the Act. Agencies are required to identify whether Part 3A of the Act will be triggered at the earliest opportunity. Agencies are encouraged to carefully consider the application of such legislation and discuss the potential requirements with the relevant authority (State or Commonwealth).

Reference material for preparing business cases

- Policy
- Legislation
- Industry standard
- Agency standards and architectures
- Treasury Policy Paper TPP07-5 NSW Government Guidelines for Economic Appraisal July 2007
- Treasury Policy Paper TPP07-6 Economic Appraisal Principles and Procedures Simplified July 2007
- State Environmental Planning Policies, especially SEPP (Major Projects) 2005 and SEPP (Infrastructure) 2007 (see www.planning.nsw.gov.au/planningsystem/sepp1.asp)
- Treasury Policy Paper TPP 06-10 – Information and Communication Technology (ICT) Capital Investment Process

5 Implementation of the proposal

Key principles:

- Agencies are accountable for achieving the business case and must demonstrate the capacity and capability to deliver the proposal from procurement to implementation. These factors will assist in evaluating whether the proposal can be delivered on time, within budget and realise the anticipated project benefits.
- Governance arrangements must demonstrate that the activities required to ensure a successful project are based on the scale, risk and significance of the proposal and cover management arrangements for meeting project deliverables.
- Where the business case is to deliver an election commitment, agencies need to make the case that the commitment will be cost effectively delivered to achieve the maximum benefits and that the operating costs are affordable.
- Agencies must put in place an effective benefits realisation mechanism that documents agency accountability and responsibility for implementing change management and delivering the anticipated project benefits.

Application:

- Preliminary businesses cases are to address the governance arrangements to deliver the final business case.
- Final business cases are to address the following requirements in full.

5.1 Project planning

Agencies will need to document the proposed plan for implementing the project or program.
In the life of a project there are a number of key steps that will follow a resource allocation decision including:

- proposal
- procurement
- design/development/construction
- commissioning
- operation

Each step involves rigorous planning to address the activities being undertaken, milestones to meet deliverables, decision points for the agency and Government, specific skills and levels of resources required; acquisition of sites; purchase of equipment and materials; consultation with stakeholders, implementing change management to deliver the project or program.

Agencies must consider the likely project planning implications as it will support agency capacity and capability to achieve the deliverables of the project or program. Key deliverables will often include time, cost, quality, risk, procurement, safety, change management and realising service benefits or objectives.

5.2 Governance arrangements

Agencies will need to document the proposed governance model for implementing the project or program.

Governance arrangements for managing the delivery of a project or program can begin when a service need has been identified and continues during the project's lifecycle. Governance is not static as agencies must ensure there are appropriate mechanisms in place to achieve key deliverables such as time, cost, quality, risk, procurement, safety, change management and service benefits.

It is critical for agencies to consider the appropriate governance arrangements based on the scale, risk and complexity of the project or program. Agencies must identify at the earliest stage the skills and seniority required as part of the governance arrangements. Governance arrangements may generally include the following elements.

Steering committee

Usually a steering committee is established for major projects by the delivery agency. These skills may be sourced from within the agency, other agencies if it is a cross agency proposal, or from the private sector.

Project sponsor

The project sponsor is responsible for the deliverables of the project or program and the realisation of project objectives and/or benefits.

Project director

The Director-General or a delegated representative of the delivery agency should appoint a project director. The project director is responsible for delivering the project and managing members of the project team, including external advisers and consultants. The project director requires a good understanding of Government processes and well-developed commercial skills applicable to developing and negotiating contractual arrangements.

Probity advisor

A probity advisor may occasionally be required but this will depend on the scale, complexity and sensitivity of the project or the procurement method for the project (such as a privately financed project). The role of the probity advisor is to ensure a fair, transparent, defensible and robust process is followed. The probity auditor must be objective and also endorse the probity plan, monitor the procurement process throughout, and provide independent advice to the project team, the steering committee and the Director General of the delivery agency.

Project team

The project team possesses the skills and resources to develop and deliver a project or program and it may vary over the life of a project. Agencies need specialist knowledge required for each phase of the project, including technical, planning, financial, economic, operational, community relations, environmental, contractual and legal skills.

Central agency assistance

The scale, risk, complexity and significance of the project may require assistance from the Office of the Coordinator General within the Department of Premier and Cabinet and Treasury. Agencies should consult with these central agencies when governance arrangements are being established.

Reference material for business case

- Premier's Memorandum 2005-09 Major Infrastructure Coordination and Delivery
- *Working with Government*, Guidelines for Privately Financed Projects (see project management structure section at page 38)

5.3 Procurement strategy

While a detailed procurement plan is developed after resource allocation has been approved, agencies must document the proposed procurement strategy to identify the most effective way of achieving the objectives of the project or program.

Finalising the procurement strategy is important task as procurement costs can contribute up to 30 per cent of the estimated total cost of the proposal. Agencies need to demonstrate at an early stage how the procurement strategy will contribute to value for money and how this will be managed as part of the governance arrangements (5.2 above).

Agencies must ensure that a procurement strategy takes into account the risks and constraints, use of the market's capabilities and the procuring agencies' requirements. A procurement strategy aims to achieve the optimum balance of risk, innovation, control and funding for a particular project.

Procurement options will depend on the scale, risk and complexity of the project or program, affordability of the options and also the capacity of the delivery agency. These factors may lead to different procurement models such as direct purchase, service level agreements, construct and design; design, construct and manage, alliancing, or privately financed projects.

The decision for delivering a project through private financing or similar procurement methods can only occur after the Government has made a resource allocation decision, that is, it has been proven that a proposal has merit, is a priority and it is value for money.

Reference material for business case

- NSW Code of Practise for Procurement
- NSW Government Tendering Guidelines
- *Working with Government*, Guidelines for Privately Financed Projects

5.4 Change management strategy

Agencies will need to document the proposed change management strategy for implementing the project or program and achieving the intended benefits of investment.
Change management involves understanding the level of operational change that a project or program will cause to an agency, its people and the general public and proactively developing strategies and action plans to manage the impact of that change. Change management is a critical task to achieve the benefits of a project or program.
Change management is a dynamic activity. It is a significant component of a project or program and may be a larger or more complex task than originally anticipated in a change management strategy. The critical issue to be considered by agencies is their capability to plan, manage and implement the benefits of the project or program.

Reference material for business case

- Government Chief Information Office Change Management Guideline (can be applied to non-ICT projects as well)

5.5 Risk management strategy

Agencies will need to document the proposed risk management strategy for implementing the project or program.

Managing risk has two main parts: risk analysis and risk management. Risk analysis is essential for effective management of risk and comprises risk identification, estimation and evaluation. Identifying risks must be gathered through consultation with stakeholders. Use skilled resources that can speak to the technical, environmental, social, procurement, change management and service integration requirements of the project or program.

Risk management identifies how future events will be managed to ensure that the identified benefits will be achieved within the scope, time frame and proposed budget.

Agencies are encouraged to document the results of risk assessments within a risk register (which is part of the Risk Management Plan) which is regularly reviewed, updated and reported as part of the governance arrangements for the life of the project or program.

Reference material for business case

- Total Asset Management Risk Management Guideline TAM04-12
- Department of Commerce Government Chief Information Office Project Risk Management Guideline
- Australian and New Zealand Standard AS/NZS 4360:2004: Risk Management
- Treasury Policy Paper TPP07-5 NSW Government Guidelines for Economic Appraisal July 2007
- Treasury Policy Paper TPP07-6 Economic Appraisal Principles and Procedures Simplified July 2007
- "People First" the NSW Government's ICT Strategic Plan

5.6 Benefits realisation strategy

Agencies must document the proposed benefits realisation strategy for implementing the project or program.

Benefits realisation is an established practice of ensuring that projects or programs produce the anticipated benefits claimed in the project's economic appraisal (section 4.3). It is also a method to address the changes that are necessary to realise benefits. The type and extent of benefits evaluated will be proportionate to the value and risk of the project. Benefits realisation is relevant to all categories of proposals.

Benefits realisation can manifest in a number of methodologies ranging from a post occupancy evaluation through to a benefits realisation plan or register. The methodology adopted by agencies must be fit for purpose.

The timing attached to evaluating the realisation of the benefits will depend on the expected timing attributable to the practical realisation of these benefits (either at occupation or when service delivery performance targets are expected to be achieved).

Where anticipated benefits include longer term savings for government or other benefits achieved through prevention and early intervention strategies, the benefits realisation strategy should include measures to evaluate the effectiveness of these strategies, and realise these savings.

Within the established governance arrangements, it is the responsibility of senior management to ensure the benefits can be measured and are capable of being delivered within specified timeframes. Agencies should establish regular reporting of the progress and achievement of the objectives and or benefits as part of the reporting to the project governance committee (section 5.2).

Reference material for preparing business cases

- Government Chief Information Office Benefits Realisation Register Guideline
- Government Chief Information Office Benefits Management Plan Guideline
- *Working With Government* Guidelines for Privately Financed Projects (see post implementation review section at page 43)
- Premier's Memorandum 2007-20 State Plan Priority F4: Embedding the Principle of Prevention and Early Intervention

5.7 Stakeholder consultation strategy

Stakeholders are the people and organisations able to significantly influence the success of any of the phases of the business case.

The stakeholder consultation strategy:

- identifies the key stakeholders who must be consulted in order to ensure the effective implementation and delivery of the business case.
- what consultation has occurred and
- how any issues are assessed and managed.

Agencies must document a consultation strategy for implementing the project or program.

Identifying, engaging and communicating with stakeholders is an ongoing process in the project or program's lifecycle. The extent of engagement with stakeholders will invariably be proportionate to the scale, risk and complexity of the project and will involve both agency and external stakeholders. Stakeholders are those who have a significant stake in the project or program and may include other agencies, and other units in the proponent agency, as well as external parties such as the community.

While agencies are likely to have stakeholder consultation methodologies, they will need to consider the most effective way of engaging with stakeholders over the life of a project to keep them informed and to respond to issues that are raised throughout the communication process. This process is not a static activity so agencies are encouraged to regularly review and monitor their strategies/plans to ensure they continue to be relevant and have regard to emerging risks and issues.

5.8 Resourcing

This section describes how you will ensure you have the skills and capabilities to implement the project, operate the system and achieve the business case benefits.

The business case should describe what resources are needed to deliver the project and how will they be sourced. This should state:

- What resources are necessary to implement this project and realise the benefits of this business case.
- How resources will be managed and sourced.
- Specific resources for each stage of the project can be stated in the Gantt chart provided in the project workplan.
- Impact on current internal resources.
- How vendor management and legal capabilities will be achieved.
- Additional training for use and support of the deliverable.

Appendix 1 - Preliminary business case template

Treasury Circular NSW TC 08/07 *Revised Project Size/Risk Thresholds for the Submission of Business Cases and Gateway Reports* specifies when Preliminary Business Cases are required to be submitted.

Application

- The preliminary business case constitutes the planning framework, and is used to demonstrate and justify the service rationale, consider service delivery alternatives and also inform internal agency priority setting.
- The preliminary business case template and the Strategic Gateway review report must be prepared and submitted for Treasury assessment before proceeding to the Business Case Review stage.
- Each section of the template is to be addressed to an appropriate level of detail. If this cannot be achieved then a full referenced justification must be provided.
- The extent and accuracy of evidence for the preliminary business case will be proportionate to the value and risk of the project or program. The degree of accuracy and basis for the cost and time estimates should be stated. The degree of accuracy is expected to be lower than that for a full business case.
- The standard of evidence is to be based on quantitative (preferred) and qualitative data underpinned by established methodologies. The standard is lower than that required for a full business case.

The case for change (Section 3) - What is the rationale for the case for change? (Based on current strategic planning.)

The case for the service need (Section 3.1) – Is there a legitimate service need and why?

- state the service need
- state the rationale for government intervention - *what is the market failure?*
- state the drivers of the service need such as population growth, demographic change, ageing and longevity, technical developments, relative prices, service utilisation, asset condition, environmental and social conditions, availability of natural resources, changing social expectations of service delivery
- state how, and to what extent (quantified estimates) the proposed project or program will contribute to desired services and results identified in the agency's RSP, and any applicable State Plan priority or mandated priority (policy statement, legislation, contractual arrangements, intergovernmental agreements, government decision/commitment)
- outline any cross-agency involvement or impacts, and governance or consultation processes for managing this
- outline the anticipated change resulting from the project or program, both inside (including business processes) and outside the agency, and the framework for managing the change efficiently and effectively
- outline the scope and timing of the service to be delivered

Priority of the service need (Section 3.2) – Is there a legitimate service priority and why?

- state the priority of the proposal (note: must be consistent with TAM data tables)
- state whether reprioritisation of priorities has occurred to permit the proposal to come forward

Benefits of the service need (Section 3.3) – What are the key benefits from the proposed service?

- outline (as applicable) the projects or programs key expected social, economic and environmental benefits
- identify the beneficiaries and the type and timing when they are to receive the expected benefits

Stakeholder engagement (Section 3.4) – Are there key stakeholders that influence the service scope?

- if applicable, state the consultation already undertaken
- list the major stakeholders and their relationship to the proposal
- identify how stakeholder issues have been integrated into the service scope or why they have not been included
- identify how the relevant issues will be managed
- if a cross-agency proposal, have the other agencies signed off on this business case?

Analysis of the proposal (Section 4) - What are the realistic service delivery alternatives and the key costs and benefits?

Objectives (Section 4.1)

- outline the strategic objectives
- objectives must be expressed in results logic or be specific, measurable, achievable, relevant and timely
- priority of the proposal

Options (Section 4.2)

- define a range of realistic alternative service delivery options
- the base case option must be considered
- consider prevention and early intervention and demand management strategies
- initial value management study

Costs and benefits (Section 4.3)

- identify and provide economic and financial analysis of the key costs and benefits of these options, including disaggregated estimates for key intended beneficiaries
- early stage estimates of costs and benefits may be highly subjective and should be given as ranges, to identify the key risks and uncertainties (including risks relating to the "base case" of not proceeding with the project)
- the level of certainty for the cost estimates should be stated

Risk assessment (Section 4.4)

- identify the major risks inherent in each of the options
- identify the impact and likelihood of these risks occurring
- identify critical assumptions and dependencies

Sustainability (Section 4.5)

- identify critical environmental, economic or social constraints or opportunities

Technical standards and legislative requirements (Section 4.6)

- identify critical technical standards, legislation and policies (standards) relevant to the design and performance of services
- state the applicability of any legislative requirements, including whether Part 3A of the *Environmental Planning and Assessment Act 1979* has been triggered

Implementation of the proposal (Section 5)

- outline the governance structure and arrangements in place (or any planned improvements) to ensure the project is successfully taken through to the final business case (to be included in the Business Case Development Plan)

Business case development plan – How will the final bsiness case be achieved?

- identify outstanding major risks regarding project delivery and intended results and how these will be addressed for the final business case
- Identify uncertainties in quantified costs and benefits and how these will be resolved, to achieve the final business case
- identify the consultation required to complete the final business case

Appendix 2 - Final business case template

NSW Treasury Circular NSW TC 08/07 *Revised Project Size/Risk Thresholds for the Submission of Business Cases and Gateway Reports* specifies when Final Business Cases are required to be submitted.

Application

- The final business case is used to document a defined project. This includes an updated justification of the service rationale, and demonstration of value for money and the agency's capability to implement the service.
- Final business case template and the Business Case Gateway review report must be prepared for proposals submitted to Government for funding approval.
- Each section of the template is to be addressed to an appropriate level of detail. If this cannot be achieved then a full referenced justification must be provided.
- The extent of evidence for the final business case will be proportionate to the value and risk of the project or program. The degree of accuracy and basis for the cost and time estimates should be stated.
- The standard of evidence is to be based on quantitative (preferred) and qualitative data underpinned by established methodologies.
- Expected degree of accuracy is proportionate to costs and time estimates. This should be higher than in the preliminary business case.

Executive summary

Provide a summarised description of the:

- case for change – what is the service need and scope?
- priority of the proposal
- contribution to agency service delivery and Government objectives or priorities
- relative priority (must be consistent with TAM data tables)
- key stakeholders and clients
- objectives
- options, including the base case option
- costs and benefits of the options and the preferred option – *does it offer superior value for money and why?*
- financial impacts upon the agency
- funding strategy internal/external
- key risks, including key assumptions
- key technical standards or legislative requirements
- key project planning requirements – does your agency have the capacity and capability to deliver the project?
- governance model
- benefits realisation – is there an accountable and transparent process for managing the changes to realise the project benefits?

Introduction

Provide a description of the:

- purpose and approach of the business case
- process used to develop the business case
- structure of the business case

The case for change (Section 3) - (revisit, update & complete) What is the rationale for the case for change?

Provide a description of the:

Service need (Section 3.1) – Is there a legitimate service need and why?

- if no preliminary business case was submitted for the proposal state the service need
- if a preliminary business case was submitted for the proposal revisit, update and complete the case for the service need
- outline rationale for government intervention - *what is the market failure?*
- state the drivers of the service need such as population growth, demographic change, ageing and longevity, technical developments, relative prices, service utilisation, asset condition, environmental and social conditions, availability of natural resources, changing social expectations of service delivery
- state how, and to what extent (quantified estimates) the proposed project or program will contribute to desired services and results identified in the agency's RSP, and any applicable State Plan priority or mandated priority (policy statement, legislation, contractual arrangements, intergovernmental agreements, government decision/commitment)
- outline any cross-agency involvement or impacts, and governance or consultation processes for managing this
- outline the anticipated change resulting from the project or program, both inside (including business processes) and outside the agency, and the framework for managing the change efficiently and effectively
- outline the scope and timing of the service to be delivered

Priority of the service need (Section 3.2) – Is there a legitimate service priority and why?

- state the priority of the proposal (note: must be consistent with TAM data tables)
- state whether reordering of priorities has occurred to permit the proposal to come forward

Benefits of the service need (Section 3.3) – What are the key benefits from the proposed service?

- state (as applicable) the key anticipated social, economic and environmental benefits
- identify the beneficiaries and the type and timing of expected benefits to be received

Stakeholder engagement (Section 3.4) – Are there key stakeholders that influence the service scope and how has this been integrated?

- if applicable, state the consultation already undertaken
- list the major stakeholders and their relationship to the proposal
- identify how stakeholder issues have been integrated into the service scope or why they have not been included
- identify how the relevant issues will be managed
- if a cross-agency proposal, have the other agencies signed off on this business case?

Analysis of the proposal (Section 4) - Does the proposal offer value for money and is it affordable?

Provide a description of the:

Objectives (Section 4.1) – What objectives will the proposal be measured and evaluated against?

- document the full range of objectives to measure and evaluate the options
- the objectives must contribute to the performance of agency service delivery
- objectives must be expressed in results logic or be specific, measurable, achievable, relevant and timely

Options (Section 4.2) – What are the realistic options for meeting the service need?

- summarise the evaluation of the wide range of options that was undertaken and the reasons why options were eliminated
- provide the short-list of options which are most likely to deliver the objectives
- clearly state the base case
- fully describe the base case and other options
- demonstrate that other technologies have been considered (as applicable)
- demonstrate that prevention and early intervention and demand management strategies have been considered
- describe the impact on related services and assets and opportunities for integration with other government services
- include information on whether the operation, or part of it, could be efficiently and reliably performed by the private sector
- document details of capacity for variations to the design and/or useful economic life of the proposal

Costs and benefits (Section 4.3)

Economic Appraisal – What are all the costs and benefits of the options and do they meet the service objectives?

Summarise the key findings of the economic appraisal:

- **Identify all relevant costs** (quantified or estimated) – capital, operating, maintenance; provision for contingencies. The stream of costs should cover the full project period which will be based on the economic life of the project or program. Costs need to be in sufficient detail to have their accuracy verified. The level of certainty for the cost estimates and the basis for estimation should be described. The basis for annual cost escalation indices should be provided.
- **Identify the benefits** – may include avoided costs, savings, revenues, benefits to consumers not reflected in revenue flows, benefits to the broader community.
- **Identify qualitative factors** – may include environmental considerations, industrial relations, social or regional impacts, safety, public relations, resource availability.
- **Assess net benefits** - costs and benefits should be valued in real terms: that is they should be expressed in constant dollars and increases in prices due to the general rate of inflation should not be included in the values placed on future benefits and costs.
  The stream of costs and benefits (expressed in real terms) should be discounted by a real discount rate and sensitivity tested using discount rates pursuant to the Economic Appraisal Guidelines.

Using the discounted stream of costs and benefits, the following decision measures should be calculated:
  - Net present value
  - Net present value per dollar of capital outlay
  - Benefit-cost ratio
  - Internal rate of return
- **Sensitivity testing** – analyse the sensitivity of the options under different scenarios and different discount rates.
- **Explicit reference to data sources and assumptions** – document all sources of data and assumptions.

Financial impact – Has the agency financial impact of the proposed project or program as well as the broad implications for other agencies been analysed?

- summarise the finding of the completed financial impact statement
- identify major budget impacts for the agency and broader implications for other budget sector agencies
- the Treasury financial impact statement template (available from the Treasury internet site) must be completed and submitted.

Financial appraisal – Has the financial viability of a proposed project/program been analysed?

Summarise the key findings of the economic appraisal:
- costs – capital, operating, maintenance; provision for contingencies
- data sources, references for assumptions (e.g. CPI, building price index, wage increases; internal rate of return/hurdle rate
- financial impacts, including the retiring of older assets and associated operating and maintenance savings
- any third party revenues, source for revenue assumptions
- justification for assumed discount rate

Risk assessment (Section 4.4) – What are the risks and the underlying assumptions?
- identify the risks inherent in each of the options
- identify the impact of these risks occurring

For each of the risks document determine:
- the probability of the risk occurring
- what are the risk management strategies to address the risks
- whether additional costs will be incurred
- whether additional costs should be incorporated into the analysis and
- the need (if any) for any contingencies.

In addition:
- list critical assumptions including revenue drivers, capital and operating costs, social and environmental factors, financing constraints, availability of resources and expertise
- state known or emerging constraints directly impacting on the proposed initiative
- identify any relevant regulatory, legislative, policy issues and relevant Acts which may impinge in the proposal need to be identified including information on where this may be a constraint
- identify any key dependencies that affect the performance of the options

Sustainability (Section 4.5) – What are the sustainability issues associated with each option and what strategies are in place to mitigate any impacts?

- document the full description of sustainability (environmental, social and economic) impacts (positive or negative)
- describe the nature and extent of the impact
- describe the impacts as either quantified or non-quantified
- develop strategies and options to capitalise on opportunities and manage negative issues

Technical standards and legislative requirements (Section 4.6) – What technical standards or legislative requirements impact on the performance of the options? Has part 3A of the Environment Planning and Assessment Act 1979 been triggered?

- identify the technical standards, legislation and policies (standards) relevant to the design and performance of services
- indicate how these standards have been included in the scope of the services, objectives of the proposal, integrated into the options, or used as part of the evaluation of the options
- state the extent to which the options comply with technical standards (statement of compliance)
- identify any risks or costs attached to the implementation or integration of the standards
- if applicable, document consultations undertaken with the relevant authority (State or Commonwealth)
- state if the provisions of Part 3A of the *Environmental Planning and Assessment Act 1979* have been triggered and what are the implications for implementing the project or program?

Implementation of the proposal (Section 5) - Does the agency have the capacity and capability to implement the proposal?

Provide a description of the following:

Project planning (Section 5.1) – What is the planning behind delivering the major components of the project?

- provide an outline of a project plan that includes the major project components for implementing the project or program from resource allocation decision to operation, (that is, procurement, design/development/construction, commissioning, and operation)
- outline the major requirements to support these project components including key milestones and delivery dates, major decision points, critical path items, key dependencies, resourcing requirements and strategy, risk management plan, governance arrangements, environmental planning requirements, change management and stakeholder consultation requirements
- Note, the project plan should not be a high level work plan of the project phases and should provide the due dates for the major project deliverables/milestones
- A Gantt chart is preferable: the level of detail should be appropriate for an executive audience and enable an expert assessment of the soundness of the proposed workplan

Project planning (Section 5.2) – What governance model is to e adopted and how will this be resourced?

- describe the governance arrangements for the planning, procurement and implementation of the proposal
- state the roles and responsibilities to account and report on project deliverables – the key project deliverables should be identified
- document an outline of how the governance arrangements are to be resourced from within the agency, the private sector or from other agencies
- state whether (because of the scale, risk and complexity of the project) assistance is being sought, or is to be provided, by a central agency

Project planning (Section 5.3) – What procurement method will be employed to implement the project?

- describe the procurement objective or what result is expected from the procurement
- explain the value for money from the procurement choice and the governance arrangements for managing the procurement (this is to compliment the description of the governance arrangements identified below)
- outline the market characteristics as this may influence the method of procurement or who to procure from
- outline how the market is to be engaged whether open tender, from a pre-qualified list of tenders, etc
- an outline of the key steps and timing for developing and implementing the procurement method
- an outline of the cost of procurement and the key risks and management methods
- a realistic statement of the capacity and resources of the agency to manage the procurement process and to manage the agency's responsibilities under the contract (may be included in the project plan)

Project planning (Section 5.4) – How will changes to service delivery be managed?

- document the changes to be managed (this includes the benefits or objectives of the project or program)
- document the stakeholders who will be involved in the change management process. These may involve the agency, a business unit within an agency, other agencies (where there are cross agency implications), service providers, users or recipients
- document the change management roles and responsibilities such as a change sponsor, change agents and the stakeholders that will have to make changes to their work practises
- outline the communication strategies and plans to be developed
- outline the training of new tools, processes or work methods to be developed
- state the mechanism to monitor and measure the effectiveness of the change management process

Project planning (Section 5.5) – What is the process for identifying, monitoring and managing risk during the implementation of the project?

Document the risk analysis by:

- stating what the project risk is assessed as (Gateway Project Profile Assessment risk evaluation tool)
- identifying the range of significant risks
- measuring each of the risk exposures in the project/program, in terms their likelihood (e.g. almost certain, unlikely) and their consequences (e.g. very high, moderate)

Risk exposure = Consequences x Likelihood

	Likelihood				
Consequences	Rare - 1	Unlikely - 2	Moderate - 3	Likely - 4	Almost certain - 5
Very high - 5	5	10	15		
Major - 4	4	8	12	16	
Moderate - 3	3	6	9	12	15
Minor - 2	2	4	6	8	10
Insignificant -1	1	2	3	4	5

Key
Risk Exposure: High Moderate Low

- assessing whether the level of each risk is acceptable, and what the controls are to mitigate or reduce the level of gross risk

Document risk management approach by:

- selecting the option most appropriate to mitigate or reduce each identified risk
- identifying and assigning the resources necessary to do the work
- stating what will be done to monitor the status of each risk, and checking controls are performed and are effective

Benefits Realisation Strategy (Section 5.6) – How will the benefits of the project be realised?

- document the benefits realisation methodology to be adopted
- describe the benefit to be achieved
- describe the contribution to agency service delivery, -Results and Services Plan, Statement of Business or Corporate Intent, State Plan, etc
- identify the person responsible for implementation and what will be managed and measured during implementation. This is to ensure that the objectives and/or benefits will be achieved and to track whether the project is being implemented in a way to give assurance that the benefits will be achieved. This will be a set of measurable KPIs that have a results logic to the post-implementation benefits)
- identify performance measure or service level before and after the service change
- identify target date(s) for the objectives and or benefit to be implemented or realised

Stakeholder consultation strategy (Section 5.7) – How are stakeholders to be engaged and what is the process of managing stakeholder issues?

- document the range of stakeholders that have an interest or are affected in the project
- state the nature of the interests
- state objectives for communicating with stakeholders
- outline the information needs and methods for communicating
- outline the extent of communication and timing for communicating with stakeholders (this should be linked to key milestones in the project)
- state the skills and resources required for communicating with stakeholders
- address how the issues raised through the communication process will be captured, responded to, monitored and reported to the governance arrangements for the project

Resourcing (Section 5.8)

The business case should describe what resources are needed to deliver the project and how will they be sourced. This should state:

- What resources are necessary to implement this project and realise the benefits of this business case
- How resources will be managed and sourced
- Specific resources for each stage of the project can be stated in the Gantt chart provided in the project workplan
- Impact on current internal resources
- How vendor management and legal capabilities will be achieved
- Additional training for use and support of the deliverable

Appendices

Attach the financial impact statement (completed template).
Attach other supporting analysis, including (if applicable):

- value management study report
- environmental studies
- social studies
- economic appraisal
- financial appraisal

New South Wales
TREASURY

NSW GOVERNMENT PROCUREMENT POLICY

Office of Financial Management

Policy & Guidelines Paper

TPP 04-1

July 2004

PREFACE

This Policy and Guidelines Paper outlines a simplified Procurement Policy and associated implementation processes for NSW Government agencies. Treasury Circular TC04/07 has been issued in conjunction with this Paper, conveying the Government's endorsement of the policy and its status as a Treasurer's Direction.

Fundamentally, existing procurement policies remain valid. Reform has focussed on the issue of an overarching policy statement, condensing previously separate procurement related codes into a single Code of Practice for Procurement as well as simplifying and strengthening procedures. The objective is to assist agencies to make appropriate and informed procurement decisions that ensure best value for money and support the efficient and effective delivery of government services. The Policy emphasises agency accountability for outcomes, and greater upfront planning and stronger linkage with the State Budget process prior to allocation of capital funding.

Key elements include:

- A ten step online guide to the procurement process to assist agencies' implementation of the Procurement Policy. The guide is tailored for each of three main categories of procurement:
  - Construction
  - Goods and Services
  - Information and Communications Technology
- An Agency Accreditation Scheme for capital works procurement whereby Treasury determines the level of external assistance that agencies require with this procurement
- A Gateway Review process for complex and innovative procurements to independently assess that appropriate discipline has been applied at key stages of the procurement cycle.
- Enhanced monitoring of major capital works by NSW Treasury.

The Procurement Policy applies from 1 July 2004 on a whole-of-government basis to all government departments, statutory authorities, trusts and other government entities. State Owned Corporations under the *State Owned Corporations Act* are exempt although they are encouraged to adopt aspects of the Policy that are consistent with their corporate intent.

John Pierce
Secretary
NSW Treasury
July 2004

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General inquiries concerning this document should be initially directed to:
Principal Adviser, Asset Management and Procurement (Tel: 9228 4417)
This publication can be accessed from the Treasury's Office of Financial Management Internet site
[http://www.treasury.nsw.gov.au/]. For printed copies contact the Publications Officer on Tel: 9228 4426.

CONTENTS

NSW GOVERNMENT PROCUREMENT POLICY STATEMENT

1 INTRODUCTION

1.1 Policy Objective

The fundamental objective of the Procurement Policy is to ensure that government procurement activities achieve best value for money in supporting the delivery of government services.

Key principles underpinning the Policy are:

- value for money, being the benefits achieved compared to whole-of-life costs;
- efficiency and effectiveness;
- probity and equity; and
- effective competition.

1.2 Applicable Strategies

Strategies underpinning the Procurement Policy are aimed at achieving efficient resource allocation and clear agency accountability through:

- a whole-of-government approach;
- ethical and sound procurement practice;
- effective procurement capacity and competence;
- appropriate support of the Government's economic, environmental and social objectives; and
- monitoring of, and improvement in, agency performance.

Key elements of the Policy introduce:

- mandatory business case Gateway Reviews for complex and innovative procurements;
- an Agency Accreditation Scheme for capital works procurement; and
- greater monitoring of major capital works by NSW Treasury.

1.3 Application of the Policy

The NSW Government Procurement Policy is implemented as a Treasurer's Direction under Section 9 (1) of the *Public Finance and Audit Act.* [1]

The Policy applies on a whole-of-government basis to all government departments, statutory authorities, trusts and other government entities. State Owned Corporations under the *State Owned Corporations Act* are exempt although they are encouraged to adopt aspects of the Policy that are consistent with their corporate intent.

The Procurement Policy, including Agency Accreditation Scheme and mandatory Gateway Reviews, is effective from 1 July 2004.

[1] In that regard Treasury Circular TC04/07 has issued in conjunction with this Policy and Guidelines Paper.

2 POLICY FRAMEWORK

The Procurement Policy is an overarching framework for all government procurement, and is consistent with the Government's total asset management, infrastructure, planning and delivery framework. The Policy links with the State Budget process to deliver better budgetary outcomes through agencies' Results and Services Plan and savings targets.

The NSW Government Procurement Policy should be read in conjunction with the Premier's Department's *Strategic Management Framework,* which is designed to assist agencies navigate their way through the range of key planning, budgeting and reporting requirements.

Attachment 1 to this Policy and Guidelines Paper provides a diagrammatic representation of the whole-of-government procurement framework, outlining the application of the Procurement Policy to the three main types of procurement:

- Construction
- Goods and Services
- Information and Communications Technology (ICT)

Attachment 2 outlines the implementation process and outcomes for the ten stages of procurement. The process is designed to ensure that agencies are able to justify funding requirements and outcomes, and apply the right discipline to government procurement. The process map is available online at the Treasury website (www.treasury.nsw.gov.au).

2.1 Legal Framework

Public Sector Employment and Management Act 2002

Chapter 7 - Goods and Services - covers the establishment of the State Contracts Control Board (SCCB), the provision for regulations for the acquisition and disposal of goods or services for the Public Service, and the referral of complaints to the Board regarding competitive neutrality in tendering. The Public Service is represented by those agencies listed in Schedule 1 of the Act. The role of the SCCB is set out in the *Public Sector Management (Goods and Services) Regulation 2000* and requires that competition to supply goods and services is maximised, that probity is maintained in tendering and that the tender selected should be the most advantageous to the Public Service.

Public Finance and Audit Act 1983

Under the Act, agencies are required to be accountable and to use monies efficiently and effectively.

2.2 NSW Government Code of Practice for Procurement

This single Code of Practice covers all types of government procurement and outlines the philosophy, obligations and standards of behaviour applicable to all parties in the supply chain during the procurement process. (Refer *Attachment 3*)

2.3 Agency Accreditation Scheme

Treasury accredits an agency on its capability and capacity to undertake capital works procurement. Agencies not accredited need to use approved external experts and an approved procurement system to assist them in their procurement activities. (Refer *Attachment 4*)

2.4 Gateway Reviews

A mandatory independent Gateway Review is required at the business case stage for all high risk procurements or all other procurements valued at $10 million ($5 million for ICT) or more. Reviews at other gates and on lesser value projects are recommended. (Refer *Attachment 5*)

2.5 Australia And New Zealand Government Procurement Agreement

NSW is a signatory to the Agreement which seeks to maximise opportunities for Australian and New Zealand suppliers and reduce the costs of doing business for both government and industry.

2.6 Industry Preference Schemes

The schemes consist of an Australia and New Zealand (ANZ) price preference margin and a Country Industries Preference Scheme (CIPS) to assist NSW industry. The ANZ price preference margin adds a 20% price loading to the imported content of non ANZ goods in tender evaluations. The margin does not apply to services. CIPS is applied to support approved manufacturing industries in country NSW by adding margins of 2.5% or 5% only to the prices of other NSW suppliers.

2.7 Tendering Complaints

Tendering complaints for all government procurement are directed to the Chairperson of the State Contracts Control Board.

3 ROLES AND RESPONSIBILITIES

Under the NSW Government Procurement Policy, NSW Treasury is responsible for:

- policy initiatives for policy development; and
- maintaining and monitoring the Procurement Policy, and in particular increased monitoring of major capital works projects. (Refer *Attachment 6*)

To achieve the benefits of the reform, NSW Treasury works closely with the Department of Infrastructure, Planning and Natural Resources, and the Department of Commerce.

The Department of Commerce is responsible for:

- through the SCCB, carrying out procurement on behalf of the Public Service under the Public Sector Management (Goods and Services) Regulation;
- providing procurement advice to NSW Treasury and agencies in planning and managing the procurement of capital works, property, goods, services, and information and communications technology;
- maintaining the web based guidance material on behalf of NSW Treasury; and
- supporting NSW Treasury in implementing the Agency Accreditation Scheme, including the provision of a default procurement delivery system and the Gateway Review process (involving facilitation of agency reviews and maintenance of the Gateway system).

Agencies are accountable for the efficiency and effectiveness of their procurement and implementation of the NSW Government Procurement Policy. Implementation of the Procurement Policy will require agencies to particularly focus on the upfront preparation of procurement proposals.

FURTHER INFORMATION

Procurement Policy Advice

Further information on procurement policy issues may be obtained from Treasury by contacting:

Stephen Chong, Principal Advisor on (02) 9228 4417 (email stephen.chong@mail.treasury.nsw.gov.au), or Phil Armessen on (02) 9228 5427 (email phil.armessen@mail.treasury.nsw.gov.au).

Procurement Implementation Advice

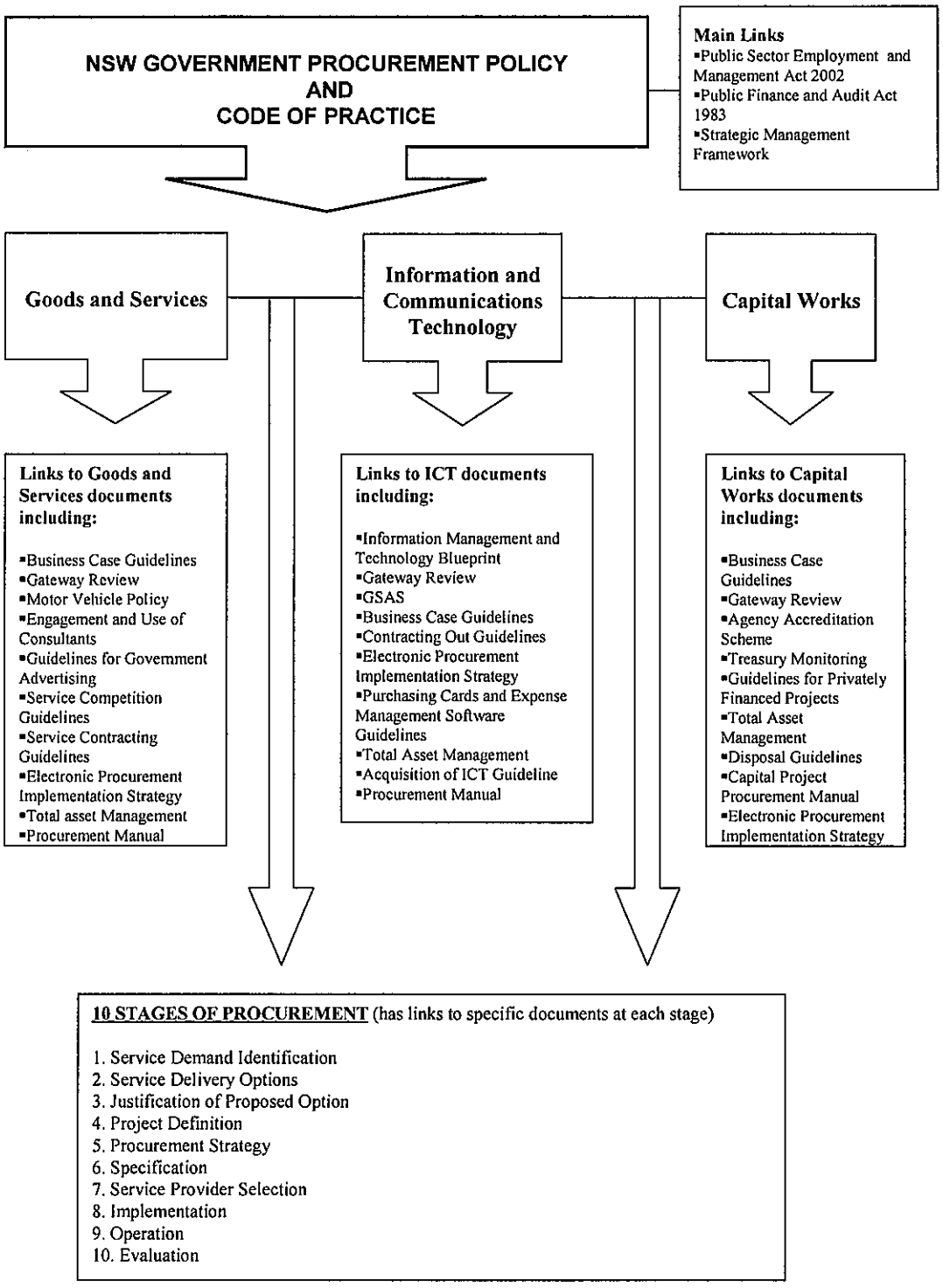
The Department of Commerce, Government Procurement Services helpdesk, on (02) 9372 8600, is available to assist with enquiries on procurement implementation.

Treasury Website

All procurement policy documentation and implementation guidelines, including assistance with the ten step procurement process is available on the Treasury website www.treasury.nsw.gov.au.

ATTACHMENT 1

WHOLE OF GOVERNMENT PROCUREMENT FRAMEWORK



ATTACHMENT 2

PROCUREMENT PROCESS – TEN STAGES

The process involves ten stages and enables agencies to justify funding requirements and outcomes and apply the right discipline to government procurement.

Guidance with the ten stages is available on the Treasury website. Information is provided at each stage on government requirements, with links to relevant procedures and guidelines separately identified for each of the three procurement categories:

- construction procurement;
- goods and services procurement; and
- information and communications technology procurement.

Stage	Purpose	Typical Deliverables	Outcome
1. Service Demand Identification	Identify if there is a genuine service delivery need	Service outcomes strategy Comparison of service need with Government Policy and Corporate Direction Input into Service Delivery Strategy	Demonstrated and quantified service requirement
2. Service Delivery Options	Develop service delivery options for meeting the identified need	Service delivery options study Stakeholder analysis Preliminary risks identified	Service delivery options identified
3. Justification of Proposed Option	Evaluate delivery options and determine a preferred option that meets the service requirement	Project Strategy Report Preliminary financial and economic appraisal Inclusion in Asset Strategy (ie Capital Investment Strategic Plan)	Decision to proceed with a selected delivery option
4. Project Definition	Define project options for using procurement to deliver service need Obtain funding approval to implement preferred project option	Project Appraisal Report Feasibility Analysis Economic/Financial Appraisal Risk Assessment Value Management Study Benefits Realisation Register Stakeholder Analysis Business Case Gateway Business Case Review	Authority to proceed with the acquisition and commence more detailed planning
5. Procurement Strategy	Develop a detailed and approved project procurement plan to ensure a viable acquisition outcome can be achieved	Project Procurement Plan (including an approved procurement and contracting strategy) Project Brief Risk Management Plan Benefits Management Plan Procurement Strategy Report	A strategy for seeking tenders from the market and managing the project

Stage	Purpose	Typical Deliverables	Outcome
6. Specification	Produce tender documentation that clearly specifies what is required and how potential service providers are to respond	Completed and approved tender documents Completed and approved tender evaluation plan Pre-tender estimate	Authority to invite tenders and commence the contract formation process
7. Service provider selection	To solicit offers from the market using approved sourcing methods Select an acceptable and capable service provider/s that provide best value for money.	Offers received from tenderers Record of tender documents issued, including addenda Record of tenders received Identification of capable service providers Evaluation and recommendation report Post-tender review report Approval to contract with recommended tenderer A contract and contract documents Notification to unsuccessful tenderers Contract details published	A concluded tender process and a contracted service provider
8. Implementation	Ensure service provider delivers the asset, goods or services in accordance with its contractual obligations	Completed and verified asset, goods or services Acceptance test reports Contract payments Performance reports Progress reports Asset management information Material variations report	Successful completion of the contract and provision of the deliverables
9. Operation	Manage the use/operation of the asset, good or service, including any ongoing operational and maintenance contracts	Operation plans Maintenance plans	Service need is met Level of service is maintained
10. Evaluation	Review the outcomes of the project, ensure any learnings are disseminated to stakeholders and determine future actions	Contract evaluation report Ideas/proposals to improve future procurements Post Completion and/or Post Implementation review Benefits Realisation Report	Comparison of the service outcomes achieved as opposed to the outcomes sought Learnings to support future actions

ATTACHMENT 3

NSW GOVERNMENT CODE OF PRACTICE FOR PROCUREMENT

NSW GOVERNMENT CODE OF PRACTICE FOR PROCUREMENT

1. INTRODUCTION

This *Code of Practice for Procurement* outlines how the New South Wales Government will conduct its procurement activities when interacting with the private sector.

The Code sets the framework for all business relationships by:

- Establishing the standards of behaviour expected from government agencies (as clients), employer and industry associations and unions
- Requiring a strong commitment to continuous improvement and best practice performance by all participants in the supply chain.

The Government will use its right as a major client to do business only with service providers who display a commitment to the standards of behaviour outlined in the Code.

This Code replaces a range of Codes and Guidelines relating to government procurement, namely

- Code of Practice – NSW Government Procurement (1999)
- Code of Tendering – NSW Government Procurement (1999)
- Implementation Guidelines – NSW Government Procurement (1999)
- Code of Practice for the Construction Industry (July 1996)
- Code of Tendering for the Construction Industry (July 1996)
- Implementation Guidelines for the Code of Practice and Code of Tendering (July 1996)
- Code of Practice on Employment and Outwork Obligations – Textile Clothing and Footwear Suppliers (February 1998)
- Implementation Guidelines on Employment and Outwork Obligations – Textile Clothing and Footwear Suppliers (1998).

The New South Wales Government Procurement Policy framework is an essential reference to give proper effect to this Code. The Policy incorporates all relevant policies, guidelines and procedures which underpin the practice requirements of this Code.

The Code applies to all procurements for which tenders are invited or negotiations commenced on or after 1 July 2004. The earlier Codes continue to apply to procurements for which tenders were invited or negotiations commenced prior to 1 July 2004.

2. OBJECTIVE

The NSW Government wants its procurement activities to achieve best value for money in the expenditure of public funds while being fair, ethical and transparent.

In achieving this objective, the Government:

- has set the responsibilities and standards of behaviour expected of the parties undertaking procurement activities as outlined in this Code of Practice;
- will award contracts to those service providers that meet the requirements outlined in the Code; and
- calls on other industry stakeholders, such as employer associations, industry associations and unions, to support and uphold this Code of Practice.

3. CODE RESPONSIBILITIES

Clients, tenderers and service providers:	are required to comply with the Code.
Agencies:	are required to implement the Code and monitor and report on Code compliance.
Employer associations, industry associations and unions:	are expected to: - support the Government in implementing the Code; - encourage their members to comply with the Code; and - develop and use rules to deal with breaches of the Code.
Construction Agency Coordination Committee (CACC):	is responsible for advising the Government on proposals for government-wide sanctions for Code breaches relating to construction procurement.
State Contracts Control Board (SCCB):	is responsible for advising the Government on proposals for government-wide sanctions for Code breaches relating to non-construction related goods and services procurement, including information and communications technology procurement.

4. STANDARDS OF BEHAVIOUR

All parties will behave in accordance with the following standards at all times.

Honesty and fairness:	Parties will conduct all procurement and business relationships with honesty and fairness.
Accountability and transparency:	The process for awarding contracts on government projects will be open, clear and defensible.
No conflict of interest:	A party with a potential conflict of interest will declare and address that interest as soon as the conflict is known to that party.
Rule of law:	Parties shall comply with all legal obligations.
No anti-competitive practices:	Parties shall not engage in practices that are anti-competitive.
No improper advantage:	Parties shall not engage in practices that aim to give a party an improper advantage over another.
Intention to proceed:	Parties shall not seek or submit tenders without a firm intention and capacity to proceed with a contract.
Co-operation:	Parties will maintain business relationships based on open and effective communication, respect and trust, and adopt a non-adversarial approach to dispute resolution.

5. PRACTICE REQUIREMENTS

All parties shall adhere to the requirements of this section.

5.1 Best Practice

Procurement processes should be structured to minimise costs for all parties, consistent with the standards of behaviour required by this Code.

Commitment to continuous improvement and best practice performance is expected of all those involved in government procurement. Areas where this commitment may be demonstrated include, but are not limited to:

- Client focus, service quality and value for money outcomes;
- Ethical business practices;
- Management of procurement risk;
- Tendering and contract management;
- Co-operative relationships;
- Non-adversarial dispute resolution;
- Planning and management of human, physical and financial resources;
- Environmental management;
- Occupational health and safety management, and workplace injury management;
- Workplace practices;
- Training management;
- Aboriginal participation;
- Supply chain management;
- Payment practices, including reflective practices down the contract chain; and
- Innovation in design, service provision, processes and use of technology.

Details of specific practice requirements are provided at Appendix A.

The NSW Government Procurement Policy framework provides guidance for agencies and service providers in implementing best practice in these areas. This framework is available on the NSW Treasury website www.treasury.nsw.gov.au.

5.2 Tendering Requirements

Clients may choose not to accept tenders from or award contracts to tenderers who:

- have breached this Code and are subject to an applicable sanction;
- are bankrupt;
- are subject to a winding up order;
- have had an administrator appointed; or
- are corporate entities with persons involved directly or indirectly in the management of the entity who are disqualified under corporations law.

Tender Methods and Process

Clients should select a tender method and process that suits the procurement, its level of risk, is timely, avoids creating unnecessary costs for tenderers, and safeguards the security and confidentiality of all tenders.

Conditions of tendering shall be the same for each tenderer on any particular tender process. Standard conditions that give effect to this Code and which should be included in all documents requesting tenders are provided at Appendix B.

All requirements, including the criteria for tender evaluation, shall be clearly stated in conditions of tendering.

Evaluation Criteria

In addition to prices tendered, evaluation criteria shall contain the critical factors to be used in the evaluation of tenders. These factors may include, but are not limited to:

- whole-of-life costs, including costs of disposal;
- innovation offered;
- delivery times offered;
- quality offered;
- previous performance of tenderer;
- experience of tenderer and personnel proposed;
- capability of tenderer, including technical, management, human resource, organisational and financial capability and capacity;
- tenderer's occupational health and safety management practices and performance;
- tenderer's workplace and industrial relations management practices and performance;
- tenderer's environmental management practices and performance;
- tenderer's community relations practices and performance;
- value adding components such as economic, social and environmental development initiatives, if appropriate and relevant to the procurement; and
- conformity of tender with requirements.

The evaluation criteria should be consistent with the proposed contract requirements and aim to identify the tenderer offering the best value for money.

Ideally, the weighting of the evaluation criteria should be determined prior to calling of tenders but shall be not later than close of tenders.

Submission of Tenders

It is the tenderer's responsibility to submit a tender in accordance with the conditions of tendering and in a legible and uncorrupted form, particularly in the case of electronic tendering.

Late tenders should not be considered, except when the client is satisfied that the integrity and competitiveness of the tendering process has not been compromised.

Confidentiality

Clients shall not disclose tender information received from tenderers that is intellectual property, proprietary, commercial-in-confidence or otherwise confidential.

Evaluation of Tenders

Evaluation of tenders shall be based on the conditions of tendering and evaluation criteria therein.

Tenders should be evaluated by people with the necessary skills and knowledge, and who are free of any conflict of interest that might undermine the fairness of the process. Any tender that does not adequately comply with the conditions of tendering may be passed over.

Tenderers may be encouraged to offer alternative tenders that do not fully meet the prescriptive conditions of tendering but provide better value for money. Clients should specify the conditions under which alternative tenders will be considered. Where a tenderer offers an alternative, a tender for that alternative should not be sought from other tenderers. Clients should not breach confidentiality by using information contained in alternative tenders as the basis for calling subsequent tenders.

Clarification of Tenders

If information received in a tender is open to interpretation or is not clear, then clarification should be requested from the tenderer where this is material to identifying the successful tender. The clarification procedure shall be managed in such a way so as not to give the tenderer an unfair advantage over other tenderers by allowing the tenderer to revise or enhance its original tender.

Tenderers shall not use clarification requests by the client as an opportunity to gain an advantage over other tenderers by revising or enhancing their tender.

Tender Negotiation

If after a competitive tendering process none of the tenders are acceptable either due to the level of non-conformance or because they do not represent sufficient value for money, negotiations may be conducted with the tenderer that submitted the most acceptable tender based on the evaluation criteria.

The purpose of the negotiations shall be made clear to all participants prior to the commencement of negotiations. The aim is to achieve a tender that is mutually acceptable.

Clients should exhaust negotiations with the tenderer that submitted the most acceptable tender before negotiating with the next most acceptable tenderer, unless time constraints or the closeness of the tenders dictate otherwise.

Prohibition of 'Bid Shopping'

Clients shall not use tender negotiations as an opportunity to trade-off one tenderer's prices against other tenderers' prices in order to obtain lower prices. This practice, known as 'bid shopping', is prohibited.

Outcomes of Tenders called by Agencies

Agencies shall make information on the successful tender publicly available. Information relating to unsuccessful tenders will remain confidential, unless otherwise specified in the conditions of tendering, agreed by the tenderer or required by the law.

Premier's Memorandum 2000-11 *Disclosure of Information on Government Contracts with the Private Sector* advises agencies of the minimum information that should be disclosed and gives guidance on what should remain confidential.

Debriefings

If a client does not accept any of the tenders submitted, the tenderers shall be advised of the reasons. If fresh tenders are to be called, clients may add other tenderers to an original list of invited tenderers.

Clients should advise tenderers they have been unsuccessful and be available to debrief them on request. Debriefings should explain how their tender performed against the evaluation criteria, rather than against the successful tender, with the objective of assisting them to improve future tenders.

6. COMPLIANCE

6.1 Reporting Code Breaches

Alleged Code breaches shall be notified by the reporting entity to the client agency as well as to the entity allegedly in breach. A form suitable for reporting breaches is at Appendix D. The client agency is to assess the nature and extent of the alleged breach.

The preliminary determination of the agency is to be issued to both the entity alleging the breach and the entity allegedly in breach, allowing both entities to comment before a final determination is issued.

If the alleged breach is against the client agency and the matter cannot be resolved at the agency level, the allegation may be referred to either the CACC or SCCB as appropriate for advice or independent investigation. The CACC is responsible for dealing with breaches associated with construction related procurement, while the SCCB covers other procurement. Contact details are at Appendix C.

6.2 Dealing with Code Breaches

Government Agencies

If a Code breach is substantiated against an agency and is attributable to the agency's policies, practices or procedures, then that agency will take corrective action in relation to such policies, practices or procedures.

If the breach is the result of the activities of an individual, in contravention of the agency's policies, code of conduct, practices or procedures, then that agency will take appropriate disciplinary action in accordance with that agency's practices.

Non-Government Party

If a Code breach is substantiated against a non-government party, the relevant client agency may require that party to show cause why sanctions should not be applied and, subject to the response, may apply sanctions to that party.

Where the non-government party is a member of an employer association, industry association or union, the breach may also be referred to that association or union for action under its rules or code of conduct.

Representatives of Employer and Industry Associations

Where an association's representative is found to have breached the Code or acted to incite a breach of the Code, the circumstances of the breach or action will be referred to the association for action under the association's rules or code of conduct.

Union officials

Where a union official is found to have breached the Code or acted to incite a breach of the Code, the circumstances of the breach or action will be referred to the relevant union and the Labor Council of New South Wales for action under the relevant union rules or code of conduct.

6.3 Sanctions

Breaches of the Code by a non-government party may result in sanctions being applied to that party, in addition to any contractual or legal remedies that may be pursued.

Commercial Sanctions

Commercial sanctions for breaches of the Code are based on the Government's right to choose with whom it does business. The sanctions applied will depend on the nature and seriousness of the breach and on the degree of commitment shown by the party in breach to its obligations under the Code.

The range of sanctions available to be imposed on parties includes:

- formal warnings - that continued non-compliance will lead to more severe sanctions;
- partial exclusion from tendering - that is, a reduction in tendering opportunities; and
- preclusion from tendering for any work in the supply chain, for a specified period.

Sanctions may be restricted to tender opportunities associated with a single agency for lesser breaches, or in more severe cases may be applied for all government contracts (see government-wide sanctions).

Government-wide Sanctions

Proposals for government-wide sanctions shall be made by an agency to either the SCCB or CACC as appropriate. The SCCB or CACC will investigate the proposal and advise the Government if a government-wide sanction should be applied.

If the SCCB or CACC becomes aware of a tenderer or service provider who repeatedly breaches the Code, the SCCB or CACC may independently investigate and proceed with the option of advising the Government if a government-wide sanction should be applied.

7. DEFINITIONS

Agency	New South Wales Government Department or Declared Authority within the meaning of the *Public Sector Employment and Management Act 2002* NSW, 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 State-owned Corporations within the meaning of the *State Owned Corporations Act 1989* NSW.
Bid shopping	The practice of trading off one tenderer's prices against another's in order to obtain lower prices.
Client	Party calling for tenders and / or awarding a contract.
Construction	All organised activities concerned with demolition, building, landscaping, maintenance, civil engineering, process engineering, mining and heavy engineering.
Construction Agency Coordination Committee	The CACC consists of representatives of key agencies involved in construction procurement and assists the Government in the development of consistent and effective construction procurement practices, and in promoting the application of these practices by agencies.
Employee	Person whose employment is governed by a contract of service, or a person deemed to be an employee under Australian or NSW industrial law.
Employer	Entity that employs a person or persons under a contract of service or a person deemed to be an employer under Australian or NSW industrial law.
Employer association	Organisation representing the interests of employers that is registered under Australian or NSW industrial law.
Fair	Being unbiased, reasonable and even-handed. Being fair does not mean satisfying everyone or not reasonably pursuing one's legitimate interests. A fair decision may still adversely affect parties.
Industry association	Organisation representing the professional, trade or commercial interests of its members in an industry.
Infrastructure	Fixed assets that support economic and social development in a fundamental way.

Intellectual property	Inventions, original designs, and practical applications of good ideas protected by law through copyright, patents, registered designs, circuit layout rights and trademarks. Also includes trade secrets, proprietary know-how and other confidential information protected against unlawful disclosure by law and through additional contractual obligations, such as confidentiality agreements, contracts and conditions of tendering.
Monitor	Regularly collect information to review performance against specified criteria.
Party	Client, tenderer or service provider. An entity's role in a procurement will determine whether it is a client, tenderer or service provider for that procurement.
Procurement	All activities involved in acquiring goods or services either outright or by lease (including disposal and lease termination). Includes acquiring consumables, capital equipment, real property, infrastructure, and services under consultancies, professional services, facilities management and construction.
Service provider	Includes contractors, subcontractors, suppliers and consultants that contract to provide goods or services.
State Contracts Control Board	The SCCB is established under the *Public Sector Employment and Management Act 2002.* Its membership includes representatives from the central, budget and non-budget agencies. It assists the Government in the development of consistent and effective non-construction related procurement practices, and promoting the application of these practices by agencies.
Tender	Includes a price, bid, offer, quotation, consultant proposal or expression of interest lodged in response to an invitation or request for tender.
Tenderer	Entity submitting a tender.
Union	Organisation of employees also referred to as a 'trade union', which is registered under Australian or NSW industrial law. This term also includes the Labor Council of New South Wales.
Value for money	The benefits, compared to whole-of-life costs.

Appendix A

NSW GOVERNMENT CODE OF PRACTICE FOR PROCUREMENT

DETAILS OF SPECIFIC PRACTICE REQUIREMENTS

ENVIRONMENTAL MANAGEMENT

The Government expects government agencies and all other parties to identify the potential environmental opportunities, risks and impacts of their activities and to adopt measures to:

- realise those opportunities, manage those risks, and enhance and protect the environment;
- encourage recycling and re-use of materials and minimise waste; and
- support effective use of scarce resources - including energy, water and materials.

Service providers shall have a demonstrated commitment to, acceptable performance with, and systematic approach to, environmental management.

On construction projects, all service providers are required to develop and implement an appropriate site specific environmental management plan. Tenderers and service providers for major contracts are required to have a corporate Environmental Management System accredited by a government agency.

The *Environmental Management Systems Guidelines* of the Capital Project Procurement Manual describe the management practices required of all parties on NSW Government construction projects.

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT AND WORKPLACE INJURY MANAGEMENT

Occupational Health and Safety Management

The Government attaches a high priority to the continuous improvement of occupational health and safety management and workplace injury management in procurement for all construction and other industry participants.

Service providers shall have a demonstrated commitment to, acceptable performance with, and systematic approach to, occupational health and safety management and workplace injury management.

The *OHS&R Management Systems Guidelines* of the Capital Project Procurement Manual describe the management practices required of all parties on NSW Government construction projects.

Occupational Health and Safety Compliance

Service providers and their employees must comply with their occupational health and safety obligations under the *Occupational Health and Safety Act (NSW),* the *Workplace Injury Management and Workers Compensation Act (NSW)* and Regulations, workers compensation insurance premium requirements, relevant OHS industry codes of practice, and safety and dispute settlement procedures in applicable industrial awards and approved agreements.

Dispute Resolution

Where a dispute about occupational health and safety matters cannot be resolved at the workplace, determinations by WorkCover New South Wales inspectors made under the *Occupational Health and Safety Act (NSW)* and OHS Regulation 2001 must be accepted by all parties.

No payment shall be made to employees for time spent engaged in industrial action (as defined in either the *Workplace Relations Act (Commonwealth)* or the *Industrial Relations Act (NSW))*, unless payment is authorised or ordered by either the Australian or NSW Industrial Relations Commissions.

WORKPLACE PRACTICES

Obligations Relating to Employment

Principal contractors are accountable for compliance by their service providers with their legal obligations regarding their employees working on construction projects.

All service providers, their employees and their unions must also comply with their workplace obligations, including the provisions of all applicable industrial awards and approved agreements.

Arrangements or practices designed to avoid workplace obligations under relevant laws, industrial awards and approved agreements are not permitted.

Industrial Relations Management

The Government is committed to an improved industrial relations planning and management culture and better employee and employer relationships in the construction industry and other industries.

Service providers are required to develop and maintain a pro-active and responsible approach to the management of industrial relations at the enterprise level and on projects.

The *Industrial Relations Management Guidelines* of the Capital Project Procurement Manual describe what is required of tenderers, and the management practices to be implemented by service providers on construction projects.

Enterprise Agreements

Enterprise agreements are important elements in achieving continuous improvement and best practice. Enterprise agreements should ideally:

- reflect the needs of the enterprise, including the scope of the enterprise's operations and projects;
- improve remuneration and working conditions, based on quality of work and productivity; and
- give effect to measures to increase productivity, which may encompass:
  - improved occupational health and safety and workplace injury management practices;
  - better training and skill development strategies; and
  - cooperative, flexible workplace arrangements, relationships and practices.

Project Agreements

Project agreements incorporating site-wide payments, conditions or benefits may be negotiated where the strategy has first been authorised by the relevant agency. Generally, project agreements will only be appropriate for major construction projects as defined by the agency.

Typically, major projects will have some or all of the following features: an extended construction period, high cost, several identifiable contract packages within an overall project, and special industrial relations, skill development and occupational health and safety requirements.

If a tenderer foreshadows a project agreement and the tenderer is awarded the contract, a business case in support of that strategy must be submitted by the successful tenderer and only proceed if approved by the agency involved. This process should be completed before site works begin.

Payments, conditions or benefits in a project agreement must be related to improved productivity measured in time and/or cost saving performance. This performance may be achieved as a reduction of the period of construction or a reduction in the construction cost or both, to the benefit of the agency.

The agency here means the government agency responsible for the project, irrespective of whether there is a construction contract between the agency and a service provider. For example, in a privately financed project there may not be a construction contract with the relevant government agency but the agency will still retain the right, in consultation with the relevant service provider under the privately financed project contract, to authorise the negotiation of a project agreement.

The integrity of existing individual enterprise agreements shall be maintained with any project agreement. Therefore project agreements should not override the approved enterprise or workplace agreements. While there may be a provision in a relevant enterprise or workplace agreement that enables the signatories to that agreement to include these provisions in a project agreement, there shall be no double payment or allowance of conditions or benefits.

The signatories to a project agreement may not use any term in the project agreement as a precedent on any other project or for any other purpose. To take effect, a project agreement must be approved under either the *Workplace Relations Act (Commonwealth)* or the *Industrial Relations Act (NSW)*.

Site Allowances

Site allowances shall not be paid unless awarded by an industrial tribunal, after arbitration.

Site allowances are awards made by the Industrial Relations Commission under the *Industrial Relations Act* (NSW) to provide compensation to affected employees engaged at a particular work site, if they encounter conditions that are so far removed from the type of conditions ordinarily experienced on construction sites as to warrant extra compensation.

Dispute Resolution

Service providers are required to make every effort to resolve grievances or disputes with their employees and applicable unions at the enterprise level, in accordance with legal obligations and the procedures outlined in applicable industrial awards or approved agreements.

Where resolution is not possible at a particular enterprise level, the graduated steps, involving higher levels of authority, in the dispute settlement procedures contained in applicable industrial awards or approved agreements are to be complied with. This includes referral of the grievance or industrial dispute to the appropriate industrial tribunal for settlement.

All parties to a grievance or dispute are required to comply with tribunal decisions, subject to any legal appeal rights. While the dispute resolution procedures are being followed:

- no industrial action is to take place;
- the conditions prior to the dispute must prevail; and
- work is to continue normally.

Strike Pay

No payment shall be made to employees for time spent engaged in industrial action (as defined in either the *Workplace Relations Act (Commonwealth)* or the *Industrial Relations Act (NSW))*, unless payment is authorised or ordered by either the Australian or NSW Industrial Relations Commissions.

Membership of Registered Organisations

Membership of unions or employer associations is encouraged through proper and lawful means. This precludes victimisation, through any mechanism, for membership or non-membership of organisations.

Project Impacts

The service provider must advise the client during the progress of the work, at the earliest opportunity, of any industrial relations or occupational health and safety matter which may have an impact on the progress of work, the contract, costs or other related contracts.

TRAINING MANAGEMENT

Service providers shall comply with the Government's training management requirements and guidelines. Service providers will be encouraged to pursue and implement training and skill development strategies appropriate to the focus, size and capacity of the individual enterprises and to their contracts.

The *Training Management Guidelines* of the Capital Project Procurement Manual describe the management practices required of all parties on NSW Government construction projects.

ABORIGINAL PARTICIPATION

Tenderers will be required for selected contracts to indicate measures they intend to implement if awarded the contract, including:

- extending employment opportunities to Aboriginal people;
- enhancing the business skills of Aboriginal people; and
- providing economic benefits to Aboriginal communities

which could lead to improved conditions in Aboriginal communities.

The *Aboriginal Participation in Construction Implementation Guidelines* of the Capital Project Procurement Manual describe what is required of all parties on NSW Government construction projects.

EMPLOYMENT AND OUTWORK OBLIGATIONS FOR TEXTILE, CLOTHING AND FOOTWEAR SUPPLIERS

The Government requires suppliers of textile articles, clothing and footwear to:

- comply to the extent applicable, with all relevant laws, awards and other industrial instruments in relation to the employment and management of employees including outworkers; and
- take all reasonable steps to ensure that their service providers comply to the extent applicable, with all relevant laws, awards and other industrial instruments in relation to the employment and management of employees including outworkers.

Tenderers for NSW Government clothing, textile and footwear contracts must submit a statutory declaration to this effect. A tender will not be considered unless such a statutory declaration is lodged with the tender.

Appendix B

NSW GOVERNMENT CODE OF PRACTICE FOR PROCUREMENT

CONDITIONS OF TENDERING

Conditions of tendering giving effect to the NSW Government Code of Practice for Procurement and for inclusion in all documents requesting tenders, should be similar to the following:

> All tenderers must comply with the NSW Government Code of Practice for Procurement. The ability of a tenderer to demonstrate compliance with the Code is an essential condition.
>
> Lodgement of a tender will itself be an acknowledgement and representation by the tenderer that it is aware of the requirements of the Code, that the tenderer will comply with the Code and that the tenderer agrees to provide periodic evidence of compliance with the Code and access to all relevant information to demonstrate compliance for the duration of any contract that may be awarded.
>
> If a tenderer has failed to comply with the Code, this failure will be taken into account by the client when considering its tender or any subsequent tender and may result in this or any subsequent tender being passed over without prejudice to any other rights of action or remedies available to the client.

Appendix C

NSW GOVERNMENT CODE OF PRACTICE FOR PROCUREMENT

CONTACT DETAILS:

CONSTRUCTION AGENCY COORDINATION COMMITTEE
STATE CONTRACTS CONTROL BOARD

Construction Agency Coordination Committee (CACC)	All inquiries to the CACC Executive Officer By telephone (02) 9372 8910 Facsimile (02) 9372 8844 By email: info@construction.nsw.gov.au By mail to: CACC Executive Officer NSW Department of Commerce Office of Government Procurement Level 23, McKell Building 2–24 Rawson Place, SYDNEY 2000
State Contracts Control Board (SCCB)	All inquiries to the SCCB Executive Officer By telephone (02) 9372 8910 Facsimile (02) 9372 8844 By email sccb@commerce.nsw.gov.au By mail to: SCCB Executive Officer NSW Department of Commerce Office of Government Procurement Level 23, McKell Building 2–24 Rawson Place, SYDNEY 2000

Appendix D

NSW GOVERNMENT CODE OF PRACTICE FOR PROCUREMENT

FORM FOR REPORTING ALLEGED BREACHES OF THE NSW GOVERNMENT CODE OF PRACTICE FOR PROCUREMENT

Name(s)	
Occupation	
Business address	
Your contact details: Phone Facsimile Email	
Section of Code allegedly breached:	
The names of persons and/or organisations involved in the alleged breach:	
Description of events surrounding the alleged breach and the dates on which the breach occurred:	
List and/or attach documents that support your claim:	
If you have taken actions to remedy the breach identified, describe them:	
If you have previously complained about the breach of the Code, the dates of prior complaints and name of person and agency complaint made to: [Please attach copy(ies) of previous complaint(s)]	
Details of response to above or insert 'nil' if no response:	
Signed [including electronic signature]	
Date	

ATTACHMENT 4

AGENCY ACCREDITATION SCHEME[2]

PURPOSE

The purpose of the Agency Accreditation Scheme is to manage risks and reduce cost overruns in the procurement of capital works assets by establishing effective and efficient capital asset procurement practices in all government agencies.

SCHEME OUTLINE

- The Agency Accreditation Scheme is based on the premise that an agency should procure capital works assets using systems and resources commensurate with its capabilities.
- The scheme involves consideration of two independent factors:
  - the agency's procurement capabilities, and
  - the level of risk in the project or program being procured.
- An agency will be required to obtain external support if the level of risk is high in relation to its assessed capabilities, which should be consistent with its core service delivery functions.

PROCUREMENT CAPABILITIES

- The scheme applies to the planning and delivery phases of capital works procurement:
  - The planning phase, which essentially involves preparation of the business case and the project approval process, commences after an agency has determined a need for a capital works asset following a strategic assessment, using Total Asset Management.
  - The delivery phase is the process of dealing with service providers delivering the asset. This includes documenting requirements, selecting and managing service providers.
- The capabilities required to manage the inherent risks in each procurement phase can be described in terms of systems and competencies (knowledge, skills and abilities) to perform the required tasks.

PROCUREMENT RISK

- The risk level of a proposed capital asset acquisition is assessed using a tool based on the Risk Profile Assessment developed for the Gateway Review process.
- The tool generates a score that indicates whether procurement involves a high, medium or low level of risk. The indicative project budget will be a significant factor in this assessment.
- Agencies will be required to conduct a Risk Profile Assessment at the commencement of the planning phase for every capital works project or program valued at $1M or above.
- The Risk Profile Assessment generated by the tool is to be included with the routine economic appraisal submitted to Treasury in support of the bid for capital funding.

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[2] This Scheme takes effect on 1 July 2004 and supersedes the Project/Procurement Risk Management policy as outlined in Treasurer's memorandum TM91/7. Agencies should contact the Government Procurement Services Unit of the Department of Commerce on transition matters regarding construction projects which were subject to TM91/7. Projects which are part way through their planning phase will not need to comply with the accreditation process for planning, but will need to do so for the delivery phase.

ACCREDITATION

- Each agency will be assessed for accreditation for each of the two identified procurement phases. An agency may be accredited to undertake planning without support, but be required to obtain support for the delivery phase.
- An agency will be accredited for a particular procurement phase if it is considered to have all the capabilities necessary to carry out that phase without external support at any level of procurement risk.
- Remaining agencies will not be accredited on the basis they do not have the capabilities required to manage that phase without external support, except for the planning phase for low risk projects valued at less than $50 million (for which accreditation is not required).
- A non accredited agency can however obtain "partial" accreditation for a phase of a specific project or program assessed at low or medium risk. To do so, it must demonstrate that it has the competencies necessary to successfully manage that phase of the capital works asset acquisition.

The table below articulates these requirements for accredited and non-accredited agencies.

	Agency Accreditation Status - Planning and/or Delivery Phases			
Project Risk	**Accredited:- Projects of all values**	**Non-Accredited:- Projects valued >$50M**	**Non-Accredited:- Projects valued <$50M**	**Partial Accredited:- Projects valued <$50M**
H	Can undertake without external support using own procurement system	Require external support. Must use approved procurement system for delivery phase	Require external support. Must use approved procurement system for delivery phase	N/A - Require external support and must use approved procurement system for delivery phase
M	Can undertake without external support using own procurement system	Require external support. Must use approved procurement system for delivery phase	Require external support. Must use approved procurement system for delivery phase	Can undertake without external support but must use approved procurement system for delivery phase
L	Can undertake without external support using own procurement system	Require external support. Must use approved procurement system for delivery phase	Can undertake planning without external support. Delivery requires external support and use of approved procurement delivery system	Can undertake without external support but must use approved procurement system for delivery phase (partial accreditation not required for planning phase)

EXTERNAL SUPPORT

- The external support that agencies will be required to obtain may include:
  - using the approved procurement system for the delivery phase that is developed and maintained by the Department of Commerce
  - engaging approved external advisers with relevant competencies to assist in managing the procurement. Such expert advisers must use the approved Department of Commerce procurement system, unless they are accredited agencies in which case they may use their own system.

- The approved procurement delivery system generally consists of guidelines and procedures for the selection of procurement strategies, contract risk allocation, supplier selection (including prequalification), tendering and formal dispute resolution. The approved systems will provide support for agencies to engage expert advisers. The Department of Commerce will supply the approved procurement delivery system for non government external experts.
- The support that agencies will be required to obtain for each relevant phase of a capital asset acquisition is outlined in the above table and summarised below:
  - a fully accredited agency will be authorised to carry out procurement at any assessed risk level without the support of external resources. It will need to maintain effective procurement systems;
  - an agency which is not accredited must use the approved procurement delivery system and the support of external advisers for capital works projects and programs of any risk level, except for planning phase for low risk projects valued below $50 million;
  - a "partially" accredited agency will be authorised to carry out a capital asset acquisition assessed at low or medium risk without the support of external resources, but must use approved procurement delivery system. For projects or programs assessed as high risk, the agency must engage approved external expert advisers.

THE RULES

- NSW Treasury will:
  - accredit agencies, including partial accreditation, and will review accreditation status of agencies after 12 months operation of the scheme. Treasury may seek assistance from representatives of the Department of Commerce and other expert agencies;
  - review and revise an agency's accreditation on the basis of an agency's procurement management performance or changes to its capability. For example loss or gain of in-house expert personnel may result in adjustment to the accreditation status;
  - review and verify project Risk Profile Assessments.
- Agencies will:
  - have ultimate responsibility for the efficiency and effectiveness of their procurement and for implementing the Government's Procurement Policy;
  - undertake project Risk Profile Assessment and provide the results together with the routine submissions to Treasury under the enhanced monitoring arrangements;
  - be able to request Treasury to approve "partial" accreditation for a particular procurement. To gain "partial" accreditation, an agency will need to provide evidence it has competencies commensurate with the proposed additional activities;
  - advise Treasury of significant changes in their procurement capabilities, for example through movement of key procurement personnel. (Not applicable to non accredited agencies).

SCHEME COVERAGE

- The scheme will:
  - apply to capital works procurement projects and programs above a value of $1M;
  - apply on a whole-of-government basis to all government departments, statutory authorities, trusts and other government entities;
  - not apply to State Owned Corporations subject to the *State Owned Corporations Act.*

ATTACHMENT 5

GATEWAY REVIEW PROCESS

PURPOSE

The purpose of the Gateway Review process is to independently assess whether an appropriate level of discipline is applied across the procurement cycle. The process addresses the lack of initial preparation evident in managing major asset procurements which in turn leads to significant time and budget overruns.

GATEWAY REVIEW OUTLINE

- The Gateway Review consists of a series of structured Reviews that examine procurements at six key decision points (or gates) in the procurement cycle. These gates are Strategic, Business Case, Procurement Strategy, Tender Review, Pre Commissioning and Post Implementation.
- Initially there is a review of the risk of the procurement. The Risk Profile Assessment is used to determine risk rating and thereby the level of independence required of Reviewers.
- Three categories of risk have been identified (high, medium and low). Typically:
  - High-risk procurements will be reviewed by a small team of Reviewers independent of the procurement and the proponent organisation.
  - Medium risk procurements will be reviewed by a small team of Reviewers independent of the procurement and at least one person independent of the proponent organisation.
  - Low risk procurements will be reviewed by a small team of Reviewers independent of the procurement, but may be from within the proponent organisation.
- The Project Sponsor initiates a Review, receives the findings and determines what action, if any is required to address the recommendations. The Project Sponsor is the senior manager responsible for the procurement, with the authority to make decisions affecting its progress.
- Reviewers are generally senior government employees selected for their relevant expertise in the particular stage of procurement being reviewed. From time to time expertise may be sourced from outside the government sector where appropriate.
- The Review process is facilitated by the Department of Commerce. Facilitation includes providing training and support to Reviewers, the Project Sponsor, the Project Team and other stakeholders. It also includes assistance with documentation of the Review report and Review logistics.
- Reviews are held over one to two days following a half-day planning session undertaken a week prior to the Review. The Review runs as a series of interviews with key stakeholders including Project Team members, technical consultants, planners, senior managers and client representatives.
- At each Review the project is assessed against seven Key Success Factors– affordability, service delivery, governance, sustainability, risk management, stakeholder management and change management. The underlying rationale for the Business Case is revisited at each gate.

- All information tabled in the Review is confidential with documentation provided by the Project Team on behalf of the Project Sponsor. It is not intended that documentation be produced especially for the Review. Nor is it expected that Reviewers read in detail all documentation associated with the project. Rather, Reviewers will need to read sufficiently to gain an overview, with enough detail to make an informed judgment.
- The Review report is produced in draft form on the day of the Review and the final report is provided to the Project Sponsor for appropriate action. Action will range from fine-tuning project details to a decision to take a major change in direction.

BENEFITS

The potential benefits include:

- More accurate project scoping and estimates
- Reduced time and cost overruns
- Improved alignment of service delivery with available funds
- Improved procurement discipline
- Better risk management
- Reinforcing agency responsibility and accountability for decisions

GATEWAY RISK PROFILE ASSESSMENT TOOL

The Gateway Review Process is applied based on an assessment of a procurement's potential risk profile. This assessment goes beyond simple financial thresholds to consider issues such as:

- impact the procurement will have on the agency's service delivery
- level of integration the project requires with other initiatives
- amount of experience an agency has with similar procurements
- level of expertise available in the marketplace
- degree of innovation involved in the procurement solution
- complexity of the procurement method

Gateway can then be targeted at complex and risky procurements that would benefit from increased scrutiny.

An online tool has been developed to assist agencies to complete the assessment quickly and easily. The tool calculates an indicative risk score based on the options selected.

APPLICATION

- The process applies to all procurement, including built infrastructure, information and communications technology (ICT), services and capital equipment.
- Reviews will be mandatory at the Business Case Gate for all high risk procurements and other procurements valued at $10 million or more ($5 million for ICT).
- Agencies are encouraged to apply the other five Gateway Reviews to their procurements. The decision to complete one of these gates should be based on the risk profile of the procurement and the Project Sponsor's understanding of how the procurement is progressing. For these gates it is recommended that agencies have:
    - a small team of people independent of the project and proponent organisation review high risk projects;

- a small team of people independent of the project and a least one person independent of the proponent organisation review medium risk projects;
- agencies review their processes to ensure they are aligned with Gateway for low risk procurements.

- Business Case Gateway Reviews will be linked to the Budget process by agencies submitting a copy of their review to Treasury with any bid for capital funding.

THE RULES

Treasury will support the process by:

- Making suitable officers available as Gateway Reviewers.
- Funding the Department of Commerce in its facilitation, system development and maintenance role.

Agencies will:

- Undertake the Risk Profile Assessment for all procurements and include them with their routine submissions to Treasury as required.
- Ensure appropriate Project Sponsors are appointed.
- Undertake Business Case Reviews as a minimum, on all high risk procurements and other procurements valued at $10 million or over ($5 million for ICT).
- Take responsibility for Review findings.
- Make suitable officers available as Gateway Reviewers.
- Link Gateway Reviews at the Business Case stage with the budget process as required.

Department of Commerce will:

- Maintain, develop and promulgate information about the Gateway Review Process.
- Maintain the database of Reviewers for the mandatory Business Case Review.
- Manage Reviewer training and support agencies in Reviewer selection.
- Facilitate Reviews.
- Refine the Review methodology to account for lessons learned.

COVERAGE

The mandatory Business Case Review:

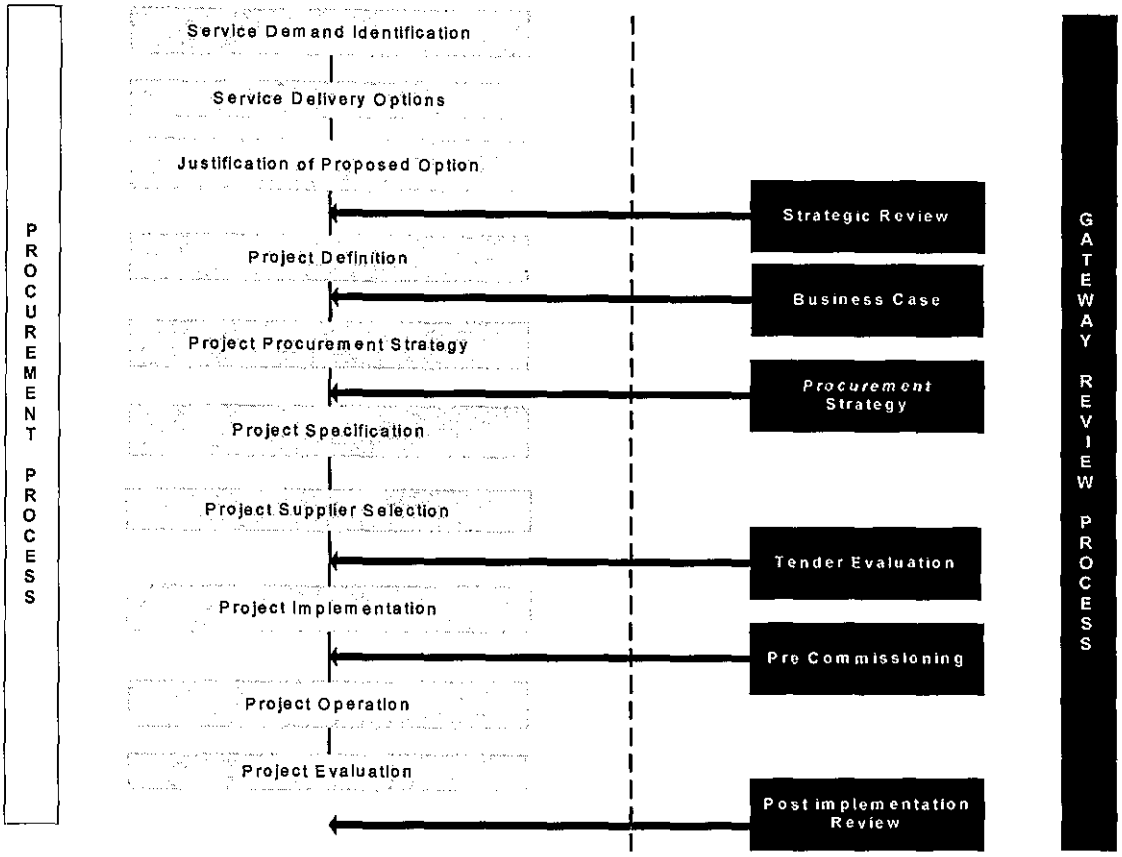
- Applies on a whole-of-government basis to all government departments, statutory authorities, trusts and other government entities.
- Does not apply to State Owned Corporations subject to the *State Owned Corporations Act*.

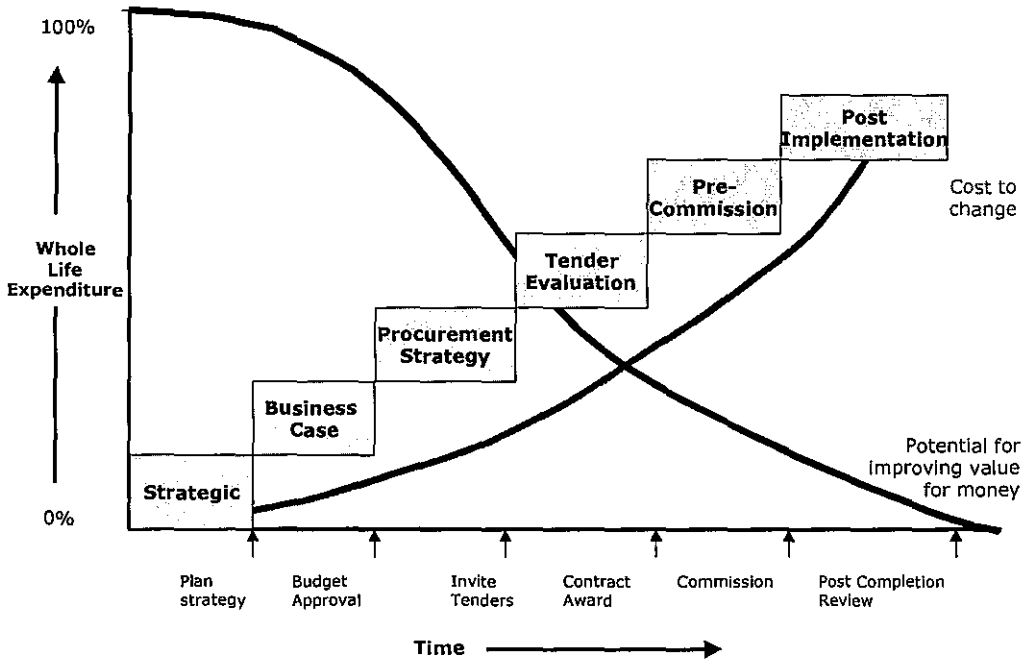
IMPLEMENTATION

- The Gateway Review process commences 1 July 2004.

THE SIX GATES

The six gates in the procurement process are indicated below.





ATTACHMENT 6

COMPREHENSIVE TREASURY APPRAISAL/MONITORING[3]

Treasury's role in assessing and monitoring major capital works projects (those valued at $1 million or more) is dependent on the size and risk of the project, the risk being assessed using the Gateway Risk Profile Assessment tool.

A strong emphasis is placed on the quality of the business case supporting any funding/ investment decision and service delivery objectives of the agency concerned.

Agencies need to demonstrate clearly that:

- the project supports its service delivery objectives;
- the initial business case that triggers any funding is sound; and
- the project, as it is delivered, either remains consistent with the original business case or properly informed decisions are made in terms of the project's future if this is not the case.

Agencies are required to submit specific information and reports to Treasury at key decision points, dependent on the risk and value of the project as outlined below:

High Risk Projects and All Other Projects valued more than $50 Million:

- Project Appraisal Report to demonstrate the Business Case is properly developed prior to going to the Budget Committee of Cabinet or internal funding approval. This will include copies of the project Risk Profile Assessment using the Gateway tool, Mandatory Business Case Gateway Review and Economic Appraisal
- Procurement Strategy Report and Pre-Tender Estimate to reconfirm the Business Case prior to calling tenders
- Post Tender Review Report to reconfirm the Business Case prior to contract award
- Material Variations Report highlighting major changes to scope, cost and time after contract award as they occur

Projects Not High Risk and valued between $10 Million and $50 Million:

- Copy of the project Risk Profile Assessment using the Gateway tool, Mandatory Business Case Gateway Review and Economic Appraisal prior to submission to the Budget Committee or internal funding approval.
- Procurement Strategy Report and Pre-Tender Estimate prior to calling tenders

Projects Not High Risk and valued between $1 Million and $10 Million:

- Summary of Economic Appraisal prior to submission to the Budget Committee

A checklist of material which may be required for the above reports and a flow diagram illustrating the interaction of the agency accreditation scheme, Gateway Reviews and Treasury's monitoring role is available on the Treasury website.

[3] These enhanced Treasury monitoring arrangements take effect from 1 July 2004 and apply to construction projects for which funding had not been approved as at that date. However projects already funded that are high risk or valued at $50 million or more are required to submit the required reports depending on their stage of project delivery. All funded projects valued at less than $50 million and not high risk may proceed under the earlier Treasury intervention arrangements.

New South Wales
TREASURY

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NSW Government Guidelines for Economic Appraisal

OFFICE OF FINANCIAL MANAGEMENT

Policy & Guidelines Paper

Preface

Rigorous economic appraisals provide important information to decision makers at various levels within Government. The *NSW Government Guidelines for Economic Appraisal* promote a consistent approach to undertaking such appraisals for the assessment of significant spending proposals, including proposed capital works projects and new programs across all public sector agencies.

The purpose of an economic appraisal is not to validate a specific proposal, but to help choose the best means to satisfy a specified objective, and to rank competing proposals when resources are limited. All capital works and programs are provided as a means to an end.

The Guidelines are subject to ongoing review. This edition incorporates the most recent amendments and supersedes the previous June 1997 NSW Treasury Policy & Guidelines Paper (TPP97-2).

The application of these Guidelines ensures that required reporting and appraisal standards are satisfied when new capital works projects are being considered. This will lead to better resource allocation decision making.

In general, an economic appraisal is required for all individual projects with a total cost in excess of $1 million. While primarily written with capital works proposals in mind, the principles outlined in the Guidelines are appropriate for the application of economic appraisal to other areas such as asset management, plan and program evaluation, and regulation review proposals.

The Guidelines are not intended to address the specific issues of each agency. They do, however, establish the requirements for the evaluation of capital works, adapted to the characteristics and scale of the projects.

A revised companion document, *Economic Appraisal – Principles and Procedures Simplified* (TPP 07-6) provides a summary of these Guidelines which non economists in particular may find useful.

John Pierce
Secretary
NSW Treasury
July 2007

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Note
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This publication can be accessed from the Treasury's Office of Financial Management Internet site [http://www.treasury.nsw.gov.au/].
For printed copies contact the Publications Officer on Tel: 9228 4426.

Contents:

Executive Summary

1. Introduction

The New South Wales public sector is a major component of the State economy. The efficiency with which it uses resources can have a significant impact on the overall performance of the State economy and the welfare of its residents.

It is therefore important that the most efficient ways of meeting particular service objectives are identified and implemented.

With the objective of improving public sector resource allocation, the Government decided in December 1988 that economic appraisal techniques should be applied to all capital works proposals.

The *Guidelines on Economic Appraisal of Assets* were first published in 1988. They were revised and renamed following a review by the Economics and Revenue Division in Treasury and the Capital Works Unit in Premier's Department in 1990. This edition of the *NSW Government Guidelines for Economic Appraisal* incorporates further refinements following reviews by Treasury in 1995 and 2006.

2. Overview

The Guidelines are intended to establish a framework for all public sector agencies to undertake economic appraisals on a consistent basis. The framework covers both the reporting requirements for the Cabinet Standing Committee on the Budget (the Budget Committee) and the structure of appraisal required.

These Guidelines, however, are not intended as a manual to address the specific issues of each agency. Agencies should apply these general principles to their particular situation, and develop procedures for undertaking appraisals in their field of operation in consultation with Treasury.

While primarily written with capital works proposals in mind, the principles outlined in the Guidelines are appropriate for the application of economic appraisal to other areas such as asset management planning, program evaluation, and regulation review proposals.

3. Economic Appraisal

Economic appraisal is a way of systematically analysing all the costs and benefits associated with the various ways of meeting an objective.

Economic appraisal provides important information to decision makers at various levels within Government. Not only does it assist the Government at the highest level of decision making but it also helps individual agencies as they formulate their own capital works programs.

Clearly the results of the economic appraisal will not be the only factors taken into account when making a decision. Nevertheless, it provides vital information on the effects of each possible decision.

The use of economic appraisal techniques is encouraged in all relevant areas of public sector activity including asset management, plan and program evaluation, regulation review, in addition to new capital works. The process of undertaking economic appraisals of projects should interact with the review of strategic plans within agencies on an ongoing basis.

For example, a proposal to build a particular project might be substituted by a better project, or deferred, or replaced by upgraded maintenance of existing facilities, etc as a result of more detailed economic appraisal of all feasible options to meet the particular service objective.

4. The Guidelines

The Guidelines cover two methods of economic appraisal - cost benefit analysis (CBA) and cost effectiveness analysis (CEA). Both techniques require as many as possible of the benefits and costs to be quantified in money terms.

CEA is used when the major benefits cannot be valued in dollar terms, or when it would be unduly expensive to undertake the valuation. CEA is most often used in areas such as education, health, law and order and the environment, where CBA economic appraisal can prove more difficult. Longer term research may improve information standards in these areas.

While monetary valuation of effects is important, the methodology outlined explicitly takes unquantifiable benefits and costs into account. These will often be very important in public sector projects, and their identification is vital to the process of economic appraisal.

An important feature of economic appraisal is that various methods of achieving the stated objective are assessed.

Economic appraisal is most effective when it becomes a routine part of capital works planning, incorporated from the early stages of project development. It should be central to an iterative planning process, with analysis outcomes guiding the development and refinement of project options.

In order to ensure that a consistent approach is used by all public sector agencies, Treasury sets certain key parameters to be used in appraisals, such as the discount rate and the rate of real earnings growth.

Important features of the analysis, such as the definition of a project (neither too aggregated nor too disaggregated), the treatment of inflation, the valuation of impacts and the project period are all addressed in the Guidelines. Issues such as the valuation of benefits may create particular problems for certain agencies. In some cases problems may be shared by more than one agency and there is scope for cooperation across agencies to address some of these issues.

The Guidelines discuss the arithmetic of discounting and set certain key measures of worth which can be used for summarising the quantifiable benefits and costs and then used in conjunction with the available information on the unquantifiable effects. The preferred criteria are the Net Present Value (NPV), Benefit Cost Ratio and the Net Present Value per unit of capital invested (NPVI). The latter measure is designed to reflect the fact that capital may be considered a scarce resource from the point of view of the public sector as a whole.

The outcome of most capital works projects is affected by risk and uncertainty. This is recognised and the Guidelines stress the need for assessing the outcomes of projects under a range of different scenarios adequate to capture the full scope of uncertainty.

5. Reporting Requirements

The Guidelines establish requirements for the evaluation of capital works, tailored to the characteristics and scale of the projects. The overall rule is that an economic appraisal will have to be undertaken for all individual projects with a total cost in excess of $1 million. The procedures used to assess projects below $1 million should be appraised on a regular basis by each agency.

Summary sheets only are required for projects between $1 million and $10 million. Full appraisals are required to be submitted for projects over $10 million. In addition, special studies may be required of some capital works, as may also special reporting requirements for certain projects.

All public sector agencies are responsible for undertaking economic appraisals and submitting them as part of their capital expenditure bids. They may also be submitted or requested to support proposed major new recurrent programs.

6. What NSW Treasury Looks For In an Economic Appraisal

In its review of economic appraisals to provide advice on proposed projects or programs, above all, Treasury looks for **objectivity** in an economic appraisal. Common sense is an important guiding principle.

The economic appraisal should present an independent, unbiased assessment of all the costs and benefits of the various means of achieving the stated service delivery objective.

The economic appraisal should not be a "business case" which simply promotes a preferred approach. The economic appraisal may form part of a business case, to explain how a preferred approach came to be selected.

In providing NSW Treasury advice on the best value for money approach from the community's viewpoint to meet a service delivery objective, Treasury closely analyses the appraisal usually in consultation with the proponent agency to better understand the results.

NSW Treasury's review of an economic appraisal considers issues which include:

- Has the appraisal been carried out in accordance with the NSW Government Guidelines for Economic Appraisal? Was Treasury contacted by the consultant or agency at the outset? Were the proposed methodology and the approach to any contentious issues discussed and agreed with Treasury?
- Is the service delivery objective clear and unambiguous and the fundamental need confirmed?
- Have all reasonable, feasible options been considered, costed and analysed?
- Does the appraisal represent an objective analysis of the options to arrive at a preferred option, and is not simply a case to support a predetermined option? Has there been an iterative process to option development, where appropriate?
- Is there a realistic Base Case, as described in the Guidelines, against which other options' costs and benefits have been compared?
- Have all relevant costs and benefits, quantifiable and non quantifiable, been included? Are they comprehensive and do the estimates appear reasonable? For example, if it is proposed to construct a facility in a new location, have relocation costs and remediation costs been included in the analysis as well as the new facility construction costs? If a refurbished facility is proposed as an option, have costs of any temporary accommodation etc been included?

Treasury considers how the data are produced and reviews the assumptions incorporated in the analysis. This is to ensure there is no "project bias" in the analysis, for example, in terms of overoptimistic benefits and/or underestimated costs. Treasury considers the sources and basis of estimates - are they credible, informed, independent, the latest available, etc? Such matters may be discussed with the agency and with specialists within Treasury.

- Have a range of sensitivities, including worst case scenarios, been assessed and commented on in the appraisal results? Treasury considers whether the sensitivity tests carried out are reasonable and comprehensive. For instance, so that decision makers are fully informed it may be appropriate to consider what impact there would be on the appraisal results if say both estimated costs increase and benefits decrease, not just one or the other? What are the chances of that happening? What are the risk management strategies to address such possibilities? Do they involve additional costs that should be incorporated in the analysis? What contingencies have been allowed for?
- Changes to the scope of the project can affect results - eg changes to address public concerns as a result of the Environmental Impact Assessment process, or other factors. Such possibilities should as far as is reasonably possible be taken into account upfront in the sensitivity analysis. If the outcome of the Environmental Impact Assessment process significantly alters costs or benefits, the project should be reassessed to ensure that it is still worthwhile proceeding.

- There should be reassessment of major project parameters as project planning proceeds, and if these vary significantly reassessment of the decision to proceed with the proposed project may be necessary to avoid implementing a project that has negative net benefits.
- NSW Treasury's approach to its review of appraisals is pragmatic and practical. Common sense is adopted in interpreting results and aspects of the appraisal are clarified with agencies where necessary.
- To ensure that Treasury's advice to assist decision making in Government is timely and progresses smoothly, agencies should liaise with Treasury on an ongoing basis and ensure that draft appraisals are provided informally well in advance of formal submissions.
- Advice is available from NSW Treasury to assist agencies in the preparation of economic appraisals.

Part I - Overview and Reporting Requirements

1. Introduction

The New South Wales public sector is a major component of the State economy. The efficiency with which it uses resources can have a significant impact on the overall performance of the State economy and the welfare of its residents.

Expenditure on capital works by State Departments and Public Trading Enterprises (PTEs) is over $12 billion per annum. This expenditure is important not only because of its size, but also because it provides the economic and social infrastructure which is fundamental to the economic development of the State and the well being of its population.

It is vital to closely evaluate capital works proposals so as to ensure that the 'best value for money' is achieved and that scarce resources are allocated in the best manner.

The more than $12 billion spent on capital works each year is only the tip of the iceberg when the total stock of assets managed by the State is considered. The value of the capital stock of State Departments and PTEs is estimated to be well over $170 billion.

It is clear that the issue is not simply one of new capital expenditure but of the effective and efficient management of the existing stock of assets. Economic appraisal is also appropriate in other areas of public sector activities, including plan and program evaluation and the review of regulation proposals.

Economic appraisal is a way of analysing all the costs and benefits associated with a particular project. While economic appraisal techniques seek to place monetary values on those costs and benefits whenever possible, the techniques also make explicit allowance for the many costs and benefits which cannot be valued. These will often be critical to the decision, and economic appraisal allows explicit account to be taken of them.

A number of public sector agencies devote considerable resources to the economic evaluation of capital programs and asset management. The attention given to these techniques reflects their value to public sector agencies in internal decision making. These Guidelines are not intended to replace the approach followed by these agencies. Rather, they extend economic appraisal to all public sector agencies on a consistent basis. While economic appraisal does aid internal decision making, it can also assist in external review. These Guidelines therefore also aim to improve the information available to the Budget Committee.

The Guidelines:

- Establish requirements for the evaluation of capital works, tailored to the characteristics and scale of the specific projects;
- Provide a methodology to facilitate the ongoing efficient and effective management of assets;
- Encourage public sector agencies to evaluate all feasible options as early as possible in the planning process, including for example private sector involvement;
- Provide guidance on identifying the full range of costs and benefits from the overall State perspective;
- Set requirements for reporting the results of the evaluation to the Budget Committee; and
- Provide a mechanism for setting consistent key parameters such as the discount rate.

The Government approved in December 1988 the application of the Guidelines to all capital works proposals from 1989-90 onwards. Economic appraisals of proposals are required as part of capital works bids from public sector agencies, as set out in these Guidelines.

In 1989-90 a review was carried out of the Guidelines and the way they had operated in the first twelve months. Further reviews were carried out in 1995 and 2006. This edition of the Guidelines incorporates refinements from the latest review as well as the earlier reviews.

Economic Appraisal 'On a Page'

Economic appraisal is a systematic means of analysing all the costs and benefits of various options to achieve a particular service objective.

Economic appraisal is mandatory as it assists selection of those projects or programs which maximise benefits to the community relative to costs, or which are the most cost effective.

In essence, economic appraisal shows:

- Whether the benefits of a proposed project are likely to exceed its costs;
- Which among a range of options to achieve an objective has the highest net benefit; or
- Which option is the most cost effective, where benefits are equivalent.

Economic appraisals assist decision making among projects competing for limited Government funds. They are a mechanism for assessing the best possible value for the community from particular Government expenditure.

The results of an economic appraisal are not the only factors taken into account when making a decision, but they provide important information on the effects of each possible decision. The Guidelines establish the framework for agencies to undertake project analysis on a consistent basis.

Economic appraisal differs from a financial appraisal in several respects. Financial appraisal concentrates on the financial impacts for the agency sponsoring the project. Economic appraisal also considers external benefits and costs for the broader community – individuals, other Government agencies, and private sector organisations. Economic appraisal considers a wider range of costs and benefits of a project, with those costs and benefits assessed from the community's viewpoint..

An agency's strategic planning process should identify future project requirements in broad terms to meet the agency's overall objectives. The process may be iterative, with the strategic plan varying following economic appraisal of individual planned projects and vice versa.

Agency Capital Investment Strategic Plans (CISPs) or Results and Services Plans (RSPs) may contain elements which are "subject to economic appraisal". CISPs or RSPs may be in effect approved in principle, but this does not remove the need for proposals to be supported by economic appraisal. CISPs and RSPs may change in their detail as a result of economic appraisal of all feasible options to meet the stated service objective.

An economic appraisal should be undertaken at the earliest possible stage in specific project development, before any planning commitment, real or implied, is given to a particular option, for example in terms of size or scale.

It is sometimes beneficial for economic appraisal, value management, and financial analysis of a project to be undertaken concurrently, particularly in the early planning stages. For large projects, a preliminary economic appraisal may be required, and subsequently updated as new material and data become available.

It is recommended that agencies undertake post completion evaluations of projects – to see if the assumptions and conclusions varied from what was expected. In this way agencies should improve planning procedures and economic appraisals for future projects.

2. Economic Appraisal Techniques

2.1 Introduction

The basic feature of economic appraisal is a systematic examination of all the advantages and disadvantages of each practicable alternative way of achieving an objective such as solving a problem or overcoming a deficiency. This is economic appraisal's main strength.

While the techniques have been developed mainly in the context of investment decisions, the principles apply to any specific proposal for the use of resources or for spending or saving money. Economic appraisal sets the framework for thinking rationally about the use of resources through a systematic approach to capital expenditure and asset management decisions. The techniques of economic appraisal are also applicable to decisions with regard to the disposal of assets, the design or provision of standards or the assessment of plans (eg security of supply of services, environmental standards or Land and Water Management Plans).

Economic appraisal is applicable to the full range of public sector agencies ranging from self funding commercial public enterprises to budget sector departments whose output is not traded in markets or for which revenue is not received. (The former agencies also employ financial analysis). Where outputs cannot be valued in money terms, economic appraisal can still show the lowest cost way of providing a given output, or what different levels of output or levels of service would cost.

A range of recognised economic appraisal techniques exist. The major distinction between these techniques is the extent to which benefits are quantified.

2.2 The Major Economic Appraisal Techniques

2.2.1 Cost Benefit Analysis

Cost Benefit Analysis (CBA) is the most comprehensive of the economic appraisal techniques. It quantifies in money terms all the major costs and benefits.

CBA can be applied to most, if not all, public agencies that cover costs with revenue and to agencies which do not fully cover costs by revenue but which produce traded outputs. The technique is also applicable in varying degrees to social infrastructure such as schools, hospitals and public housing.

The key strength of CBA is that it considers on a consistent basis the benefits and costs of alternatives. Thus the outcomes for a range of options are translated into comparable terms which facilitate evaluation and decision making. Against this CBA does not by itself provide direct consideration of the distribution of benefits and costs and can require considerable data for satisfactory implementation. Further, the concentration on valuation of impacts can sometimes lead to the overlooking of impacts which cannot be valued quantitatively, although CBA does allow for the incorporation of such impacts.

Overall, CBA is most easily applied to public sector agencies producing outputs that generate revenue (for example water supply and electricity) or else where the major benefits can be quantified fairly readily (for example roads).

2.2.2 Cost Effectiveness Analysis

Where the output of a project is not readily measurable in monetary terms (using either actual or proxy values) such as in certain areas of health, education or social welfare, it may not be possible to apply CBA.

An alternative approach is available, that of Cost Effectiveness Analysis (CEA). This type of appraisal compares the costs of different initial project options with the same or similar outputs. CEA is applicable to a wide range of public sector agencies with strong community or social welfare objectives. For example, in the health sector, CEA could be used to assess the relative merits of alternative treatments for severe kidney problems in terms of relative cost for given increases in life expectancy. Of course the quality of this additional life expectancy would need to be considered in qualitative terms.

It should be noted that CEA cannot be used directly to compare projects with different objectives. Nevertheless, the fact that the costs and benefits are all identified will allow more informed subjective decisions to be made.

It should also be noted that while some benefits may be difficult to assess in monetary terms, the technique still requires the valuation of as many benefits of the project as possible.

Careful identification and analysis of **all** the benefits and costs remains a key element of CEA. The temptation to list the benefit of a project as "improved service provision" (or something similar) should be resisted. In all cases some better indicator of the benefits will be available.

2.2.3 CBA or CEA ?

It is rare to find a project where either all the benefits or none of the benefits can be valued. It is also hard to define what is meant by "can be valued": most benefits can be valued if sufficient resources are devoted to the task, although there may still be no real consensus about the valuations produced.

CBA is usually used where the major benefits of a project (as well as the costs) can be valued. This permits the decision maker to compare projects of different kinds. CBA is ideal in cases where there is sound information on which to base the analysis and where the scale of the investment justifies the work entailed.

CEA, on the other hand, is used where the major benefits cannot be valued in money terms. Instead, the costs involved in achieving some desired effect or output are compared. CEA therefore only allows a decision maker to compare options that have similar objectives. This, however, enables CEA to be more readily applied to the bulk of social and community service programs (as opposed to economic services).

In summary whether CBA or CEA is the most appropriate form of analysis is dependent on:

- the overall size/importance of both the project as a whole and the "difficult to quantify" benefits; and
- the effort required to value the "difficult to quantify" benefits and the likely accuracy of the valuation.

Chapter 5 provides more specific guidance to the use of the techniques in the context of the State's capital works program.

Either technique provides a framework within which all the benefits and costs of a proposal can be considered, whether they are monetary or non-monetary, and whether they accrue to the sponsor of the proposal or some other enterprise or individual. It should be noted that neither technique provides direct information on the distribution of costs and benefits, and in certain cases it may be necessary to draw special attention to the distribution of impacts.

For example, in certain cases, where the main beneficiaries of a publicly funded project may be a small number of private sector commercial enterprises, the distribution of benefits and costs among the public/private sector parties should be assessed to assist decision making.

2.3 Financial Analysis

The economic evaluation techniques outlined above have much in common with financial analysis. There are, however, significant differences.

First, a traditional financial analysis examines a project from the narrow perspective of the entity undertaking the project. It does not take account of effects on other enterprises or individuals. Thus, a proposal put forward by one Government agency may inflict costs (or confer benefits) on other Government agencies, on private sector enterprises or on individuals. These external costs and benefits must be taken into account. Similarly, a strictly financial analysis does not consider the opportunity cost of using resources in the case where the actual price paid by or to the entity is not a good indicator of the real value in terms of alternative uses.

Second, economic evaluation does not consider directly the payment of interest. Rather real resource flows are shown and time preference is taken into account by the use of a discount rate.

Third, in economic analysis capital expenditure is recognised as a resource cost at the time it is incurred whereas in financial analysis it may be shown amortised over the life of the project for taxation and other purposes.

In the public sector the fundamental requirement is usually for an economic appraisal. It should be noted, however, that the undertaking of an economic appraisal does not remove the need for a financial analysis. The financial analysis will show the demands on cash flow which will result from the project - an important factor when managing the State's finances. It will also show the rate of return from the project which is important for commercial agencies.

2.4 Other Appraisal Techniques

A variety of other techniques of varying degrees of usefulness exist. These include:

- Incidence analysis;
- Input - output (multiplier) analysis;
- Economic impact assessments; and
- Multiple objective programming.

Incidence analysis disaggregates the overall impacts of the options according to the impact on individual community groups. The disaggregation is commonly undertaken in terms of the income grouping of those affected by a specific development. As such it provides valuable information to decision-makers. Like multiplier analysis below, it is not an alternative to CBA or CEA but rather provides information on the distribution of benefits and costs.

Input-Output (Multiplier) Analysis is commonly used to assess the regional impacts of a project. In the simplest form of input-output analysis, input-output multipliers are applied to measures of direct impact to determine estimates of flow-on impacts in terms of income and employment. All such analysis is subject to significant limitations, and extreme care should be taken in its interpretation.

First and foremost, input-output analysis is concerned with measuring economic activity, and is not a tool for the evaluation of projects. Input-output analysis does not take account of the alternative uses (opportunity costs) of resources. Input-output analysis, however, will always indicate positive impacts - activity - without providing guidance as to whether such impacts correspond with net benefits. Poor investments, perhaps in heavily subsidised fields of endeavour, could be associated with greater levels of activity than good investments.

Second, published impact multipliers are inappropriate for assessing impacts associated with additional marginal investment. Published multipliers measure the overall linkages between an industry and the remainder of the economy, and are therefore concerned with average rather than marginal impacts.

Other concerns include:

- Often poor quality of the data on which regional input-output models are based;
- Double counting of impacts - value added, income and employment impacts are alternative measures of the level of activity, and should not be added together;
- Application of multipliers to measures of gross output - again, this leads to double counting; and
- Application of inappropriate multipliers - for example, employment multipliers indicate the employment flow-on effects associated with final demand, not with employment.

Economic Impact Assessments - Economic impacts of particular development proposals on their own, whether calculated by Input Output Multiplier analysis of Computable Generated Equilibrium models, are of limited use in assisting Government to make funding decisions on capital projects. Such analysis attempts to estimate changes to economic activity associated with a development.

All Government capital projects, however have economic impacts and generate employment. Those impacts, although positive, are not the primary objective of say a hospital, a rail line or a national park. An economic impact assessment of the positive impacts of one particular project does not help Government decide where it should allocate public funds.

More importantly, an economic impact assessment in the context of the primary objective of the project, does not relate the expected benefits to the costs involved - ie what benefits the community might expect to flow from the taxpayer funded costs involved.

Cost benefit analysis (economic appraisal) of specific project proposals, undertaken in accordance with Government policy and the procedures set out in these Guidelines, is appropriate for Budget submissions by agencies in support of capital project proposals.

Multiple Objective Programming is particularly valuable in the assessment of options which have several objectives which cannot be quantified in monetary terms. In such circumstances the results of CEA can be quite complex. Multiple Objective Programming uses mathematical programming techniques to select projects based on explicit objectives. Constraints to action and costs such as minimum levels of output or expenditure limits are modelled explicitly.

This techniques offers a basis for assisting a wide range of project or regulatory decisions. In its ideal form it fully reflects the goals and constraints of the decision process and permits the quantification of implicit costs of constraints. However, the results are only as good as the inputs to the model. In particular, the estimation of the weights for the various objectives in the decision function may be particularly tenuous. Consequently, the characterisation of the decision process may be unrealistic. In essence this technique assists in evaluating the results of complex applications of CEA.

3. Benefits of Economic Appraisal

3.1 The Role And Limitations Of Economic Appraisal

The prime contribution of economic appraisal is to provide the best possible information to decision makers at various levels within Government. In respect of capital works decisions, it will assist in the choice between projects. This choice can occur at two levels: one is the choice between alternative projects (or options) for achieving the same objectives; and the second is the choice between a range of projects, directed at a variety of objectives, which cannot all proceed due to resource constraints.

The tools of economic appraisal can also play an important role in the development of options and the design and implementation of the selected options. In this context it can assist in the choice of the most efficient option.

In regard to the existing capital stock, economic appraisal techniques assist in evaluating the optimal economic life of assets, evaluating whether assets should be redeployed, refurbished or replaced.

While economic appraisal is an important aid to decision making, the results of such appraisals will not be the sole determinant of decisions. A financial analysis will clearly be important as it will demonstrate the cash flow requirements of the project as well as the financial return to the agency concerned. A wide range of other objectives also feed into the decision process and a number of these cannot be effectively included in the analysis.

However if economic appraisal is to be fully effective it should be:

- Normal practice in all areas of capital works planning and approval, asset management, and ideally for recurrent programs;
- Carried out as early as possible in the development and approval stage for new capital expenditure and continued through the design and tender stage; and
- Carried out in sufficient detail and with examination of sufficient options consistent with the nature of and size of expenditure involved.

It may be beneficial for economic appraisal, value management, and financial analysis of a particular project to be undertaken concurrently, particularly in early planning stages. For large projects, preliminary analysis may be required, and subsequently updated as planning proceeds.

3.2 Benefits of Economic Appraisal

As noted above the ultimate benefit of a system of economic appraisal of assets is an improvement in the allocation of public sector resources to ensure the Government's objectives are met to the fullest extent possible and the benefits to the community are maximised. In achieving a better pattern of resource allocation future growth will be improved.

While economic appraisal techniques will contribute to the achievement of these community wide benefits, the Guidelines are also of direct benefit to the participants in the capital works process. This is reflected in the efforts made by a number of public sector agencies in the development and implementation of appraisal techniques.

3.2.1 Benefits to Public Sector Agencies

The Guidelines assist public sector agencies in the following ways by:

- Identifying and measuring all costs to an agency, economic appraisal provides the framework for consideration of the total costs of providing particular services, and thereby encourages the pursuit of low-cost solutions;
- Considering both up-front capital costs and ongoing recurrent costs, it can assist public sector agencies to evaluate the best mixture of capital and recurrent costs;
- Focusing on the systematic evaluation of alternatives, the discipline of economic appraisal can encourage new approaches at all stages in the development of a project from the concept stage to the final decision to proceed;
- Emphasising the quantification of benefits, it encourages managers of public sector agencies to question and re-examine the strategic objectives of the agency in undertaking the project; and
- Requiring an ongoing assessment and management of the stock of assets, not just focusing on the new capital expenditure decision, economic appraisal can help ensure that the State's public sector infrastructure is effectively and efficiently utilised.

3.2.2 Benefits to Budget Committee/Government

The Guidelines assist Government in the following ways by:

- Quantifying the net contribution of projects in a standard manner, the information base for decisions is improved, thereby assisting in the assessment of relative priorities;
- Quantifying and reporting all benefits and costs, it can help the Budget Committee ensure that projects are consistent with Government objectives;
- Including costs and benefits falling outside the agency (for example, reduced hospital costs associated with better roads), economic appraisal helps to maximise net benefits to society and capture the various linkages between projects (for example the relationship between road and public transport decisions); and
- Broadening the focus for new capital expenditure decisions to consider the utilisation of the existing stock of infrastructure, economic appraisal links new capital expenditure decisions to decisions about capital replacement, refurbishment and maintenance.

4. Steps in Preparing a Full Economic Evaluation

The key steps in economic evaluations are summarised in this chapter and are covered in greater detail in Part II.

Where projects are considered by agencies to be absolutely essential (for example, due to urgent health/safety reasons) and no realistic alternatives are available, a full economic appraisal may not be required. Such cases, however, must be discussed with NSW Treasury at the outset and will require detailed justification.

The following discussion outlines the steps which must be followed when preparing a standard economic evaluation. Within each stage a number of options are available. Each of the steps listed is relevant to CBA and CEA, though, with step 6, CEA does not express all benefits in monetary terms. The steps are outlined below:

4.1 Define Objectives (Refer to Chapter 7)

Every proposal to spend money must have an underlying objective. The importance of specifying objectives when considering investment proposals cannot be over-stated. The worth of an investment can only be evaluated in terms of its objective(s).

This objective should be related to the performance of a particular function, be clearly and unambiguously stated and be compatible with the broader Department, group or corporate objectives outlined for example in agency Results and Services Plans.

In certain circumstances, the achievement of an objective is essential (for example, meeting the statutory requirement to provide education services). This does not necessarily imply that expenditures to achieve essential objectives will be without choice, as various alternative methods of meeting the objectives are usually available. It may also be possible to vary the level or quality of service provided.

4.2 Identify Options (Refer to Chapter 7)

It is necessary to identify the widest possible range of realistic options at the earliest possible stage of the planning process. One alternative that should be considered is the possibility of the objective being met by the private sector.

In developing alternative solutions, the first option to be considered is the base case of "do nothing", ie retain the status quo. This is not to say the base case will not involve costs; in many cases doing nothing (for example, continuing with a low maintenance program) will result in cost penalties. One of the benefits of "doing something" may be the avoidance of these costs.

Options might include refurbishing existing facilities, variations in staging an investment (demand and population growth forecasts should be reviewed), demand management or maintenance by the private sector. Appraisals should report on all feasible options and clearly explain cases where potential options may not have been evaluated.

4.3 Identify Benefits (Refer Chapter 8, 9)

There are five separate types of benefits which may be relevant:

- **Avoided costs** - incremental costs which are unavoidable if nothing is done to solve a particular problem, but may be avoided if action is taken.
- **Savings** - verifiable reductions in existing levels of expenditure if a program proceeds. Where manpower savings are claimed, the clear identification of the areas of such savings and costs saved is necessary so that any post audit review can judge whether they have actually been achieved.
- **Revenues** - incremental revenues which result directly or indirectly from a particular program. Revenue changes which would have occurred regardless of the program must not be included.
- **Benefits to consumers not reflected in revenue flows**. For a variety of reasons, such as the nature of the service provided or equity considerations in pricing policies, the user of a service may not be charged a price which reflects the benefits received (for example, recreational use of national parks). While it may prove difficult, attempts should be made to quantify such benefits wherever possible. If quantification proves impossible, as much detail of the benefits as possible should be included in the report.
- **Benefits to the broader community**. Benefits of services such as police services flow to the community as a whole rather than to individual consumers. Alternatively, an activity may have secondary or subsidiary effects on groups or industries other than the direct recipient (for example, urban public transport can reduce pollution levels). Commonly the price will not reflect the benefits received and hence alternative means of valuing the benefits must be developed.

4.4 Identify Costs (Refer Chapter 8, 9)

All economic evaluations should be based on incremental costs and benefits associated with a particular program.

All **relevant** cost items which can be identified, quantified or estimated must be included. The stream of costs should cover the full project period which will be based on the economic life of the building or equipment. Assumptions underlying all estimates should be made explicit in the evaluation.

There is a danger that while great efforts will be made to identify both primary and secondary benefits, less attention may be paid to identifying all the costs of a proposal. It must be remembered that a project may impose secondary costs on the community, or groups within it, and attempts should be made to identify and value these costs.

4.5 Identify Qualitative Factors (Refer Chapter 8, 9)

Documentation of the economic evaluation should also include other relevant information which can affect the recommendation/decision. The costs and benefits which can be quantified are only part of an economic evaluation. Other aspects, such as environmental considerations, industrial relations, social or regional impact, safety, public relations, resource availability, and similar, will also have to be taken into account in choosing between competing options.

In every case these qualitative factors should be identified and where possible given a subjective weighting. The initiating Agency will have the best knowledge of what and how important these additional factors are.

4.6 Assess Net Benefits (Refer Chapters 10,11)

Once all costs and benefits over the life of the program have been identified and quantified, they are expressed in present value terms in CBA. For CEA a present value is only provided for costs. In doing these:

- Costs and benefits should be valued in real terms: that is they should be expressed in constant dollars and increases in prices due to the general rate of inflation should not be included in the values placed on future benefits and costs.
- The stream of costs and benefits (expressed in real terms) should be discounted by a real discount rate of 7 per cent, with sensitivity testing using discount rates of 4 per cent and 10 per cent.

Using the discounted stream of costs and benefits, the following decision measures should be calculated:

- Net present value (NPV);
- Net present value per $ of capital outlay (NPVI);
- Benefit-cost ratio (BCR);
- Internal rate of return (IRR).

4.7 Sensitivity Testing (Refer Chapter 12)

There will always be some degree of risk or uncertainty surrounding the outcome of an appraisal.

In addition to the preparation of the most likely estimate of costs and benefits, **projected outcomes under alternative scenarios should be prepared**. The purpose of such scenario analysis is to test the sensitivity of results and provide information on the robustness of the project to adverse movements in the range of variables determining its viability.

While one option might excel in some scenarios, it might produce devastating results under other scenarios. An alternative option might produce satisfactory results under all sets of assumptions. This option could well be considered the best solution to the problem.

While optimistic and pessimistic scenarios should be presented, particular emphasis should be given to the pessimistic alternatives.

The aim should be to select a realistic range of possible values for the major cost or benefit variables that could most significantly affect the project outcome.

4.8 Post Implementation Review (Refer Chapter 13)

A selection of the major projects undertaken by an agency should be subject to ex-post evaluations. In addition, major ongoing programs which may involve a series of smaller projects should be subject to such ex-post evaluations. These evaluations would involve:

- Re-evaluation of the benefits and costs of the selected option to assess whether the anticipated benefits were realised and the forecast costs kept to;
- Reconsideration of alternative options;
- Examination of the project design and implementation to assess the scope for improvement to the option adopted.

By examining these issues ex post evaluations will assist in the development and evaluation of future projects.

In addition, public sector agencies should implement procedures for ongoing asset management and assessment.

5. Application of Economic Appraisal Techniques

5.1 Introduction

This chapter sets out the broad procedures for applying economic appraisal.

Further details of the methodology to be used are given in Part II.

5.2 The Role of These Guidelines

These Guidelines are intended to establish a framework within which public sector agencies can undertake their appraisals. The framework covers both the reporting requirements for the Budget Committee and the structure of appraisal which is required by the Committee. These Guidelines, however, are not intended as an economic appraisal manual which could be applied in each agency, nor could a single document fulfil that purpose. Each agency needs to concentrate on the application of these general principles to their particular situation. Consultants may be helpful in this process (see Section 5.7).

5.3 Areas where Economic Appraisal Techniques should be used

The applicability of the Guidelines extend beyond new or replacement capital expenditure.

The Guidelines are capable of being applied to each of the following decision areas:

Assessment of New or Replacement Capital Expenditure, or Major Maintenance

This is the principal area of application of the Guidelines and an area of direct concern to the Budget Committee of Cabinet.

A distinction should be drawn between the evaluation of a new project and the replacement of an existing asset. While in the non commercial area it may be difficult to quantify certain benefits from new projects, the benefits from asset replacement, whether in the commercial or non commercial /social infrastructure area, should be capable of quantification.

When evaluating capital expenditure options, full consideration needs to be given to recurrent costs involved in the various options. Different options may have different staffing and maintenance requirements. There may be a choice between different levels of capital intensity in achieving a given objective.

Consideration may be given to the issue of demand management and in particular whether the current pricing structure for services provided is appropriate or whether alteration of the structure is desirable in order to change the level and composition of demand and hence influence the capital expenditure decision.

Asset Management

The Guidelines cannot simply be applied to investment decisions in isolation from consideration of the stock of assets in operation. For example, in the area of transport rolling stock, be it buses, freight wagons, passenger carriages or locomotives, an assessment needs to be made of the optimal economic life of assets or classes of assets. Even where economic appraisal techniques are applied at the stage of the acquisition of an asset and an economic life established, this will need to be kept under review in the light of actual operating conditions and the alternative provided by replacement.

One aspect of asset management is the ongoing review of utilisation of existing fixed assets. Public sector agencies need to evaluate their holding of assets in terms of the opportunity cost of disposing of the asset versus maintaining it in current use. For example, surplus land involves an opportunity cost which needs to be balanced against the planned use of the land. Since the original version of these Guidelines was published the Government has produced a Total Asset Management Manual which incorporates a range of complementary analytical procedures to assist efficient asset management. These should be used in conjunction with economic appraisal.

Assessment of the Appropriateness of Design, Operating and Other Standards

While standards are a useful form of guideline, an ongoing assessment needs to be made as to appropriateness in the context of changing demand patterns, technology and other external factors. It needs to be recognised that excessively rigid or demanding standards impose a cost in terms of the use of resources that could be employed in other areas.

Other Areas of Application

Economic appraisal as outlined in these Guidelines should also be applied to other areas as appropriate, such as Program Evaluation and Regulation Proposals and Review. This can apply to evaluation of proposed new recurrent programs as well as review of cost effectiveness of existing programs.

5.4 Application of Guidelines to the Capital Works Program[1]

The definition of 'capital works' used in the State budgeting system does not in general accord with the distinction between capital and recurrent expenditure used in the private sector. The principles of economic appraisal, however, are equally applicable to capital and recurrent expenditure. The Guidelines given below are therefore based on the size of the project rather than its nature.

Economic appraisal of projects being submitted by agencies as part of their capital works bid is required. Nevertheless, it would clearly be inefficient to undertake a full, formal appraisal for even the smallest capital work. An agency might have many hundreds of these in a single year, and even the paper work involved in appraisals would be overwhelming.

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[1] The State's capital expenditure program, or State Infrastructure Program, as contained in Budget Paper No. 4.

Guidance is therefore needed on what scale of appraisal is required in any particular case. The development of exact rules is difficult. While a $1 million project might be regarded as small by one agency, it could be a major capital works project to another. And while the capital costs involved in a project might be small, the associated recurrent costs could be substantial. Or the secondary benefits (and costs) associated with a project could be significant.

While a general guide is given below on when appraisals should be undertaken, there will therefore always have to be scope for flexibility. The Budget Committee may decide that lower or higher thresholds are appropriate in some cases. Public sector agencies should discuss their position with Treasury if they have any doubts about their situation.

In principle, capital works projects can be split into various types. The following categories of works have been established for general guidance:

(1) 'One-Off' Projects With Total Cost Under $1 Million

One-off projects are unlikely to merit a full, formal appraisal. The criteria which are used to assess them should be appraised to ensure that all possibilities are being considered, and that relevant factors are not being ignored. Such an appraisal should be undertaken at regular intervals: at least every five years. These procedure appraisals should be submitted to the Budget Committee.

(2) Projects With Total Cost Under $1 Million Which Are Part Of An On-Going Program

If a project is part of an on-going program, then the program should be formally appraised at regular intervals: at least every five years. The appraisal would consider the program as a whole, assessing its benefits and its costs. Individual projects within the program would then have to be considered only to ensure that they accord with the criteria laid down for the program as a whole. These program appraisals should be submitted to the Budget Committee.

(3) Projects With Total Cost Of $1 Million Or Over

A large project should be the subject of a full appraisal in its own right. For larger projects it may also be useful to undertake some form of "program" evaluation where this is appropriate, for example the benefits of programs to reduce water pollution. Such appraisals are likely to be the best way to generate values of key parameters to be used in individual project appraisals.

When applying these Guidelines, a key issue will be the definition of a project. This is discussed in more detail in Chapter 7. Care must be taken to avoid excessive disaggregation.

5.5 Choice of Technique

As discussed in Chapter 2, a decision needs to be made on the appropriate appraisal technique to be applied.

In essence there are two criteria that should be applied to determine whether CBA or CEA is the relevant technique for a specific project:

(1) Ease with which benefits can be valued

Benefits can be valued by:

- market prices for the outputs of commercial agencies such as the electricity distributors and the various water suppliers;
- valuations based on imputed benefits to the community such as travel time savings with improved roads; and
- market research estimates based on revealed preference of customers in areas such as visits to national parks or art galleries.

Any of the above three approaches is a legitimate method for placing a value on benefits for CBA, whilst each will require a different level of resources and, in each case, the resulting figure will differ in its degree of accuracy. In some cases valuation would be extremely expensive and the resulting figures very uncertain.

The ease of valuation of benefits is related to both market relationships and the degree of externalities in the benefits provided.

However, while a necessary condition for CBA, ability to value benefits is not a sufficient condition.

(2) Relative importance of the project and the quantifiable benefits provided

Due to the informational demands of CBA, the project and the benefits have to be of reasonable significance to justify the resources required for CBA. Factors to be considered here include the:

- Overall size of the project;
- Relative importance of those benefits that can be valued relative to the total benefits of the project; and
- Importance of the quantifiable benefits relative to the overall objectives of the agency.

For example, the recreational benefits of both a local picnic ground or the Darling Harbour project can be valued, but only the scale of the latter would justify the use of CBA.

To summarise, CBA will normally be used where the major benefit can be readily valued. CEA will be used where this is not the case.

An assessment has been made of all significant areas of capital expenditure, based on the twin criteria of ease of valuation of benefits and relative significance. In very broad terms, it is proposed that CEA should be used in the areas of education, health, welfare, the environment and law and order, while CBA should be used in all other areas.

Where any doubt exists concerning the application of economic appraisal principles, early contact should be made with Treasury.

5.6 Project Bias

International research on major infrastructure projects has found evidence of systemic bias in project appraisals, attributed to a *"tactical under- and overestimation of effects in the initial stage of project development (to) make projects look good in cost-benefit analyses and environmental impact assessments."*[2]

The research suggests a tendency for the costs of major projects to be underestimated and for demand forecasts to be inflated. These conclusions are based on case studies of several hundred major infrastructure projects in over 20 nations and 5 continents.

This tendency results in a choice of projects that may not have been economically efficient. That is, some projects proceeded that should not and some other projects failed to proceed.

As planning for any project proceeds, initial cost estimates are often revised upward as more detailed investigation is undertaken. NSW Treasury has also observed at times tendencies in some project appraisals that would support the findings of the detailed international research.

Consequently the potential for project bias will be given due consideration in economic appraisal from the outset, including discussions between a proponent agency and NSW Treasury. Any indications of project bias will be closely scrutinised as part of Treasury's review of economic appraisals submitted in support of funding requests.

The most appropriate way of addressing the issue, particularly for new projects which are "out of the ordinary" for an agency, is to ensure that the cost and benefit assumptions and data used in the analysis are reasonable, when compared with actual data from broadly similar projects undertaken in the past, or similar projects completed inter State or overseas. The analysis should also incorporate adequate sensitivity analysis.

Where data isn't readily available or where, for example, future demand forecasting is difficult, appraisals should use sensitivity analysis. This analysis would indicate by how much expected benefits would have to fall short of expectations for the project to remain worthwhile or become marginal - then consider how likely that would be.

Sensitivity tests on the expected cost and benefit aspects (such as benefits derived from expected patronage) for the preferred option should not just be the standard "+ or – 10 or 20%" analysis often applied to those individual components, but should draw on empirical data and factual experience from recently commissioned "like" projects – ie what was the expected outcome, and what was the actual outcome.

The percentage change between what was expected and what resulted, say for usage, can then be applied to the subject project; for example, reducing expected benefits by a similar percentage, or increasing estimated costs by a percentage.

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[2] *For example, Flyvbjerg; Bent, Nils Bruzelius and Werner Rothengatter. 2003. "Megaprojects and Risk", Cambridge University Press, Cambridge; Mott MacDonald (2002) "Review of Large Public Procurement in the UK".*

A sensitivity test that combines the two possible variations in both expected costs and benefits may also be appropriate.

Such sensitivity analysis should highlight the degree to which project appraisal results may be influenced by over optimistic demand or cost data, and improve confidence in the findings of the appraisal.

If the impact on appraisal results were found to be significant, then risk management strategies to address such possibilities should be explained in detail.

5.7 Setting of Key Parameters

It is essential that there is a consistent approach to the setting of key parameters for otherwise it will not be possible to compare results between agencies.

Treasury produces on an annual basis, key economic, physical and resource variable projections in the Budget Papers (see www.treasury.nsw.gov.au).

Where appropriate, alternative scenarios should be produced (see Chapter 12).

5.8 Consultancy Services

While a number of agencies have developed expertise in the area of economic appraisal, not all public sector agencies will have had experience in this area. Some may therefore wish to employ consultants, either to establish a general procedure for appraisals in a particular agency or to undertake individual appraisals.

In other cases an agency may not have the in-house resources available from time to time to conduct all appraisals and will hire consultants to bridge the gap.

Considerable benefit is seen from obtaining outside assistance in terms of providing a fresh view on possible options and other matters. While not mandatory, public sector agencies are encouraged to consider external resources, at least for selected projects where the size, complexity, or importance justifies their use. Government agencies should aim to spread their economic appraisals among a range of consultants in order to gain the benefit of different approaches to particular problems. NSW Treasury can provide general advice relating to economic appraisal consultants.

5.9 Individual Agency Guidelines/Manuals

Some Government Agencies have established procedures and parameters to cover economic appraisals in their particular field.

This can be a desirable approach where there is consensus about the appropriate procedures for valuing costs and benefits, as the setting of parameters in a given area can simplify and reduce the effort and cost of economic appraisal.

Agencies who wish to establish general procedures for their appraisals (perhaps after undertaking research of the type outlined in Section 14.5) should submit drafts of proposed guidelines or manuals to Treasury at an early stage. This is to ensure consistency with the Treasury Guidelines and, where appropriate, consistency between individual Agencies in related areas in terms of values of commonly used parameters.

5.10 Pooling of Knowledge

Some public sector agencies will face similar problems in undertaking economic appraisals. There is therefore a great deal to be gained through knowledge pooling.

For instance, it might be appropriate for two or three agencies to undertake a joint research program, perhaps into issues such as benefit valuation. This will both reduce costs and encourage a consistent approach to issues.

It is recommended that such issues be raised with NSW Treasury in the first instance to assist coordination.

6. Reporting Requirements and Procedures

6.1 Introduction

Economic appraisals are used both by agencies and Ministers (in deciding on the projects to include in their annual capital program bids) and the Budget Committee (in deciding between bids).

The Budget Committee has overall responsibility for formulating the State's capital and recurrent programs each year and as part of this process undertakes a review and approval role in respect of new capital project proposals. In undertaking this role the Committee is greatly assisted by its consideration of the results of economic appraisals of new capital project proposals. However, a balance needs to be struck between giving the necessary information and avoiding excessive demands on the Committee through the volume of submissions.

This chapter sets out procedures and reporting requirements based on the scale, sensitivity and characteristics of the projects involved. It can also be anticipated that the Committee will want to make exceptions to the reporting requirements laid down below in those cases where it feels that the provision of more information is desirable.

6.2 Treasury's Role and Contact Points

The roles of NSW Treasury in respect of economic appraisal and the relevant contact points are given below:

NSW Treasury - Office of Financial Management

- **Economic and Fiscal Directorate**

  Contact: Roger Sayers (Senior Economic Analyst) Tel.9228 4641, Fax.9228 4041

  - Maintains Guidelines.
  - Contact point for technical matters.
  - Reviews economic appraisals for consistency with Guidelines (projects over $10m)
  - Provides advice to Budget Committee on micro-economic aspects
  - Contact point for individual project appraisals over $10m.

- **Resource Directorates**

  Contact: Individual Agency Relationship Manager

  - Reviews appraisals for consistency with Guidelines (mainly projects between $1m and $10m).
  - Provides advice to Budget Committee on funding aspects.
  - Ensures economic appraisals have been submitted in respect of all relevant new capital projects included in annual forward capital program bids by agencies.

6.3 Early Liaison

It is strongly recommended that in cases where economic appraisals may involve contentious issues, or for advice on issues that should be addressed in a particular appraisal, early contact be made with NSW Treasury.

6.4 Timing

It is mandatory that economic appraisals have been completed for all new capital projects included in program bids for the coming year.

Economic appraisals, especially of major projects, should be submitted during the course of the year prior to the annual capital program bid being submitted to NSW Treasury. The purpose of this is to ensure that any matters requiring discussion are resolved before budget submissions. If necessary reports may accompany annual capital bids.

Where projects come within categories (2), (3) or (4) below, early contact should be made with Treasury to inform them of the project review.

6.5 Reporting Of Results of the Analysis

In addition to other budgetary reporting requirements, the following information will be required to accompany Budget submissions.

(1) Projects With A Total Cost Under $1 Million

There are no additional reporting requirements, though it would be expected that economic appraisal techniques would be applied according to the outline given in Chapter 5, as appropriate. Naturally the degree of accuracy and size of the study should be related to the significance of the project. From time to time review of specific areas that fall outside normal reporting requirements may be requested.

(2) Projects With A Total Cost Of At Least $1 Million But Less Than $10 Million

Budget submissions are required to include summaries of the results of the economic appraisal undertaken in accordance with the Guidelines. The summaries should be sent to the relevant area of NSW Treasury's Resource Directorates.

Pro-formas which may be used in the preparation of summaries are provided in Appendix 6.1 for CBA and in Appendix 6.2 for CEA.

The appraisal is not necessarily subject to external review as a matter of course, although the Budget Committee may request copies of the appraisal or their review by NSW Treasury or an outside expert.

(3) Projects With A Total Cost Of $10 Million Or Over

Submissions to the Budget Committee are required to include a copy of the appraisal in support of bids for capital funds, in addition to summaries of the results of economic appraisal in accordance with the pro formas (see Appendix 6.1 and 6.2).

Copies should be sent to the relevant agency analyst in NSW Treasury's Resource Directorate, who will liaise with the Senior Economic Analyst in the Economic and Fiscal Directorate.

Submission of economic appraisals should be accompanied by a Ministerial letter which indicates support or otherwise for the findings and recommendations of the study.

Where external consultants have been employed to assist with an appraisal, the formal terms of reference for the study are to be included with the appraisal.

NSW Treasury's assessments of these appraisals is integral to its advice to the Budget Committee. Consequently liaison with NSW Treasury on appraisals should occur well in advance of Budget submissions.

(4) Designated Projects

The Budget Committee may identify certain projects as designated projects and assign specific reporting conditions to those projects.

(5) Essential Projects

Where projects are deemed to be essential (for example, for health or safety reasons) a full economic appraisal may be superfluous. It is still necessary, however, to consider fully the project objective and all feasible options to produce the desired outcome in the most cost-effective manner. If an agency wishes to claim an exemption on these grounds, early contact should be made with NSW Treasury. Subsequent submissions will need to provide the justification for not undertaking a full economic appraisal.

(6) Special Studies Of Capital Works Programs

Under this category, reviews will be undertaken of areas of the Capital Works Program where it would not be practical to review individual capital items. Examples could include public housing, police stations, schools etc. This would include reviews undertaken under sections 1 and 2 of Section 5.4.

(7) Ex Post Evaluation

The Budget Committee will specify certain projects for ex post evaluation reporting. This subject is covered in Chapter 13. It is expected that public sector agencies will institute procedures for ongoing review of assets to determine if they are most effectively deployed.

6.6 Recurrent Costs

It would be expected that where a capital proposal qualifies for additional recurrent funding, the extent of funding required would be determined by reference to the economic appraisal.

In any event changes in recurrent costs associated with new capital project proposals should be separately identified in appraisal reports.

Appendix 6.1: Summary Schedules for Cost Benefit Analysis

The aim of these schedules is to assist in outlining the basic results of the appraisal. Schedule A is designed to give an outline of the objectives of the proposal, since a proposal cannot be judged without knowledge of its objective.

Schedule B summarises the various options considered, covering both the financial summary statistics which can be calculated and those factors on which a monetary valuation cannot be placed (these should be listed under 'special considerations'). The Schedule also asks for the reasons for choosing the preferred option.

Schedule C details the assumptions which have been built into the appraisal. Some assumptions will have been provided by Treasury. Others will have been developed by the agency in the context of the particular proposal.

Schedule D should only be completed when the program concerned is revenue generating.

Schedule A: Project Description

1. Project/Investment Name:

2. Physical Location:

3. Project/Investment Description and Objectives:

4. Project/Investment Context:

(Specify how the project relates to the agency's capital and recurrent expenditure structure, ie programs and administrative units and whether there are options to refurbish existing assets or alter pricing structure as an alternative to the capital expenditure proposal).

5. Relationships/Interdependencies

(Specify how the project relates to other projects or programs both within the agency and with respect to other agencies).

6. Description of the Benefits Expected

(Specify in qualitative terms the level and type of benefits and their distribution)

7. Were consultants used in the preparation of this appraisal?

If yes, give the name of the consultant.

Schedule B: Summary Of Evaluation Results For Options Considered

Specify the range of options considered in order to meet the project objectives. Results should be presented as incremental to the **BASE CASE**

Option 1 (Preferred Option)

Description:

Life: (Years)
NPV:
NPV per $ of Capital Outlay:
BCR:
IRR:
Present Value of Costs:
Brief Results of Sensitivity Analysis:
Special Considerations (both quantitative and qualitative):

Option 2

Description:

Life: (Years)
NPV:
NPV per $ of Capital Outlay:
BCR:
IRR:
Present Value of Costs:
Brief Results of Sensitivity Analysis:
Special Considerations (both quantitative and qualitative):

Option 3

Description:

Life: (Years)
NPV:
NPV per $ of Capital Outlay:
BCR:
IRR:
Present Value of Costs:
Brief Results of Sensitivity Analysis:
Special Considerations (both quantitative and qualitative):

Other Options:

Reasons For Preferring Option 1:

Schedule C: Evaluation Assumptions

Assumptions	Time Period		
	Year 1	Year 2	etc
Real Charges/Rates			
Real Labour Costs			
Real Energy Costs			
Demand Growth			
Other (please specify)			

Schedule D: Effect on Accounting Income

(To be completed only by commercial agencies)

1. Income Statement Projections Without Project

2. Income Statement Projections With Project

3. Cash Flow Projections Without Project

4. Cash Flow Projections With Project

Appendix 6.2: Summary Schedules for Cost Effectiveness Analysis

The summary schedules for cost effectiveness analysis are very similar to the first three schedules for cost benefit analysis. Schedule B has, however, been amended to show different summary statistics.

Schedule A: Project Description

As per statement A of Appendix 6.1

Schedule B: Summary of Evaluation Results for Options Considered

Specify the range of options considered in order to meet the project objective. Results should be presented as incremental to the **BASE CASE**

Option 1 (Preferred Option)

Description:

Life: (years)
Measure of Benefits:
Present Value of Costs:
Special Considerations (both qualitative and quantitative):

Option 2

Description:

Life: (years)
Measure of Benefits:
Present Value of Costs:
Special Considerations (both qualitative and quantitative):

Option 3

Description:

Life: (years)
Measure of Benefits:
Present Value of Costs:
Special Considerations (both qualitative and quantitative):

Other Options:

Reason For Preferring Option 1:

Schedule C: Evaluation Assumptions

As per statement C of Appendix 6.1

Part II: Economic Appraisal in Detail

7. Defining Objectives And Projects

7.1 Clarification Of Objectives

The starting point, and in many ways the most crucial aspect, for the evaluation of an investment proposal is the specification of the objectives of the proposal and their relation to the overall objectives of the agency. No appraisal of the project can be meaningful unless the objectives are clearly defined. Obviously, the recommended project should be shown to contribute to the overall objectives of the organisation. The economic appraisal will demonstrate that the proposal is the most effective means of achieving these objectives.

Specifying objectives will provide the starting point for, and give guidance to, the development of proposals. It should be noted that an excessively narrow definition of objectives may focus on means rather than ends and so unnecessarily exclude innovative alternatives. For example, if the objective of a proposal specifies that a particular agency provide a service, then the possibility may not be considered that the service could be provided more effectively by another agency or by the private sector. Conversely, excessively broad objectives may not provide the degree of focus necessary.

Key elements in this process are the corporate (or strategic) planning and program evaluation mechanisms including Results and Services Plans of an agency. Because strategic planning mainly deals in the broadest context, the criteria to be applied at this level commonly differ from those used to evaluate individual investments at the micro level. The economic appraisal process should interact with the strategic planning process within the agency, indicating the need for review of aspects of corporate objectives over time.

Consistency with Government and agency strategic objectives should be the first screening device in determining the suitability of a particular investment proposal or program for inclusion in a strategic plan. Investments which pass this initial screening should then be subjected to the evaluation process outlined below.

7.2 Scope of Project

The scope of the project to be evaluated is also an important issue. Projects or programs will contain a range of elements related to one another and the point at which a discrete project can be identified will require careful judgement.

Three tendencies should be avoided.

(1) Excessive Disaggregation

A project may consist of a series of component parts. In such circumstances it is the evaluation of the larger project which is critical and it is essential that this be provided, not just an evaluation of the individual component parts. The evaluation of sub-components can play an important role in the development of the most cost effective overall solution but the analysis of sub-components should not be undertaken in lieu of the analysis of the wider project, to ensure that the project as a whole is of net benefit.

Project interdependencies may also arise in which the costs or benefits of one project are dependent on whether or not a second project or group of projects, goes ahead. The appropriate response is to evaluate projects as a single project (see also Section 3 below).

(2) Excessive Aggregation

If the analysis is too aggregated, some sub-components may be justified (in the analysis) not necessarily because of their own merit but because of the overwhelming net benefits of other components. In these cases there may be components with distinct objectives which are in fact independent of other elements and should be evaluated independently.

An example could be the case of upgrading a stretch of road involving two sets of roadworks, each of which could proceed independently of the other. Suppose Project A has benefits of $20m and costs of $5m and Project B has benefits of $5m and costs of $5m. If the roadworks are considered jointly, then the benefit to cost ratio (BCR) is 2.5 (total benefits of $25m, total costs of $10m) but Project B has a BCR of only 1, considerably below the BCR for the projects considered jointly.

(3) Failure to Account for Linkages to Other Projects

All Works or expenditures necessary for the achievement of the project's objective should be included in the evaluation. If the project involves an expansion of an agency's outputs, it may place pressures on other areas of the agency's activities or those of other agencies and require increased expenditures in these areas. Such expenditures should be included. For example, resolution of a bottleneck within the road system may require expenditures on feeder roads to achieve the benefits to motorists of eliminating the bottleneck.

Overall, the principles to be adopted are:

- Projects should be evaluated at a decision point equivalent to the minimum level of aggregation consistent with the existence of independent alternative ways of directly achieving the objectives of the agency.
- The project to be evaluated should include all work necessary for the achievement of the objective. Components which are not necessary for the achievement of the objectives should not be included.
- The evaluation of subsidiary components may assist an agency to develop a more effective option at the aggregate level and is encouraged.
- Component evaluations do not reduce the need for the evaluation of the total project.

7.3 Alternatives to be Considered

An appraisal of a single option generally will not meet the standards set in these Guidelines. Alternatives should be considered, canvassing the main options that will meet the objectives. The alternatives considered should, wherever possible, cover:

(1) Various Means of Achieving the Stated Objectives - Options

Often there will be a large number of options and it will not be feasible to evaluate all these options. Usually options can be grouped on the basis of like characteristics and the range of alternatives considered structured to include a representative option from each grouping.

In some cases, especially for major projects, an iterative analysis will be appropriate. First, the most promising groups may be selected from a broad range of options using a more broad-brush analysis. Subsequently, further evaluations are carried out to fine tune the alternatives and choose the best available variation within the group of options.

The need for an *iterative* option development and evaluation process

Economic appraisal should be central to an iterative project planning process, particularly for major projects, with analysis outcomes guiding the development and refinement of project options. The detail and accuracy of analysis continually improves through the process.

Initial analysis of certain costs or benefits could lead to conclusions about the most likely design of an economically optimal option. However, further, higher-quality analysis could then reveal that these costs or benefits are much more, or much less than initially estimated. Option development and evaluation could then change direction in response to this improved information.

This contrasts with an unacceptable linear approach to project development, whereby a preferred solution may be predetermined, and analysis concentrates on justifying this option.

"Do Nothing" option

One option which should always be included as the base against which other options are to be compared is the "do nothing" option. The benefits and costs of the proposals are derived through the comparison with this base case. It is important that the "do nothing" case is carefully specified and its costs and impacts are fully quantified. The "do nothing" or base case option may prove to be the preferred option.

In specifying the base case, care should be exercised to ensure that it is a realistic "do-nothing" case. It is not a "spend nothing" policy but rather is based on the continuation of current services. In the case of asset replacement decisions it may involve deferral of replacement and continued maintenance and/or eventual replacement with a new asset of comparable standard to that being replaced. In the case of system augmentation or an expansion of activities, the base case would represent a continuation of the existing system or policies.

Possible errors are, firstly, a failure to fully specify the costs of the base case and so implicitly reduce the services that can be provided. At the other extreme the specification of large elements as "essential" may see the base case so broadly defined as to be, in practice, another project case.

Option development

Investment decisions where there are no realistic choices are rare. The challenge is to generate and specify a realistic set of alternatives. The following list of questions may be useful in generating such options:

- Could the operation be scaled down or closed, releasing resources for other uses? (In which case an option requiring less expenditure than the base case would be considered). This option could be particularly important in cases where the replacement of an existing asset is under consideration. The appraisal should consider whether replacement is justified before considering the options for the nature and the timing of the replacement.

- Could the operation be contracted out?
- Are different sizes or quality of operation possible?
- What is the sensitivity of demand to the level and structure of pricing? Is it a realistic alternative to capital expenditure to vary the pricing structure?
- What is the effect of varying the design life of the scheme?
- What alternative locations are possible?
- Are there choices of technique involving a trade-off between (say) labour and capital or capital and maintenance costs?
- Are there different materials, which would cost less or need less maintenance? Would better training of staff reduce manpower requirements?
- Are all elements of the operation equally justified? Would removing some of them increase the NPV?
- Could the operation be combined with another or divided into parts to advantage?

It is possible that these questions might prompt some redefinition of the objectives.

(2) Alternative Time Paths And Output Levels For The Implementation Of The Options

An important aspect of the construction of the alternatives is the variation in the timing of investment projects. It is through the investigation of such alternatives that the optimal timing for the project may be discerned.

The optimal date for commencing an investment project can be estimated by calculating the NPV of the project for different starting times. This can be presented graphically by plotting investment project NPV as a function of time of commencement; this will allow the optimal starting date to be determined by inspection.

Furthermore, options may exist for the staging of proposals for increased capacity.

For many public sector agencies, each investment project may be one of a sequence of projects that will be undertaken over time. There is therefore choice (options) concerning how large the projects in the sequence are to be built (in terms of, say, the annual output capacity of the project).

In determining how large to make each increment or project (and the timing of that increment), agencies should consider the following basic facts, which are nearly always in conflict:

- It may pay to build large increments to the system because there are often cost savings (economies of scale) involved with increasing project size;
- The commitment to capacity that will not be used for a long time is costly and often entails greater risks. It may therefore pay to defer investment.
- The importance of maintaining maximum flexibility.

In view of the interaction of these factors, a range of options for the staging of proposals should be considered. It should be stressed that in view of the chronic uncertainty about the future state of the world, the flexibility of smaller scale investment, or a timing delay which provides for better quality information, may be a particularly important benefit.

(3) Apparent Constraints

In practice, selection and consideration of options is the step in the evaluation process where many constraints are taken as given without much questioning. For instance, options which are technically feasible may appear to be ruled out by legal, financial or political constraints.

However, although undue time and effort should not be spent on evaluating such options, constraints of this kind can be changed and should not always be taken for granted. On the same note, technical constraints and standards may have been set without full consideration of the costs they impose. It is often possible for technical constraints to be overcome at a cost.

(4) Real Options

"Real options" is a methodology sometimes used in financial analysis of proposed investments, to highlight the value of being able to choose future courses of action, in response to uncertainties which may become clearer, through research for example.

"Real options" methodology aims to quantify the value of investment decisions that in effect keep options open that might otherwise be closed off on the basis of initial NPV assessment, for example until trends in demand or costs become clearer.

If trends in demand or costs can be clarified, albeit at a cost, a "better" decision may then be possible. So in some cases a positive dollar value will be inferred from keeping options open. Some "real option" proponents claim that value would not have been recognised under a "standard NPV assessment".

As such, some proponents of "real options" claim the approach is an improvement on traditional NPV investment appraisal. But it is a moot point whether the quantification sought under "real options" represents a practical improvement for most public sector applications, which do not have a "profit" component.[3]

The potential benefits of keeping your options open, not putting all your eggs in one basket, and "buying time" are of course intuitive, and indeed are covered in these Guidelines (see references below).

In fact economic appraisal also places values on different options, such as: do nothing, staging options, deferring commencement, re-evaluating as the project progresses, abandonment, sensitivity analysis, and incorporating risk probabilities in the cash flows etc.

Determining the value of a "real option" requires undertaking a NPV analysis of multiple probability weighted scenarios, consistent with these Guidelines. A rigorous economic appraisal consistent with these Guidelines should incorporate all of the scenarios which involve "real options". That is, economic appraisals that adhere to these Guidelines will essentially address the objectives of a "real options" methodology.

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[3] *The view that a "real options" approach is a superior appraisal technique to "traditional NPV calculations" rests on false assumptions about "traditional NPV calculations", including that such calculations deal with risk by adjusting the discount rate. Although incorporating risk aversion through the discount rate is common practice in financial analysis, it is not in economic appraisal carried out in accordance with these Guidelines. These Guidelines require risk to be addressed through sensitivity analysis and adjustments to expected cash flows.*

Contemplating the presence of future options such as abandonment, deferral, contraction, staging, expansion or otherwise modifying a proposed project in terms of "real options" may be a useful check on the thoroughness of an economic appraisal. An example of a "real option" for a public sector proposal is from granting 'approval in principle', but subject to further analysis and without firm commitment. Preliminary specific expenditure may sometimes be approved for doubtful projects to better investigate project feasibility, without committing large sums of money to the project itself.

Caution should be exercised. Although risk is fundamental to creating value, particularly in the private sector, the "real options" concept has not been universally embraced in the private sector, it being criticised for encouraging investment paths that amount to "gambling with shareholders' money"[4].

Agencies must avoid developing contrived scenarios and avoid unduly raising community expectations by using "real options" as a tool to keep options open that would otherwise be closed. Where there is any doubt, NSW Treasury's advice should be sought. NSW Treasury is conscious of an internationally observed tendency for optimism bias in the formulation of project appraisals as outlined in Section 5.6.

Adherence to these Guidelines is a NSW Government requirement, and helps ensure a consistent approach by managers across government. Following their introduction in 1988, the Guidelines have been revised several times to incorporate aspects learnt from experience with their application. They clarify the basis on which appraisals should be undertaken.

The Guidelines:

- require consideration of the widest possible range of options to address a clear project objective.
- spell out the range of options that should be considered, including deferral, staging, scaling down, closing. They indicate that an iterative process may be appropriate, and that as circumstances change appraisals and decisions should be revisited.
- discuss the desirability of maintaining maximum flexibility.
- discuss different ways to address risk and uncertainty.

Nevertheless, while NPV results of economic appraisal will assist decision making, they are not the sole basis for decision making.

7.4 Conclusion

In defining the scope of the project and the alternatives to be considered:

- **The objectives for the project should be defined in terms of the overall objectives of the agency;**
- **The scope of the project evaluated should be such that the project is a discrete whole - although separate evaluation of subsidiary components is encouraged as it can assist in the development of the most effective solution;**
- **The options considered should include alternative means of providing the services required, alternative levels of output and alternative time paths for their implementation.**

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[4] *This criticism arises from concerns that a focus on real options may lead to more risky projects being pursued than would otherwise be the case. "Option valuations only make sense when applied to projects that can be terminated early at low cost if things don't go well." ("Making Real Options Really Work" by Alexander B van Putten and Ian C MacMillan, Harvard Business Review, December 2004.)*

8. Assessment of Project Period

8.1 Matters Affecting Project Period

All costs and benefits attributable to a project should be included in the evaluation and hence the period covered by the evaluation needs to be long enough to capture them. The appropriate determinant of the project period will normally be the assessed economic life of the major asset involved in the investment proposal. Once a project period of, say, 20 years has been reached, the analysis will be relatively insensitive to the choice of a longer project period due to the discounting of future costs and benefits. In view of this and the difficulty of forecasting costs and benefits over such long periods, caution should be exercised in adopting a project period, longer than 20 years. Certainly the project period should not exceed 30 years.

In practice an investment proposal is likely to be composed of assets with a range of economic lives. Hence, the renewal and replacement of assets with a shorter economic life should be included in the analysis, while a residual value should be assigned to assets with a longer life.

Frequently the investment proposals being compared in the evaluation will have varying lives for the principal assets. For example, different lifetimes may be encountered in deciding whether to make a product or provide an in-house service versus buying the product or service from an outside organisation; or to replace existing plant and equipment with new plant.

Three approaches have often been used to make choices under these circumstances. One method is based on the assumption that each option with a shorter lifetime will be repeated at the end of its life until the end of the assessed project period for the evaluation which may be based on the option with the longer lifetime. A second approach is to make the options comparable by converting the net cost/benefit streams of each option to an equivalent annual figure (eg equivalent annual cost). The third approach is to calculate the annual cost of each option in perpetuity.

It is generally considered that the first approach is acceptable and provides a simpler form of analysis. However, a piece of plant or equipment would be continually replaced by similar equipment. Due consideration and reference should be made as to the practicality or feasibility of such an assumption.

It is difficult to quantify the benefits of the lower level of risk which may be associated with assets with shorter lives. Commonly, the capital costs of the asset with a shorter life are lower, hence sunk costs are lower. The greater frequency of replacement enables the benefits of improved technology to be incorporated in the production process more quickly and may facilitate adjustment to changes in the quantity and type of service required.

While these benefits of greater flexibility and lower risk associated with shorter asset lives may be difficult to quantify, the costs which are involved in obtaining these benefits can be quantified by comparison of the equivalent annual cost of each option. Such a comparison should be undertaken where the benefits of a shorter asset life are considered likely to be significant. This is most likely to be the case in sectors where the pace of technological change is relatively rapid, demand is volatile or there is a particularly large difference in asset lives.

8.2 Conclusion

- The project life adopted for the analysis should reflect the expected economic life of the principal asset. However, with assets which have a very long life (eg. dams) a cut off point should be imposed and a residual value for the asset calculated. In such cases a project life of preferably 20 years, but no more than 30 years, should be used.

- Where the assets being evaluated have differing lives, the cost of replacement of assets with lives shorter than the project period should be incorporated in the analysis.

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- Where the benefits of reduced risk and increased flexibility for options which have shorter asset lives are considered significant, the cost of accessing such benefits should be calculated by comparing the annual cost of each option.

9. Identification And Valuation Of Costs And Benefits

9.1 Introduction

A critically important input to an economic appraisal is the identification of resource requirements or savings and their translation into monetary values, wherever possible.

It must be noted that there is an important distinction between the costs and benefits involved in a financial analysis and those included in an economic analysis.

Financial analysis, whether used in the public or private sector, implies the notion of the agency maximising its net financial surplus over time. This will generally differ from the maximisation of the economic "surplus" generated for the community as a whole whenever prices do not fully reflect the benefits or costs associated with an activity (in some cases there may not even be any prices because benefits and costs are not traded).

In the case of the more commercial agencies the differences between financial appraisal and economic evaluation may commonly be comparatively small. It is emphasised that an economic appraisal must be conducted in all cases. However, for agencies with significant community service obligations, financial appraisal can be suitably applied only in a narrow range of decision choices. Thus in the economic evaluation of a public road not subject to a toll, financial appraisal will not be of much assistance. Similarly, in choosing between two sites for a hospital, not only should the costs of building on the two sites be considered, but also the level of transport costs and length of travel time incurred by patients and visitors to the hospital.

Thus in estimating the economic costs and benefits of a project, the analyst will have to estimate values where no direct price is charged and will generally have to consider a wider range of costs and benefits than occurs in a financial appraisal.

9.2 Identification Of Costs And Benefits - The 'With-Without' Principle

This is the basic principle of any type of project evaluation. In practice, it means that an attempt should be made to estimate "the state of the world" as it will exist with the project in existence. This should be contrasted with the "state of the world" that would have existed in the absence of the project (the "do nothing" option). That is, an attempt should be made to compare outcomes, with and without the project, in all relevant dimensions.

This principle has two important implications.

First, economic evaluation must not simply be a comparison of "before project" conditions with "after project" conditions because such comparison would attribute the contribution of all pre-existing trends and external factors to the project itself. For example, reductions in on-going costs due to changed work practices should not be attributed to savings from an investment in new plant if the changes in work practices would have been introduced regardless of the investment decision.

Second, the analysis should include all impacts, both beneficial and otherwise, of the proposal being evaluated. In particular, not only should the intended effects or benefits which are the objectives of the project be included, but also the subsidiary or indirect effects.

There are a range of types of benefits and costs which must be considered, and they accrue to different people: some accrue directly to the user or provider of the service, while others will accrue to outsiders (these are known as "externalities").

The case of the evaluation of a dam whose primary purpose is the provision of irrigation for commercial crops can be used as an example. The impacts to be included in the analysis would be:

- the provision of irrigation water for cropping (the primary objective and a traded benefit);
- the provision of urban water (a traded benefit);
- flood mitigation benefits (a quantifiable non-traded benefit which is external to the users and providers of the water);
- recreational benefits offered by the dam (a quantifiable non-traded benefit external to the consumers of the water); and
- environmental effects on native fauna and flora (an external effect which may be difficult to quantify even in physical terms).

The importance of the "with-without" principle cannot be overstated. Failure to adopt it may lead to meaningless results.

9.3 Valuation Of Costs And Benefits

9.3.1 Introduction

When considering how impacts should be valued in practice, it may be convenient to classify impacts into three categories.

1. Costs and benefits which can be readily identified and valued in money terms (eg. value of additional electricity supplies to users, travel time savings).
2. Effects which can be identified and measured in physical terms but which cannot be easily valued in money terms because of the absence of market signals and consequential disagreement as to the rate of valuation (eg. museums, reduction in pollution).
3. Impacts which are known to exist but cannot be precisely identified and accurately quantified, let alone valued (eg. crime prevention effects of police programs, comfort improvements in new trains, aesthetic effects of beautification programs).

It should be stressed that **these categories are not rigid.** The wide range of tools now available will enable the valuation of the great majority of effects if sufficient effort and time is invested in the analysis. For example it would be possible to value the benefit of increased comfort on new trains using experimental choice data. Whether this effort would be warranted would depend on the extent of the replacement program and the importance of the other benefits considered in the evaluation. Nevertheless there may be areas where knowledge will gradually be acquired, and appraisal will become more sophisticated over the coming years.

9.3.2 Costs and Benefits Which Can Be Readily Valued

Costs and benefits which can be expressed in money terms will normally include estimated initial outlays and running expenses on the cost side and, estimated receipts and cost savings on the benefit side. In practice, the items to be included on the cost and benefit sides of the monetary calculations will include:

Cost Side

- capital costs (estimates of the cost of land, buildings and equipment)
- operating costs (running costs for the whole life of the option).

Benefit Side

- revenue from traded output generated by the asset
- revenue from non-traded outputs
- benefits to users of the service **not reflected in the price paid** but which can be valued.
- cost savings
- residual value of asset (if any)
- benefits to the broader community which can be valued.

Care must be taken to ensure that all investment-related costs and benefits are included, even those which do not actually involve spending or receiving cash. Section 9.4 discusses some widely accepted methods for valuing outputs which are not traded commercially.

9.3.3 Benefits And Costs Which Can Be Quantified But Not Readily Valued

There are many areas where some quantification can be achieved, but it is very difficult to place monetary values on them. For example, the number of children passing through a school or the number of people entering a national park can be measured, but valuation is far more difficult.

In some cases these benefits or costs may be regarded as relatively minor in terms of the project. In these cases they can simply be described and taken into account in a subjective manner. Further consideration needs to be given to these benefits and costs when they represent the main or a major impact of a project. This is discussed further in Chapter 14.

9.3.4 Benefits And Costs Which Cannot Be Quantified

In the public sector there are many areas where it is impossible even to measure the benefits and costs. Examples are the effect on law and order of the courts or the aesthetic impact of a sewage works in an area of natural beauty. Again these items can simply be described if they are relatively minor. The treatment of major unquantifiable benefits is discussed further in Chapter 14.

9.3.5 Parallel Treatment Of Costs And Benefits

When considering benefits and costs which either cannot be valued or cannot be quantified, there can be a tendency to concentrate on the benefits and ignore the costs. This should be resisted. Costs which cannot be valued are just as important as benefits which cannot be valued, and should be accorded an equal treatment.

9.3.6 Choice Of Technique

Chapter 5 discussed the application of the different techniques. In summary, whether CBA or CEA is the appropriate technique will depend mainly on the nature of the costs and benefits involved in the project. If the large part of the benefits and costs of a project can be readily valued, then the project is amenable to CBA. However, if significant benefits cannot be valued, then CEA is the most appropriate form of analysis.

It should be noted that CBA does not require valuation of each and every benefit and cost involved in the project, only the major ones. While valuation (and quantification) are encouraged where possible, unquantified benefits and costs will not be ignored when appraisals are considered. In many cases they will be crucial factors, and an appropriate priority will be attached to them.

This is also true of CEA. But the fact that the major benefit is unquantifiable does not remove the need for the analysis. Full details of the costs remain necessary (whether quantifiable or not). A particular unquantifiable benefit may be considered to be worthwhile, but not at any cost. The provision of cost data in dollar terms and a discussion of benefits in unquantified terms will allow these subjective judgements to be made.

As mentioned above, improvements in techniques for quantification and valuation of benefits and costs should be aimed at wherever possible. This will mean that the appropriate form of analysis may change over time. Projects which today are subjected to CEA may later be the subject of CBA as techniques for the valuation of the major benefits are developed.

9.3.7 Assessment Of Environmental Impacts

Annex 4 provides assistance in the incorporation of environmental impacts into appraisals, reflecting ongoing advances in the techniques of valuing environmental impacts.

The Annex does not establish any additional reporting requirements. Economic assessment of environmental impacts is already part of the normal economic appraisal process.

9.4 Valuation Methods

Where valuation is possible, two key concepts need to be appreciated by practitioners.

9.4.1 The Opportunity Cost Principle

Underlying the valuation of inputs to a project or activity is the principle of opportunity cost.

The use of resources (manpower, finance or land) in one particular area will preclude their use in any other. Hence the basis for valuing the resources used is the "opportunity cost" of committing resources; ie the value those resources would have in the most attractive alternative use.

The adoption of this principle reflects the fact that the economic evaluation of public sector projects should be conducted from the perspective of society as a whole and not from the point of view of a single agency.

Commonly, the price paid for new capital, labour or other inputs will reflect the opportunity cost of the resources. The position may be less clear in the case of the use of existing land owned by the agency. In general it is considered that a cost equivalent to its maximum market value under current or likely realistic land-use zoning should be placed on such land.

The general principle applies even where the public sector may have access to an input at a cost different from its market value.

In certain cases, where a resource has a market price, that price may not reflect the marginal social cost of using the resource. Such cases are reasonably rare and are discussed in section 9.5.4 below.

9.4.2 Willingness-To-Pay Principle

Underlying the valuation of the benefits of a particular project or activity is the willingness-to-pay principle.

In valuing the benefits of a project the aim is to place a monetary value on the various outputs of the project. Typically such outputs will include benefits for which:

- A price is paid; and
- No price is paid.

Where the services are freely bought and sold it is generally presumed that the price paid is a reasonable proxy for the value of the service to the consumer. This principle will hold most closely where the changes in output and price levels associated with the investment are relatively small (ie marginal). Where output changes are significant then it may be desirable to take account of changes in 'consumer surplus' (the excess over the market price which the consumer would have been willing to pay). This will require knowledge of the price elasticity of demand (ie sensitivity of demand to changes in price).

Where the service is **not freely traded** or there is no price charged, or indeed where the benefits fall broadly on the community rather than individual users, more indirect measures of the willingness-to-pay for the benefits need to be derived. A variety of techniques are available including:

- the use of data on expenditure by consumers in seeking to participate in benefits (eg costs incurred in visiting a national park);
- Price data from related goods and services (eg variations in house prices due to the impact of noise levels to assess the costs of airport noise); and
- Choice experiments (eg experimental choice between a variety of existing and new amusement/recreation amenities to infer a value for a new amenity). Some non-traded outputs (eg travel time savings in the case of road construction) have long established methods of estimation and valuation.

Where no established framework exists, **valuation of non-traded outputs will have to be approached on a case by case basis.** The issues may be common to a number of projects or agencies or they may recur within an agency. As more experience is accumulated within an agency, and throughout the public sector generally, there will be substantial cross-referencing and more consensus will be established in valuing non traded-outputs.

In all cases, the value assigned to each unit of output should be clearly spelled out in the evaluation. Often there is debate over the precise value that each particular unit of a given output can assume and a range of values is commonly suggested. A possible range of values should be specified and, where the benefit is comparatively significant, sensitivity analysis should be undertaken.

The Environmental Protection Authority, through its database of environmental estimates, has created ENVALUE. This computer package provides an anthology of abstracts from studies, in which estimates of willingness to pay have been made. These estimates cover a wide range of valuations from various parts of the world and are accompanied by instructions to aid in transferring them to local circumstances (see Annex 4).

Similarly the Department of Community Services has developed a database of material on certain social welfare costs and benefits, including aspects of health, education, child care and so on to assist analysis in such areas.

Decisions about the appropriate amount of time to be invested in benefit valuation will depend on factors such as the relative cost of the proposal being considered and whether the impact to be measured is part of the agency's prime objectives. Thus, in the end the manner of treatment will be dependent on the judgement of the analyst, subject to it being satisfactory to the users of the analysis.

Some Government services have been provided at subsidised prices and this introduces distortions into the market. Therefore the use of customer charges to value benefits is likely to understate benefits. As with services for which no price is charged, additional effort is needed in the appraisal to estimate the additional benefits, either from externalities or consumer surplus. It is not sufficient to argue that a project is justified because consumers are "willing to pay" a price when that price does not cover the costs of the service.

9.5 Specific Issues

9.5.1 Avoidance Of Double Counting Or Overstating Of Benefits

In enumerating the costs and benefits of a proposal, care should be taken to avoid **double counting.** The danger of double counting is particularly great where an effect of the project, be it beneficial or otherwise, is incorporated in subsequent valuations of assets or prices.

For example, the construction of a dam may increase the value of the land which is to be irrigated as a result of the increased ability of the land to grow crops. The increased value of the land merely reflects the market's capitalisation of the increased output stream. Inclusion of both the net value of the increased output and the increased land value would count the same benefit twice.

Another danger is the overstatement of benefits by attributing the total output of a process to a single input. Where infrastructure is provided which enables the expansion of an industry the gross output of that industry should not be attributed to the provision of the infrastructure. Account has to be taken of the other resources used in production in the "downstream" industry.

In the previous example, the total value of the crops made available by the water irrigation project should not be attributed to the project. Rather the net value of the additional production should be derived by deducting all additional input costs from the value of the additional output; ie the costs of labour, capital and other inputs such as fertiliser and fuel should be deducted from the value of the output. Measured in this way the value of net output, subject to provision for a "normal" profit, provides a measure of the "willingness-to-pay" for water. Hence, the inclusion of this benefit would also require adjustment for actual payments made for the water provided.

9.5.2 Treatment of Inflation

Due to inflation, costs and benefits which occur later will be higher in cash terms than similar costs or benefits which occur earlier.

There are two different ways to tackle this issue. Either nominal values can be used for each time period and then discounted with a nominal discount rate, or real cash flows can be used discounted by a real discount rate. There is no inherent reason to choose one rather than the other as both will provide the same answer, but the important factor is that real and nominal cash flows and discount rates must never be mixed in the one evaluation. Where cash flows are in real or unescalated terms, only the real discount rate should be used and where nominal or escalated cash flows are used the nominal discount rate must be used.

In practice, however, there are strong merits in adopting a uniform basis of analysis and it is considered that the use of real cash flows and discount rates may simplify the forecasting and calculation processes. **Hence, analysis should use costs and benefits valued in real terms and discounted by a real discount rate.** The base date for the calculations should be the same as that used for any accompanying financial analysis.

The procedure used should therefore be to express cash flows in real terms and only adjust for differential price effects where a specific resource price is expected to move at a rate different from the general inflation rate.

9.5.3 Timing of Cash Flows

The conventional approach to preparing cash flows is to set the initial cash outflow at year zero and centre all future inflows and outflows at 12-monthly intervals from that date. This regular 12-monthly "gap" simplifies the discounting of future cash flows to their present values.

The reality is that cash flows will not be evenly spaced with a 12-monthly gap nor can they necessarily be centred at 12-month intervals without some distortion to their true pattern. However, the above approach to the cash flow timing problem will not introduce unacceptable distortions for programs which are long term (five years or longer).

Where within year variations in timing will make a significant difference in the evaluation, it is suggested that a two stage discounting procedure be followed. Initially within year cash flows are discounted to the same month in each year (the month in year zero that the project is deemed to commence). The annual cash flows can then be discounted back to the base year in the normal way.

9.5.4 Use of Shadow Prices

As noted above, the general principle is that where market prices are available, they should provide the basis for the measurement of the opportunity cost of inputs or the willingness to pay for outputs.

However, in some cases such prices may contain distortions which require the use of shadow prices. (The term is also sometimes used in relation to outputs for which no prices are charged but the discussion in this section excludes this usage).

It is generally considered that the problems of measurement of shadow prices may often be substantial and the size of the impact on the analysis comparatively small. Hence, this level of sophistication in the analysis will not generally be warranted as it will introduce unnecessary controversy.

It is not intended to prohibit the use of shadow prices but rather to ensure that they are used with due care and only where their introduction is justified. Should shadow prices be thought appropriate due to the special circumstances in a particular appraisal, Treasury should be consulted before they are used.

Where a successful case has been made for the use of shadow prices in a particular area, it is intended that the accepted prices be distributed to other public sector agencies so as to standardise the use of prices wherever possible.

Instances where the use of shadow prices rather than market prices are most commonly advocated are where:

(1) Taxes and subsidies drive a wedge between costs of production and prices

While taxes and charges introduce distortions it is not considered that these will have a significant impact on the analysis unless one of the key inputs or components of the benefits is subject to an especially large excise duty/sales tax or subsidy. In particular, prices of goods and services provided by the Government have often been set at levels that do not reflect their true resource costs.

(2) The resources used would otherwise be unemployed

It can be argued that in times of unemployment the opportunity cost of labour employed on a project is less than the wage costs, and project costs and benefits should be adjusted accordingly. However, in practice such adjustments are not generally made and are not recommended.

Uncertainty exists as to what represents the "full employment" level of output and employment in the economy. The degree of full employment would need to be assessed by occupation and region and forecast over the project period. An adjustment for unemployed resources assumes that the resources employed are not at the expense of the employment of other resources. Where macroeconomic parameters act to constrain the overall level of activity in the economy and/or the funds available for capital works such an assumption is not appropriate.

9.5.5 Valuation Of Specific Cost Items

Land and Pre-existing Buildings/Plant

While a project may use land, buildings or plant already owned by an agency for which no payment will be made, the opportunity costs of these assets should be included.

In regard to land and buildings the value used should be an up-to-date valuation based on the most profitable alternative use likely to be allowed under land use regulations. This will require realistic assessment of potential alternative uses and of the likelihood that amendments to existing land use regulations would be permitted by the relevant authorities. For example, land owned by the State Rail Authority within commercial centres is commonly zoned "general use" but if it has development potential should be valued accordingly.

Where valuation of land is expected to be contentious, it is suggested that discussions be held with the Treasury. Expert advice on land valuation is available from the Valuer General's Department.

In regard to plant transferred to the project the value placed on the plant should reflect its value in an alternative use. While sale value may be used for highly marketable assets (eg motor vehicles) markets may not exist for the resale of many items of plant. In the latter case plant may be valued by the lower of:

- The estimate of the present value of its savings or revenue earnings potential in its current location or activity; or
- The current replacement value of the plant adjusted for the residual life of the existing plant where appropriate.

Labour

In assessing labour costs, the value of existing labour resources transferred to the project, as well as additional labour required, should be included.

While, theoretically, transferred employees should be valued at their alternative use, conventionally this is assumed to be equal to the total cost of the employees to the agency.

Labour on-costs are incremental, unavoidable costs and, as such, must be added to direct labour costs and included in the cost figures (and also in the savings estimates if labour savings are involved on the benefits side).

Overheads

Labour related overheads such as supervision, transport costs, administrative costs, printing and stationery etc., are also included if the with/without comparison shows that they differ between project alternatives and the base case. By the same criteria material overhead costs associated with purchasing, storing and transporting materials needed for the investment project will also be relevant.

Residual Values

At the end of the planning horizon or project life, some assets may still be of value. Such assets may not have reached the end of their economic life and may still be of use to the agency or may be resaleable. In this case the value of an asset may be assessed at a level pro rata to its remaining economic life although this is not entirely satisfactory. Alternatively the asset may have reached the end of its economic life but have a scrap value. This value is a benefit to the project and should be included in the evaluation. Certain assets are non-depreciable, such as land, and can be valued at opportunity cost.

9.5.6 Costs To Be Excluded From Analysis

A number of items which are included as costs in accounting reports or financial appraisals should not be included in an economic evaluation of an investment proposal.

Sunk Costs

In an evaluation, all costs must relate to future expenditures only. The price paid 10 years ago for a piece of land or a plant item is of no relevance; it is the opportunity cost in terms of today's value (or price) which must be included. All past or sunk costs are irrelevant and should be excluded.

Depreciation

Depreciation is an accounting means of allocating the cost of a capital asset over the years of its estimated useful life. It does not directly reflect any opportunity cost of capital.

The economic capital cost of a project is incurred at the time that labour, machinery and other inputs are used for construction, or in the case of an existing asset, when it is diverted from its current use to use in the project being evaluated. These project inputs are valued at their opportunity cost.

This is why depreciation should not be included in the economic evaluation.

Interest

As future cash flows are discounted to present value terms in economic evaluations, the choice of the discount rate is based on various factors which include the rate of interest and associated finance charges. The discounting process removes the need to include finance charges in the cash flows.

9.6 Conclusion

- The key to the analysis is a complete and accurate enumeration of all the costs and benefits associated with a project. Where such benefits and costs cannot be valued they should be expressed in physical terms wherever possible and discussed. Any benefits which cannot be quantified should still be discussed, and they will be taken into account when decisions are made.

- Cost effectiveness analysis should be used only where the major benefit from the project cannot be quantified.

- The analysis should be undertaken in real terms using a real discount rate.

- Costs and benefits should be compared between the world with the project and without it.

- Market prices should be used to value costs and benefits whenever suitable market prices are available - exceptions to this rule are expected to be relatively rare. Treasury must be consulted if the use of shadow prices is being considered.

In particular:

- land should be valued at its likely realistic market value;
- labour costs should include on-costs and unavoidable overheads; and
- sunk costs, depreciation and interest costs should be excluded.

10. Discounting Of Future Costs And Benefits

10.1 The Concept Of Discounting

The costs and benefits flowing from an investment decision are spread over time. Initial investment costs are borne up front while benefits or operating costs may extend far into the future. Even in the absence of inflation, a dollar received now is worth more than a dollar received at some time in the future. Conversely, a dollar's cost incurred now is more onerous than a dollar's cost accruing at some future time. This reflects the concept of time preference which can be seen in the fact that people normally prefer to receive cash sooner rather than later and pay bills later rather than sooner. The existence of real interest rates reflects this time preference.

In order to compare the costs and benefits flowing from a project it is necessary to bring them back to a common time dimension. This is done by discounting the value of future costs and benefits in order to determine their present value. The process of discounting is simply compound interest worked backwards.

10.2 The Recommended Discount Rate

Private sector entities sometimes require that the rate of return on a particular project exceeds the return expected on an alternative project which might otherwise be undertaken. Or they might stipulate a return somewhat in excess of the cost of borrowed funds.

Public sector decision-makers will be encouraged to invest in projects which generate returns greater than the government's test discount rates. Three alternative bases for the setting of the discount rate have been proposed:

- Social time preference;
- Opportunity cost of capital; and
- Cost of funds.

The first two concepts of the discount rate relate to the **opportunity cost** of the resources used in the public sector investment projects. Resources could be used elsewhere and the discount rate attempts to measure such opportunities foregone. In principle the social time preference rate and the opportunity cost of capital should be the same. However, for various reasons such as private sector profit and capital constraints in the public sector, the two will differ. Typically the opportunity cost of capital will be greater than the social time preference rate.

Resources devoted to public investment will be at the expense of current consumption or private sector investment. In a growing economy with rising living standards, a dollar's consumption today will be more valued than a dollar's consumption at some future time for, in the latter case, the dollar will be subtracted from a higher income level. This so-called **marginal social rate of time preference** is, of course, not easy to measure.

If alternatively, public investment takes place at the expense of private investment then, from an economic efficiency viewpoint, public investments of an economic nature should not be sanctioned if they are expected to earn significantly lower rates of return than those same resources might earn (before tax) in the private sector (the so-called **marginal social opportunity cost**).

This concept is also difficult to measure accurately. The concern is not with the **average** rate of return in the private sector, but with the marginal rate - that is with the rate which would be earned by the private sector if additional capital allowed further private investment to occur. In theory a perfectly competitive capital market will see equality of the consumer's marginal rate of time preference, the investor's rate of return on the marginal project and the market rate of interest. In practice interest rates provide limited guidance to the estimation of discount rates on these bases.

Commonly, estimates of social time preference rates are around 2 to 4 per cent while estimates of the social opportunity costs are around 7 to 10 per cent. These figures are, at best, approximate.

In the face of the difficulty of measuring discount rates on these bases, it has sometimes been argued that the appropriate rate of return or discount rate should be derived from the interest rate at which government borrows funds in the market. But given the dominant position of government in the capital market, the variability of interest rates and the wide range of factors which impact on interest rates this is quite an inadequate way of deriving the appropriate discount rate.

While there may be no universally accepted "correct" discount rate, interpretation of appraisal results will be impossible if different agencies use different discount rates. The solution is the application of a standard set of real discount rates of 4 per cent, 7 per cent and 10 per cent to see if the outcome is sensitive to such variations and, if it is, to make the critical 'break-even' rate clear in the analysis results. The central real discount rate is therefore 7% with sensitivity tests on the use of 4% and 10%.

10. 3 The Arithmetic Of Discounting

The following section presents a number of examples of the discounting technique. Of course, in practice, there are a number of computer packages which will perform discounting functions.

10.3.1 Present Values

In practice the activity of discounting will be performed through a computer package but the basic arithmetic of discounting is most readily explained using a simple compound interest rate problem as the starting point.

Suppose the sum of $100 is invested at 7 per cent for 2 years. At the end of the first year the initial $100 will have earned $7 interest and the augmented sum ($107) will earn a further 7 per cent (or $7.49) in the second year. Thus at the end of 2 years the $100 invested now will be worth $114.49.

The discounting problem is simply the converse of this compound interest problem. Thus, $114.49 receivable in 2 years time, and discounted by 7 per cent, has a present value of $100.

This can be calculated by the equation:

$$\text{Present value} = \frac{1}{(1+r)^n} X\$Y \qquad (1)$$

where $Y is the money sum whose present value is to be calculated, r is the discount rate expressed as a decimal (eg 0.07) and n represents the number of years before the sum is received (or the cost paid) - in this case 2 years. Thus:

$$\text{Present value} = \frac{114.49}{(1+0.07)^2} = \frac{114.49}{(1.07 x 1.07)} = \frac{114.49}{(1.1449)} = \$100$$

Alternatively the future sum can be multiplied by a **discount factor** to derive the present value. In this case by:

$$\frac{1}{(1+0.07)^2} = 0.8734$$

and $114.49 multiplied by a discount factor of 0.8734 = $100.

Equation (1) is the basic formula for calculating present values. Other formulae which are likely to be of use are outlined below.

10.3.2 Equivalent Annual Costs

Evaluation results for most investment projects, especially those which involve comparison of options with different lifetimes, can be calculated and presented as annualised values or "equivalent annual costs" rather than as present values.

In addition to being useful for comparing options with different lifetimes, as discussed above, equivalent annual costs can also be useful as a way of costing the use of capital assets. By expressing the capital value of the asset as an equivalent annual cost over the asset's life, it is possible to set charges so as to recoup this cost.

Equivalent annual costs are calculated as follows. The annual payment, made for n years starting in year 1, when discounted at r% with a present value at the middle of year 0 of $Y is given by:

$$A_n = \frac{r}{1 - \frac{1}{(1+r)^n}} x\ \$Y$$

where: A_n is the equivalent annual cost of $Y

For example: a payment of $1,000 in year 0 is equivalent to 10 mid-year annual payments, discounted at 7% and starting in year 1, of

$$\$1000 \text{ x } \frac{0.07}{1 - \frac{1}{(1.07)^{10}}} = \$1000 \text{ x } 0.1424 = \$142.40$$

10.3.3Present Value Of Equal Annual Payments

The present value, in year 0, of a stream of equal annual payments of $Y starting year 1, is given by the reciprocal of the equivalent annual cost. That is, by:

$$\text{Present value} = \frac{1-\frac{1}{(1+r)^n}}{r} X \$Y \qquad (2)$$

For example: 12 annual payments of $500, starting in year 1, have a present value at the middle of year 0 when discounted at 7% of:

$$\$500 \text{ x } \frac{1-\frac{1}{(1.07)^{12}}}{0.07} = \$500 \text{ x } 7.9427 = \$3971$$

10.3.4Present Value Of Annual Payments Starting Later Than Year 1

The present value, in year 0, of m annual payments of $Y, starting in year n + 1, can be calculated by combining discount factors for a payment in year n and the factor for the present value of m annual payments.

$$\text{Present value} = \$Y \text{ x } \frac{1-\frac{1}{(1+r)^m}}{r} \text{ x } \frac{1}{(1+r)^n}$$

For example: 12 annual mid-year payments of $250 in years 5 to 16 have a present value in year 4 of $250 × 7.9427 = $1986 when discounted at 7%. Therefore in year 0, 4 years earlier, they have a present value of $250 × 7.9427 × 0.7629 = $1515.

10.4 Discount Rates: Project Ranking And Treatment Of Risk

It should be noted that the choice of the discount rate is an important issue as it can have a significant impact on the ranking of options/projects and hence their choice. In general, as the discount rate rises projects with larger initial outlays and lower ongoing outlays become relatively less attractive compared with projects with lower initial outlays and higher ongoing outlays. Thus, a higher discount rate would favour maintenance options as against asset replacement.

Similarly in the case when net benefits are spread far into the future, the higher the discount rate, the more net benefits far in the future are downgraded in present value terms relative to net benefits closer to hand.

Thus, short lived options are favoured by higher discount rates relative to long-lived options.

Commonly an agency does not have sufficient funds to undertake all worthwhile projects. In such circumstances, an agency may be tempted to use a higher discount rate to ration capital funds. However, due to the biases an excessively high discount rate may introduce, this procedure should not be employed. Appropriate decision rules under capital rationing are discussed in Chapter 11 below.

It is also sometimes argued that the discount rate should be made dependent on the degree of risk associated with the project: high risk projects would be allocated high discount rates and low risk projects low discount rates. This argument presupposes that risk increases over time. This is clearly not necessarily the case - the risk may be introduced by an event due to occur in the near future or may be the same throughout the life of the project. Adjustments to the discount rate should therefore not be made because of the risk associated with the project. Risk elements should be reflected instead in the data estimates for benefits and costs, and through sensitivity analysis etc. Appropriate treatment of risk and uncertainty is discussed in Chapter 12.

10.5 Should The Discount Rate Be Adjusted From Time To Time?

Consideration has been given to the appropriate discount rate for economic appraisal on an ongoing basis since the Guidelines were first introduced, including consideration of whether the rate should be regularly adjusted, for instance to reflect changes in market interest rates.[5]

The discount rate(s) for economic appraisal, as distinct from financial appraisal, should not be varied from those set out above, for the following reasons:

- It is not appropriate to change the central discount rate in line with market movements, as it is not a market-based rate, as explained above.
- **The guidelines set 7 per cent as the central discount rate and also require sensitivity tests at 4 per cent and 10 per cent to test if the appraisal results are sensitive to the discount rate used in the analysis.**
- **The guidelines explicitly state that if the appraisal outcome is shown to be sensitive to variations in the discount rate, the critical 'break-even' rate should be made clear to decision makers.[6]**
- **The specified rates ensure consistency among agencies and over time. This is to avoid different projects being assessed by different rates, from year to** year (as project funding requests may be carried over) and between agencies.

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[5] An important distinction is made in this regard between economic appraisal and financial appraisal. In the case of financial appraisal, movements in market rates are taken into account. Both these economic appraisal guidelines and the financial appraisal guidelines (TPP 97-4) can assist decision making on new infrastructure investment. The appropriate guidelines for analysing a particular proposal depend on whether it is a General Government agency project, or a commercial project of a PTE. Both economic appraisal and financial appraisal, conducted in parallel, may be appropriate for some projects of both categories.

Financial appraisals of commercially oriented projects are carried out by discounting cash flows to a present value by the Weighted Average Cost of Capital, which is a market based rate, as detailed in the Financial Appraisal Guidelines.

[6] Comments are occasionally made that the central or so called 'hurdle' discount rate of 7 per cent for economic appraisal is too high. However, results at all three rates are taken into account. There have been instances of appraisals of projects that were not only uneconomic from the community's viewpoint at 7 per cent, but were still not economic at 4 per cent.

Inter-generational, or inter-temporal, issues are sometimes raised in the context of considerations about appropriate discount rates in economic appraisal[7] . An extreme suggestion is that there should be no discounting of costs or benefits in cases such as where there is increasing environmental scarcity.

While some differing points of view on such issues may exist consensus, including from EU and US guidelines, is for discounting the streams of benefits and costs in the analysis. The Intergovernmental Panel on Climate Change[8] for example also incorporates appropriate public sector discount rates in cost benefit assessments of long term climate change issues.

Where there is sufficient evidence to support a contention that future values will differ from current values, the stream of benefits or costs might be adjusted accordingly, with appropriate explanation. Discussion with Treasury is advisable in such cases. For NSW appraisals, the discount rate(s) should not be altered from those set out above.

10.6 Conclusion

- **The stream of assessed benefits and costs should be discounted so as to enable comparison over time.**

- **The discount rate to be used is 7 per cent in real terms. Sensitivity testing should be undertaken using real discount rates of 4 per cent and 10 per cent to test the robustness of the results to changes in the discount rate.**

- **It is essential that the net present value of the stream of benefits and costs be calculated. In certain circumstances it may also be useful to calculate the equivalent annual costs.**

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[7] See for discussion, EU Guide to Cost Benefit Analysis of Investment Projects; Guidelines for Preparing Economic Analyses, US Environmental Protection Agency.

[8] "Climate Change 2007: Synthesis Report. Summary for Policymakers" Intergovernmental Panel on Climate Change (IPCC). The IPCC is co-sponsored by the World Meteorological Organization and the United Nations Environment Programme.

11.Decision Criteria

11.1 Introduction

It is possible to calculate key statistics and develop decision criteria based on them. Such statistics will only take account of benefits and costs on which a value has been placed and can only therefore provide part of the picture to the decision maker. The unquantified effects will also need to be considered. While this chapter discusses various decision criteria, the importance of the unquantified benefits and costs must not be forgotten.

Investment decision-making is primarily concerned with three types of processes:

1) **Screening process,** whereby the decision-maker, faced with a range of independent projects and adequate resources, must accept or reject the individual projects.

2) **Choice process between mutually exclusive projects,** whereby the decision-maker must choose from a range of mutually exclusive projects (commonly directed at similar objectives).

3) **Ranking process,** whereby the decision-maker is faced with resource constraints which prevent all acceptable projects from being proceeded with - hence the projects must be ranked in an objective manner.

Various investment criteria are available to assist in reaching decisions in each of these circumstances. Commonly used criteria are the Net Present Value (NPV); Internal Rate of Return (IRR), Benefit-Cost Ratio (BCR) and Net Present Value per constrained unit of input (NPV/I).

Acceptance or rejection of investment proposals is the simplest decision normally encountered in investment decision-making. However, it is rare for investment decisions to involve only a choice between acceptance or rejection since investment can rarely be isolated from other alternatives.

The ranking decision is far more complex, particularly with regard to situations where the volume of funds for investment in a given period is limited.

11.2 Alternative Decision Rules

11.2.1Net Present Value

Net Present Value is the sum of the discounted project benefits less discounted project costs. Formally it can be expressed as follows:

$$NPV = \sum_{n=0}^{N} \frac{B_n - C_n}{(1+r)^n}$$

where B_n = project benefits in year n expressed in constant dollars
C_n = project costs in year n expressed in constant dollars
r = real discount rate
N = number of years that costs and/or benefits are produced

Under this decision rule, a project is potentially worthwhile (or viable) if the NPV is greater than zero; ie the total discounted value of benefits is greater than the total discounted costs. If projects are mutually exclusive, the project which yields the highest NPV would be chosen.

11.2.2Benefit Cost Ratio

The Benefit Cost Ratio (BCR) is the ratio of the present value of benefits to the present value of costs. In algebraic terms it can be expressed as follows:

$$BCR = \sum_{n=0}^{N} \frac{B_n}{(1+r)^n} \Big/ \sum_{n=0}^{N} \frac{C_n}{(1+r)^n}$$

A project is potentially worthwhile if the BCR is greater than 1; ie, the present value of benefits exceed the present value of costs. If projects are mutually exclusive, this rule would indicate that the project with the highest BCR should be chosen.

It has become conventional to split costs into two types when calculating BCRs: initial capital costs and ongoing costs. Ongoing costs are normally deducted from benefits in the year incurred to make a net benefit stream, while initial capital costs are used as the denominator.

For consistency, the above approach should be adopted in project appraisals for consideration by the Budget Committee of Cabinet. In cases where appraisals may also be undertaken for consideration by other parties for funding (eg Commonwealth Government) and a different basis of calculating BCR is required under their Guidelines, calculation of BCR on **both** bases should be shown and **clearly identified.**

11.2.3Internal Rate Of Return

The Internal Rate of Return (IRR) is the discount rate at which the net present value of a project is equal to zero, ie discounted benefits equal discounted costs. In algebraic terms the IRR is the value of r which solves the equation:

$$0 = \sum_{n=0}^{N} \frac{(B-C)_n}{(1+r)^n}$$

A project is potentially worthwhile if the IRR is greater than the test discount rate. If projects are mutually exclusive, this rule would suggest that the project with the highest IRR should be chosen.

11.3 Evaluation Of Decision Rules

11.3.1Screening Of Worthwhile Projects

The NPV and BCR provide equally acceptable criteria for showing whether an individual project is worthwhile, when taken in isolation. Both clearly show when, for a given discount rate, the project benefits exceed costs and the results of the rules will not conflict with each other.

While in many cases the IRR will also yield simple and unambiguous results, care needs to be exercised in the use of IRR. In cases of non-conventional cost-benefit streams (ie where there are substantial discontinuities or breaks in the net benefits stream over time) more than one quite different IRR may be calculated. An example of a non-conventional cost-benefit stream is where a project incurs net costs initially followed by net benefits over a number of years and then net costs again.

11.3.2Choice Between Mutually Exclusive Projects

A simple use of NPV, BCR and IRR will not yield the same results for the more complex choice between mutually exclusive projects. The project with the highest NPV may not have the highest IRR or the highest BCR. In the latter case this is because the ratio can be affected by the inclusion of costs as negative benefits, or different balances between initial costs and ongoing costs. This makes it difficult to compare across projects.

Where there are no constraints on inputs, such as capital resources, the choice between projects should be made on the basis of maximisation of NPV; ie the project with the highest NPV should be preferred. This will ensure that the project which provides the largest potential contribution to welfare is adopted.

11.3.3Ranking Under Constraints

In practice, decision makers operate in environments where constraints are commonplace. Indeed constraints on capital funds are almost universal. In order to ensure the Government's Budgetary objectives are met, such constraints will clearly heavily influence decision making on projects. The problem facing decision makers is to rank projects in terms of return to the constrained input and then choose projects so as to maximise the NPV of the total program.

None of the three decision criteria discussed above take capital constraints explicitly into account, although the BCR calculation as indicated in 11.2.2 implicitly does so. However, use of the NPV per dollar of total capital would result in the choice of that combination of projects which maximises the total NPV obtained from a limited capital works budget.

It can be readily calculated as follows:

$$NPVI = \sum_{n=0}^{N} \frac{(B-C)_n}{(1+r)^n} \Big/ \sum_{n=0}^{N} \frac{I_n}{(1+r)^n}$$

where I_n = capital investment in the project in year n

$C_n = I_n +$ operating costs in year n

Note that the capital investment is discounted to its present value in the same way as are the net benefits.

Using this measure, projects with the highest NPV per dollar of total capital are selected until the budget is exhausted.

This means that the expenditure constraint may be a factor in the choice of an investment option which does not have the highest NPV, if the option with the highest NPV requires very high expenditure. In such circumstances the return on the incremental expenditure may be relatively low. This procedure seeks to maximise aggregate NPV from the available funds.

11.4 Conclusion

The preferred measures of the "worth" of a project are:

- The Net Present Value (NPV);
- The Benefit Cost Ratio (BCR - calculated using initial capital cost as the denominator or in cases where the basis required for other Governments is different, calculation on both bases should be undertaken and clearly identified); and
- The Net Present Value per dollar of capital Invested (NPV/I).

These measures should be highlighted in presenting the results of an appraisal.

Another decision criteria which assists in the presentation of results is the Internal Rate of Return (IRR).

Agencies should note that NPV/I and BCR will be important considerations in respect of projects submitted for capital funding consideration to the Budget Committee.

12. Risk And Uncertainty

12.1 The Concepts Of Risk And Uncertainty

Risk can be distinguished from uncertainty. Risk refers to situations with known probabilities. That is, the number and size of each possible outcome is known and the chance of each outcome occurring can be objectively determined. For example, in the case of throwing unbiased dice, the number of possible outcomes and their probabilities are known prior to the event.

In practice, it is rarely possible to define the probability associated with each outcome, and the distinction between risk and uncertainty is not likely to be completely clear. The discussion in this chapter introduces a number of important concepts; but in practice these may not always be able to be used.

Data may be available in some circumstances. For example, information about the probability of a flood occurring is generally available from hydrological data. Hence, it is possible, in theory at least, to predict for any given size of protective works the probability of a particular flood event. One difficulty in this and similar cases is that major floods, which are critical to such assessments, occur infrequently and the probability estimates are accordingly unreliable.

Uncertainty, on the other hand, refers to situations with unknown probabilities. That is, the number and size of each outcome may or may not be known, but the chance of any single outcome occurring cannot be objectively determined. For example, the demand for new services is dependant on many factors and the relative influence of these factors may vary over time in an unpredictable manner.

A degree of uncertainty will be associated with almost any significant capital project. The problem is particularly acute in regard to public sector investments which are often comparatively long lived and of a substantial size, with little recoverable value.

For most organisations the shape of the operating environment in 15 or 20 years cannot be known, nor indeed can objective probabilities be attached to the various scenarios. Even the attachment of subjective probabilities is difficult and such attempts at quantification run the risk of creating a false sense of security. Uncertainty is therefore likely to be more prevalent than risk in capital projects in the public sector.

Decisions with lasting consequences, however, have to be made in this environment and in so doing scenarios or projections have to be used. Implicitly, or explicitly, each decision is based on a view of the future. It is considered that decision making, and project evaluation, under these circumstances will be greatly assisted if it occurs within a strategic planning framework which is integrated with scenario development. This will ensure that importance is placed on flexibility in developing solutions for the provision of service.

NSW Government agencies are required to apply a formal assessment of risk in planning new projects and major capital asset activities valued in excess of $5 million. Guidelines have been published as part of the Total Asset Management manual.

12.2 The Traditional Treatment Of Risk In The Public Sector

Past practice in the public sector has generally been to ignore the degree of volatility of the cost and benefit streams on the grounds that many public projects have costs and benefits which are very widely spread (risk pooling). Each individual is only therefore bearing a relatively small risk.

This would suggest that investment proposals could be judged on the basis of their expected NPV at the test discount rate, where the expected NPV is calculated as the sum of the NPV for each possible outcome weighted by the assessed probability (where available). As an example, a project might have a 70% probability of producing a NPV of $1 million and a 30% probability of producing a NPV of $2 million. The expected net present value (ENPV) would be calculated as:

$$ENPV = 0.7 \times \$1m + 0.3 \times \$2m = \$1.3m$$

This project could be compared with another which has a 50% probability of resulting in a NPV of $1.25 million and a 50% chance of producing a NPV of $1.35 million. The ENPV would be calculated as:

$$ENPV = 0.5 \times \$1.25m + 0.5 \times \$1.35m = \$1.3m$$

The ENPV is the same in both cases, but the variability of the result is obviously very different.

While risk-neutrality has been the traditional position in undertaking public sector evaluations, increasingly it is recognised that a more explicit allowance for risk is desirable in a number of cases.

In addition to assessing the effects of risk on the results of the economic appraisal attempts should also be made to reduce risk through project design (even though a cost may be involved). At the evaluation stage, this might include:

(a) Use of an independent expert to check reasonableness.
(b) Comparison of estimates with final costs and time scales for similar completed projects. If a consistent pattern emerges it could be assumed that current estimates may follow past patterns.
(c) Use of historical contingency allowances to provide a guide to present contingency allowances.

There are many well-known techniques for risk reduction in project design which will normally be considered as part of the technical appraisal of a project, such as the practice of spreading orders around components suppliers, the use of alternative fuels and changing the project design so as to accept lower performance in return for greater reliability.

12.3 Methods Of Assessing Risk And Uncertainty

In cases of straightforward risk, where all the possible outcomes and the probability of each outcome is known, the extent of risk is clearly apparent.

In general, however, it is more realistic to assume that there will be at least some, usually substantial, doubt about both the range of possible outcomes and the probabilities attached to them. The techniques of sensitivity analysis and scenario planning are then appropriate.

Sensitivity analysis and scenario planning do not necessarily make use of explicit probabilities of the different possible outcomes of an investment proposal. That is, they do not on their own provide a specific measure of risk, and the task of weighting the various possible outcomes falls on the decision-maker. Nevertheless, they are useful techniques for assessing the impact of uncertainty.

12.3.1Sensitivity Analysis

Sensitivity Analysis is used to assess the possible impact of uncertainty. It illustrates what would happen if the assumptions made about some or all of the key variables proved to be wrong and shows how changes in the values of various factors affect the overall cost or benefit of a given investment project.

A key practical role of sensitivity analysis is to incorporate different views about one or more key assumptions which can reasonably be held by the different people involved in the assessment process.

It is a useful means of indicating the critical elements on which the outcome of the project depends. This allows management to focus on these areas during project implementation or to divert further resources to the improvement of cost and benefit estimates and the reduction of uncertainty. (It is a necessary part of any investment appraisal.)

If a major project cost or benefit cannot be estimated with a high degree of confidence, clearly it would be desirable if the evaluation result was insensitive to movements in this value. If, however, the evaluation was sensitive, the level of uncertainty surrounding the estimate becomes important. Indeed it may be large enough to recommend that the project does not proceed despite having a positive NPV when the standard cost and benefit estimates are used (or alternatively depending on the direction of uncertainty, does proceed despite a negative NPV).

The steps in undertaking appropriate sensitivity tests are outlined below.

(1) Decide plausible range of values for factors subject to uncertainty:

eg
- real energy cost + or - 20 per cent
- real wages + 4 to +12 per cent
- exchange rate + 50 to -30 per cent

(2) Determine relationships between the sensitivities for the various variables (eg nominal wages and inflation). If correlations exist these may be tackled by:
- Moving to a higher level of aggregation (eg consider the movement of real wages rather than nominal wages and inflation).
- Looking at the underlying source of uncertainty.
- Specifying a set of mutually consistent assumptions for relevant factors under a number of different scenarios. This approach has developed into a complete method of approaching risk and uncertainty and is covered in the discussion of scenario planning below.

(3) Calculate the effect of plausible changes on the decision criterion (the NPV). The range of values taken by many variables may not be large enough to alter the decision and may therefore be eliminated, thus reducing the number of variables under consideration.

If sensitivity analysis is to be useful to decision-makers it needs to be undertaken systematically and presented clearly. There is no value in examining a large number of sensitivities chosen in an arbitrary way. Although a detailed examination could be simply carried out with the aid of computers it should not be presented in this way as it would merely produce an arbitrary set of possible outcomes. The choice of sensitivities should be made carefully having regard to the uncertainty of particular factors, particularly those that are more uncertain than others or where uncertainty is not symmetrical. Account should also be taken of any important relationships between factors.

Switching values may also be used as an alternative approach to sensitivity analysis when changes in only one variable are being considered. The 'switching value', is the critical value of a particular variable at which the calculated net benefit of the investment project changes sign. The idea is to calculate the value of that variable at which the NPV of an investment option becomes zero, or at which two options change rank. Having done this, the problem is reduced to deciding whether the variable is more likely to take on values above or below the switching value.

Sensitivity testing of results should include "worst case" outcomes such as combining variables - increasing costs and decreasing benefits.

12.3.2Scenario Planning

Sensitivity analysis only considers what would happen if one of the assumptions in the appraisal proved to be incorrect. An alternative is scenario planning.

Scenario planning is the process of looking at the consequences of various possible states of the world or future scenarios. Scenarios have been used in practice to not only analyse large individual investment projects but also entire corporate strategies. Scenarios should be developed so that they are mutually exclusive. Scenario construction should avoid the temptation to average any two scenarios, or to choose the central or the most likely one of a number.

Scenarios usually consist of descriptions of the future socioeconomic environment which, while being logical and internally consistent, differ in crucial respects. The idea is to set up two or possibly three scenarios so as to draw the attention of senior management to the technical, economic, political, or other uncertainties upon which the success of the investment project depends. Scenarios are not forecasts, they are an aid to understanding the mechanisms at work. In fact, scenario planning has grown from disenchantment with the results of traditional methods of forecasting.

In constructing scenarios, the following practical issues may be encountered by investment evaluation practitioners:

- Persuading decision makers accustomed to short-term horizons to take long-term scenarios seriously.
- Specifying the particular scenarios consistently. This means that scenarios should be internally and mutually consistent.

Scenario planning can be a particularly effective means of encapsulating the inherent uncertainty facing decision makers and ensuring the importance of flexibility in planning is addressed.

12.4 Decision Criteria Under Risk And Uncertainty

Decision criteria using the results of sensitivity analysis and scenario planning can be grouped into three categories:

1) Presentation of the net present values for the options under a range of sensitivities or scenarios with the judgement across sensitivities and scenarios left to the decision maker.

2) Presentation of the net present values for the options under a range of sensitivities or scenarios and the calculation of decision criteria such as the "maximin" payoff (option chosen which maximises the minimum return) or a simple average of results weighted by an index of pessimism.

3) Allocation of probabilities to different sensitivities/scenarios and calculation of decision criteria such as the expected net present value and the degree of dispersion in the expected net present value.

The first approach is the approach most commonly used. In particular, it incorporates the case where a most likely outcome is specified and the recommendation is based on the net present value for the options under this outcome, without incorporating the results under other outcomes in the decision criteria. This approach is adequate for many projects, but for large projects, the outcome of which can have a major impact on the finances and service delivery of the sponsoring body, and smaller, but closely targeted, projects a more thorough analysis of the impact of uncertainty and risk is needed.

When probabilities cannot be attached to different outcomes, the expected net present value is not a feasible decision criterion. However, a number of criteria have been developed which provide some guidance in these circumstances. The choice of criterion will depend on attitude toward risk.

Maximin Pay-Off Criterion

This criterion seeks security by maximising the return when the most adverse conditions are encountered. For each strategy the minimum NPV for the range of sensitivities/scenarios is found and the strategy with the highest minimum NPV is chosen.

Minimax Regret Criterion

This criterion seeks security by minimising the maximum loss which could result from selecting a particular option. The NPV for each option in each scenario is compared with the NPV which could have been achieved for that scenario if the outcome had been known in advance and the most appropriate option chosen. The difference is taken to measure "regret" and that option is chosen which has the lowest regret over all scenarios.

The decision rules for handling uncertainty are less satisfactory than those for handling risk. This reflects the fact that uncertainty is, because of its nature, less amenable to simple solutions. The "minimax regret" and "maximin NPV" rules will probably be considered too conservative and risk averse for many decision makers, but they do provide additional information for decision-makers. Under conditions of uncertainty a judgemental approach will be required and would be facilitated by the generation of results for carefully selected sensitivities/scenarios and their interpretation using rules such as those outlined above.

Where probabilities can be ascribed to particular outcomes, the present value of the investment project can be calculated for each particular outcome and weighted by its probability of occurring. The decision can then be based on the ENPV.

Although it is often difficult to obtain explicit probability estimates it may be possible to obtain some information about the likelihood of an outcome. Instances where such information is available in the public sector include flood protection, road accidents and repair frequencies for standard pieces of equipment.

It is sometimes also possible to obtain objective information about probabilities by looking at historical data and then calculating the frequencies of various events. Obtaining probability estimates for variables with limited historical data is very difficult. For these variables it is often necessary to fall back on subjective judgements.

Users of this procedure should note that being an average value, the ENPV contains no indication of the possible range of outcomes around the average value.

The ENPV may therefore not be adequate for agencies who may want to sacrifice some expected value for a reduction in the dispersion of possible outcomes about the mean. Decision rules under risk therefore require the consideration of the various ways of quantifying the dispersion around the expected value.

Dispersion around the mean may be quantified by the:

- Range
- Variance
- Coefficient of variation.

The range (the difference between the biggest and smallest possible outcomes) is not recommended as it takes no account of the fact that various outcomes have different probabilities and is determined by extreme values that may be unlikely to occur.

The variance (the average 'squared' difference between each possible outcome and the expected value) is a much more useful statistic in risk analysis. In practice, the standard deviation (the positive square root of the variance) is generally quoted by analysts. The standard deviation however, may be insufficient as a risk measure when comparing projects with different expected values.

In comparing projects with different expected values the coefficient of variation (the standard deviation divided by the expected value) is more appropriate as this statistic measures the riskiness per unit of cost or benefit (it allows for differences in the size of projects) and is also independent of the units for the calculations.

12.5 Conclusion

Problems of risk and uncertainty will almost inevitably be encountered in investment appraisals. Procedures which should be adopted in tackling these problems are as follows:

- Risks should be minimised as far as possible through careful estimation of costs and benefits, reference to ex post evaluations of previous projects and the use of risk management techniques in the design of the project;

- Sensitivity analysis or scenario planning should be undertaken to test the robustness of the analysis to forecast errors. This analysis would show the impact of alternative outcomes in those areas subject to the greatest uncertainty;

- Where probabilities can realistically be assigned to the alternative outcomes the expected net present value should be calculated, as well as the coefficient of variation;

- Where probabilities cannot be assigned to the possible outcomes (the more common case):

  - switching values should be calculated ie the value which a variable must attain for the ranking of the alternatives to change;
  - a matrix showing the appraisal results (in particular NPV, BCR) for each option under a selected range of sensitivity tests or scenarios should be presented; and
  - these decision criteria should only be used as a guide to the preferred option.

13. Ex Post Evaluation

13.1 Introduction

Ex post evaluation of projects is undertaken for three important reasons:

(1) Reassessment Of Economic Appraisal Approach

Any economic appraisal is based on a series of assumptions about costs and benefits that may or may not be fully realised in practice.

An ex post evaluation enables the ex ante evaluation procedure to be fine tuned. In effect there should be an ongoing feedback process between the operating results of existing infrastructure and programs, and the assumptions used to evaluate new capital expenditure decisions and programs.

(2) Control On Ex Ante Evaluation Thoroughness

Where there is an established process of ex post evaluation, an extra discipline is imposed on the economic appraisal process.

(3) Ongoing Asset Management

It is not enough to review projects after implementation to determine if the ex ante assumptions were realistic or not. The effectiveness of the stock of infrastructure is a function of a complex series of factors including changes and shifts in demand, technological change, movements in relative prices of inputs and asset values and a host of other factors. Public sector agencies should introduce procedures to keep under review the utilisation of assets and of alternatives such as redeployment to ensure that resources are allocated in the most effective manner.

13.2 Guidelines

Scope Of Reviews

A distinction needs to be made between ongoing asset management reviews and reviews of specific projects. It is assumed that public sector agencies will institute procedures to monitor the utilisation of existing assets. In addition to these procedures it is necessary to review individual projects as a means of fine tuning future capital expenditure decisions.

The decision of which projects will be subject to ex post evaluation will be dependent on the scale, risk and strategic importance of the project.

As a broad guide only 1 in 10 major projects would need to be the subject of a full ex post evaluation, though all major projects should be the subject of some form of review in terms of assumptions versus reality.

All projects of a size greater than $10 million should be the subject of a review.

Where an agency's projects are not of sufficient scale to require an individual ex post evaluation the agency should undertake an ex post evaluation of a representative project at least once every five years.

Timing

Ex post evaluation needs to be undertaken once the project is fully complete and experiencing normal operating conditions. Accordingly, it is suggested that the evaluation should be undertaken about two years after commencement of the operating phase. For select projects further evaluation should then occur over the economic life of the project to determine if there are significant variations in operating expertise.

Responsibility

The ex post evaluation should not be undertaken by the same personnel responsible for the initial economic appraisal, though of course the expertise and knowledge of those initially involved should be called on as required.

13.3 Conclusion

All public sector agencies should establish procedures for ongoing monitoring of the stock of assets and selective ex post evaluation of major capital works projects and programs.

14. Cost Effectiveness Analysis

14.1 Introduction

Most of what has been said in the preceding chapters applies equally to CBA and CEA. CEA is, indeed, often regarded as a limited (and less rigorous) version of CBA, as it does not attempt to place a value on the major benefits of the proposal.

Nevertheless CEA would more appropriately be regarded as the more difficult area. The reason for this is not so much the nature of cost effectiveness techniques but more the difficulties caused by the areas where they are applied. These Guidelines propose the use of CEA in areas such as law and order, education, health and the environment. These are areas where quantification and valuation are inherently difficult, where it may be difficult to even identify the effects of the proposal, and where the techniques of economic appraisal are often regarded with suspicion.

This should not be the case. To answer one common charge, economic appraisal does not ignore unquantifiable benefits; they remain a vital part of the report on any appraisal and their identification and description is one of the difficult parts of CEA. But even when all the major benefits cannot be valued, there remains a need to place a value on those benefits (and costs) which can be valued.

Decisions have to be made both between projects in the same area (a new wing to a hospital versus a heart transplant unit) and between projects in different areas (a new hospital versus a new school). Such decisions cannot be made with total disregard for the cost of the various projects. And neither can they be made with total disregard for the effects of the projects. Hence the use of CEA, to ensure a full comparison of the costs and effects of various projects.

While CEA is a minimum requirement, there is, however, no room for complacency. The fact that a benefit cannot be valued at the current time does not necessarily indicate that the techniques will never exist to value the benefit. Opportunities to extend the analysis in this way should always be kept under review.

14.2 Output Versus Effectiveness

A careful distinction has to be made between the outputs of a project and the effectiveness of a project.

The outputs of a scheme may often be directly measured - 136 students attend a TAFE course, 5000 people attend an exhibition. The aim of economic analysis is **not** to compare costs and output. Effectiveness is a way of comparing the output of a project against the objectives specified for the project. The objectives may have been to produce a TAFE course and target it at a particular group of students. So one needs to ask how many of the 136 students attending the course came from the target group. The course may have failed totally in terms of effectiveness if none of the 136 belong to the target group. The exhibition may have had the objective of stimulating investment in New South Wales. Has it been effective? The fact that 5000 people attended it does not tell us.

This distinction is an issue in both CBA and CEA, but the distinction between output and effectiveness is often more difficult in those areas applying CEA and it is easier to lose sight of the objectives. This is particularly important when trying to compare projects achieving similar objectives; projects with similar outputs may have very different degrees of effectiveness.

14.3 Treatment Of Benefits

While certain areas (such as education, health, the environment and law and order) obviously lend themselves to CEA rather than CBA, care should be taken not to assume that benefits from projects in these areas can neither be quantified nor valued. And even if this is the case at the present time, there is no reason to believe that it should always be the case.

As discussed in Chapter 9, benefits in some areas can be quantified but not valued. Research has been undertaken in the past in some of these areas, largely by academic groups. Research is to be encouraged, but care must be taken when using the output of these studies. Clearly these are difficult areas in which to work and, in the course of research, very different views are often initially put forward. Unless there is some degree of consensus about a particular view, it might be misleading to base appraisal results on these figures.

It is therefore suggested that the introduction of valuations in such areas should be a gradual process. Initially it might be necessary to rely on non-monetary measures of the effects. But simultaneously, a program of work on the development of valuation methodologies should be undertaken in those areas where these impacts are significant.

Work undertaken by one agency could well be of assistance to other agencies. Before embarking on a work program, agencies may well want to consider whether they should join forces with another agency facing similar problems. This would allow the costs of the work to be shared, and help formulate a consensus between agencies on the appropriate treatment of these impacts. In addition, Treasury should be kept informed of the work being undertaken, so that it can play a coordinating role.

Similar comments can be made about benefits which cannot even be quantified. In many of these areas, there may be little prospect of introducing any quantification. Nevertheless, consideration should be given to this possibility. In particular, the introduction of a more objective ranking system may be possible. This might enable more definite comments to be made on the priority which should be attached to various projects within a given area, although it would obviously not allow comparisons to be made across areas.

Again a work program might be involved in order to introduce these improvements. Results may not appear quickly, but any improvements made would assist agencies in the prioritisation of their projects and Ministers in their decisions.

Two means of providing information on benefits to assisting decision making on projects covered by Cost Effectiveness Analysis are:

Relating The Cost Difference Between Options To Expected Benefits

Where CEA is used to support a funding request for a project, normally it is claimed that the unquantifiable benefits exceed the project's costs.

Assessment of the reasonableness of this claim should be attempted, using indirect measures.

For example, a proposal may have a Net Present Cost of $10m which equates to a cost of $1 per user over the life of the project.

It may be considered that this amount represents a reasonable estimate of the value customers would place on the project's (free) services. In effect, users might be "willing to pay" $1 (but realistically would not pay say $100). This approach assesses the lower limit of the "band" of values users place on the benefits.

Hence it may reasonably be assessed that the project's unquantifiable benefits would exceed its costs.

Simply relating the total cost difference between options to the **primary** expected benefit can assist informed decision making. For example a $2m present value difference in Option A compared to Option B, expected to result in "improved level of service provision" may result in a different decision than if the present value difference were $20m.

Weighting Qualitative Aspects

Objective consideration by say groups of customers and service providers of a facility, in terms of the qualitative benefits of different options, eg layout impact on service efficiency, relationship to other facilities, likely waiting time, etc can provide additional information to assist decision making.

Individual attributes can be assigned weights. Aggregate scores for each (on a scale of 1 to 10) can be produced for each option evaluated.

14.4 Procedure

The process of conducting a CEA is very similar to that of conducting a CBA. The stages outlined in Chapter 4 still apply, and the issues raised in earlier chapters should be considered.

The first stage is to define the objectives. The issues here are the same as for CBA, although it is recognised that determination of the objectives may be more difficult.

The next stage is to identify the options and the benefits accruing from each. CEA is easiest when all options have the same degree of effectiveness (the exercise then approximates a cost minimisation exercise). However, this is not always possible. For example, if an expansion of an existing program is being considered, the "do nothing" option will necessarily provide a lower level of service. Similarly, different approaches to meeting an objective may have different degrees of success by their very nature.

Clearly, there is no easy solution to this problem. Wherever possible, options with similar degrees of effectiveness should be considered. If this is impossible, an attempt to quantify the effectiveness of each option is desirable. The costs of the option can be compared more easily if one option can be said, for example, to be twice as effective as another. Suggestions in 14.3 may also assist.

In some cases, however, neither of these options will be possible. In these cases, the only solution is to describe as fully as possible the effectiveness of each option and leave the decision maker to make a subjective judgement.

Just as with CBA, care should be taken to consider all reasonable options. There is a natural tendency to concentrate on the types of solutions that have been attempted in the past. This should be resisted as it can lead to potentially successful options being dismissed at an early stage.

It may be possible to place a value on some benefits accruing from the project. If so, they should be valued in the normal way along with all the costs on which a value can be placed. The present values of the cost and benefit streams can then be calculated as described in earlier chapters.

The benefits and costs for which no valuation is possible then need to be discussed as they are in CBA. In the case of CEA, however, these may be far more important.

Sensitivity analysis will also be required, as it is in CBA. Indeed it is likely to be particularly important in the case of CEA where there may be considerable doubt about the effectiveness of the various proposals. Where possible, the sensitivity analysis should be undertaken in numeric terms, but in other cases a descriptive analysis will have to suffice.

Finally, a post-implementation review is again going to be particularly important, as it will give important information to assist in future appraisals.

14.5 Conclusion

The difficulties of CEA result not from the technique itself as from the areas in which it is applied. A careful distinction between output and effectiveness is required in these areas.

Attempts should be made to value (or, at least, quantify) benefits and costs wherever possible, but this should not be achieved by the use of arbitrary values. Agencies should undertake longer term research to value benefits if there is no current consensus about their valuation. In this regard the discussion in Sections 9.3.1, 9.3.2 and 9.3.6 is relevant.

Particular care will need to be taken in the identification and description of benefits and costs when CEA is used, as well as in testing the sensitivity of the results to particular assumptions.

ANNEX 1

Summary of Changes from First Edition (December 1988) to Produce 1990 Edition

1. Rename as "NSW Government Guidelines for Economic Appraisal".

2. Encourage the use of the Guidelines in all relevant areas of economic appraisal in the public sector.

3. Emphasise that the objective of a project is not to be so narrowly defined as to preclude consideration of all viable options.

4. Emphasise that all practical options to meet an objective must be considered at the earliest possible stage in planning, including for instance private sector provision of a service.

5. Provide scope for agencies not to undertake appraisal of projects which are essential on health, safety or other grounds or for which no real alternative exists - following contact with the central agencies in the first instance with a case supporting the exemption.

6. Clarify and explain that the more commercially oriented agencies are not exempt from the requirement for economic appraisal. This does not remove the requirement for financial analysis since both types of assessment are aids to decision making at the individual agency and central agency levels.

7. Clarify procedures and emphasise the need, where relevant for:

   (a) Appraisals to be submitted throughout the year to avoid bunching with submission of bids in March each year;

   (b) Appraisals to be accompanied by a Ministerial letter indicating support or otherwise for the findings;

   (c) Liaison with central agencies at an early stage (contact points provided), particularly where difficult or contentious issues may be involved;

   (d) Copies of appraisals to be sent to the appropriate area of Budget Division, Treasury, and to the Capital Works Unit, Premier's Department;

   (e) A copy of the terms of reference to be submitted with the appraisal; and

   (f) Incremental recurrent costs to be shown separately, by year, to assist forward Budget planning.

8. Amend requirements for accreditation of consultants through:

   (a) Removing the distinction which presently exists between accreditation of some consultants for cost benefit analysis only and others for cost benefit analysis and cost effectiveness analysis;

   (b) Introduction of an accreditation scheme for Departments and Authorities wishing to undertake in-house economic appraisals;

   (c) Suggesting that consultancy work should not be over-concentrated with individual consultants to ensure that fresh approaches are not overlooked; and

   (d) Requiring formal terms of reference to be drawn up and submitted with the appraisal.

9. Clarify certain technical matters:

   (a) The valuation of land for the purpose of estimating opportunity cost should be based on maximum market value under likely land zoning (in consultation with central agencies and Valuer General's Department, where appropriate);

   (b) The use of "shadow prices" in appraisals to value inputs and outputs may be appropriate in certain areas (in consultation with central agencies);

   (c) The importance of the "with/without" principle (what the world would be with and without the project), other than in exceptional circumstances, in assessing the benefits and costs of a project relative to the "do nothing" case;

   (d) Explain application of "willingness to pay" principle in regard to projects involving subsidised charges; and

   (e) Emphasise the need for research to be undertaken, as a special study where necessary, in relation to those areas of significance where currently it is difficult to quantify in money terms the main costs and benefits of projects.

ANNEX 2

Summary of Changes from Second Edition (January 1990) to Produce Third Edition (1997) Edition

Most changes were of an editorial nature. However, the opportunity was taken to clarify the following matters:

1. Assessment of distribution of benefits among public/private sector parties;
2. Requirements relating to essential projects and environmental assessment;
3. Pooling of knowledge among agencies dealing with similar projects;
4. Central agency roles and contact points;
5. Timing of submission of economic appraisals;
6. Basis of calculation of benefit cost ratio;
7. The preferred measures to be reported in economic appraisal results;
8. Discussion of benefits of projects evaluated by cost effectiveness analysis to assist decision making;
9. Reference to the simplified version of the guidelines to assist readers; and
10. Removal of the accreditation system.

ANNEX 3

Summary of Changes from Third Edition (1997) to Produce Fourth (2007) Edition

Changes were mainly editorial and additional information to clarify certain matters:

1. Explanation of what Treasury looks for in its review of economic appraisals.

2. Clarification of issues concerning discount rates.

3. Discussion of findings of overseas research showing evidence of systemic bias in project appraisals of major infrastructure projects.

4. Commentary on economic impact assessments.

5. Advice on "real options".

6. A summary explanation of economic appraisal.

ANNEX 4

Economic Assessment Of Environmental Impacts

Introduction

Purpose

The purpose of this annex is to extend the framework of the Guidelines to more specifically cover valuation of environmental impacts. Economic appraisal of environmental impacts are an integral part of the broader economic appraisal process described in the Guidelines.

An economic appraisal does not replace the Environmental Impact Statement (EIS) process. It may rely on input from, and in turn provide input to, the EIS process. The economic appraisal of environmental impacts is separate to the EIS process.

Underlying Concepts

The purpose of economic appraisal is to identify and help achieve a socially efficient allocation of scarce resources. A socially efficient allocation is one which maximises the return on the total (including environmental) capital stock in order to maximise the economic welfare over time of all citizens.

This requires that:

- Benefits are valued on the basis of the amount that consumers are willing to pay for them, measured by the market price actually paid; and
- Costs are valued on the basis of what other suppliers would be willing to pay for the resources employed:

and also that:

- Externalities, such as pollution, are also accounted for, along with the above private benefits and costs, as part of the total social benefits and costs.

These concepts underlie the methodologies and techniques of economic appraisal of environmental impacts presented below.

Procedures

The steps in project design and evaluation are summarised in the flow chart below.

Economic appraisal is an important tool used throughout this process. The methodologies and techniques used are strongly influenced by the stage of a project. Generally, the closer a project is to being commissioned, the more involved and exacting the economic appraisal needs to be.

Ecologically Sustainable Development

Ecologically Sustainable Development (ESD) should be taken into account at all stages of a project.

ESD requires the effective integration of economic and environmental considerations in decision-making processes according to the four inter-related principles and programs presented in s 6.(2) of the Protection of the Environment Administration Act 1991 and restated in Schedule 2 of the Environmental Planning and Assessment Regulations 1994:

- **Precautionary principle - if there are threats of serious or irreversible environmental damage then lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (this can be put into practice by reference to a safe minimum standard discussed below);**
- **Inter-generational equity principle - the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;**
- **Biodiversity principle - conservation of biological diversity and ecological integrity; and**
- **Valuation principle - improved valuation and pricing of environmental resources.**

The valuation principle of ESD is the focus of this annex.

Environmental Impacts

Economic appraisal of environmental impacts first involves identifying and describing the impact as well as the probability of its occurrence ie risk.

A risk assessment of a potential environmental impact should include:

- Identifying its nature and source;
- Quantifying its relation with actions; and
- Defining its scale, scope and timing.

Particular attention should be paid to compliance with legal or policy standards, such as set levels of pollution or waste disposal, and irreversible impacts (ie an impact that so transforms an environmental state that, regardless of future decisions and changes, the original state cannot be recovered).

After the risk of an environmental impact has been assessed, the next step is to compare assigned probabilities to the safe minimum standard (where one exists). If the probability of impact is above the particular standard then a project should not proceed in its present format. If the probability of impact is below that standard then the next step is to value it.

An EIS may be relied on, where applicable, as a source of information, supplemented where necessary by additional scientific or technical input.

Valuation Of Environmental Impacts

Environmental benefits and costs can be assessed using the methodologies and techniques discussed below. The intention is to internalise environmental externalities into the decision-making process on the basis that the environment is not free.

Sensitivity & Threshold Analyses

Given the uncertainty surrounding environmental impacts and their values, sensitivity analysis should be performed in order to identify those factors with the greatest influence on a project's overall net present value (NPV). Those factors to which the NPV is highly sensitive might be investigated in further detail by say varying the forecast by ± 20%

Threshold analysis is a form of sensitivity analysis. It involves a process of comparing the environmental impacts, which are not reasonably quantifiable, with the quantifiable net benefits/costs to determine a hurdle level. If the costs (or benefits) of these impacts are reasonably expected to be larger than the quantifiable net benefits (or net costs) then this may lead to a decision not to proceed (or proceed).

Benefit transfer techniques may provide information on the magnitude of the initially unquantifiable values. The NSW Environment Protection Authority's (EPA is a functional unit of the Department of Environment and Conservation) database on environmental valuation studies (*ENVALUE*) is an excellent source for this purpose. *ENVALUE* is available online at www.environment.nsw.gov.au/envalue/

Ex-Post Evaluation

It is only after a project has been implemented that its actual impacts can be observed and the actual benefits and costs measured. Government agencies are strongly urged to undertake an ex-post evaluation of a project so that forecasts can be compared with observed outcomes. This will generally help to improve future economic appraisals of environmental impacts and, for some projects, it may be a condition for funding approval.

Methodologies

The major problem in valuing environmental impacts is that they are, generally, not traded in the market and therefore do not have a market value. Values must be imputed using the methodologies and techniques discussed below.

There are benefits and costs associated with each of the different methodologies and techniques. The level of assessment should therefore be commensurate with the project's benefits/costs eg $1 000 should not be spent where benefits/costs are reasonably estimated to be $100.

Numerous methodologies can be employed for economic appraisal of environmental impacts including:

- Cost benefit analysis;
- Risk benefit analysis;
- Cost effectiveness analysis (CEA);
- Multi criteria analysis (MCA);
- Decision analysis (DA); and
- the Delphi method.

Cost Benefit Analysis (CBA)

CBA is the preferred methodology for economic appraisal of environmental impacts.

It can be used to assess the total and net benefits and costs of a project and, thus, its effect on economic welfare.

It is broader than financial analysis which focuses on cash flows not welfare improvements.

Pros:

- covers social as well as private benefits/costs;
- use of dollar values, allowing for direct comparisons; and
- use of real values.

Cons:

- often difficult to quantify external benefits/costs.

Risk Benefit Analysis (RBA)

RBA is essentially CBA in the context of risk and uncertainty. Risk and uncertainty is discussed in detail in the Risk Management Guidelines.

Pros:

- a more comprehensive version of a CBA.

Cost Effectiveness Analysis (CEA)

CEA is a form of economic appraisal that tends to be used when most of the benefits of a project are not readily measurable in (actual or proxy) dollar terms. This may occur in areas such as health, education, law and order, and social welfare.

Pros:

- similar to CBA in terms of cost analysis; and
- particularly useful for analysing environmental mitigation, abatement or protection.

Cons:

- does not measure benefits; and
- benefits/outcomes must be reasonably similar.

Multicriteria Analysis (MCA)

MCA is a collection of mathematical techniques designed to facilitate the ranking of mutually exclusive options according to a predetermined set of decision criteria. The relative importance of criteria are represented by weights.

Pros:

- can complement CBA/RBA or CEA;
- may be used as a substitute for CBA/RBA or CEA if these are not feasible; and
- particularly useful for assessing ESD.

Cons:

- no dollar values;
- weightings are subjective; and
- less rigorous than CBA/RBA or CEA.

Techniques

There are four broad categories of techniques for measuring the economic value of environmental impacts as part of a CBA/RBA or CEA:

- market-based;
- surrogate market;
- hypothetical market; and
- benefit transfer.

All of these techniques attempt to measure the total economic value of a project's impact on the environment by producing a proxy market value.

It is important to note, however, that market prices themselves do not always reflect the true private resource cost. This is because of the existence of market failures, such as monopoly provision, and/or government distortions, such as subsidies or anti-competitive regulation.

ENVALUE can be consulted regardless of which technique is used, although, reference to it is of most importance for benefit transfer.

Using these techniques to value environmental impacts reinforces the fact that the environment has both use and non-use value. The former consists mainly of the environment's value as an input into the production and provision of goods and services, and as a directly consumed good or service. The non-use value of the environment is its intrinsic value.

1 Market-Based

Market-based valuation techniques are used when the market has, in part, valued an environmental impact (albeit imperfectly). The partial market valuation is then used to estimate the entire value of the environmental impact.

- Partial market valuations are usually derived from:
- productivity changes in physical capital ;
- productivity changes in human capital ;
- opportunity cost of foregone benefits ;
- preventive expenditures; and
- corrective expenditures on repair, replacement, compensation or relocation.

Pros:

- relatively rigorous compared to techniques 2 and 3 below; and
- relatively inexpensive compared to techniques 2, 3 and 4.

Cons:

- ignores some impacts eg pain and suffering in the cost of human illness.

2 Surrogate Market

Surrogate-market valuation techniques recognise that the value of an environmental impact can be embedded within the cost of a good or service. They, thus, try to dissect the value of the environmental impact from the total value of the good or service.

These techniques focus on:

- property values using hedonic pricing - eg the value of a house under a flight path will be lower than an otherwise identical one elsewhere;
- travel costs - eg the expenditure on travel to a recreational site with no access fee; and
- wage differentials - eg the wage premium for working in an underground coal mine.

Pros:

- more rigorous than techniques 3 and 4.

Cons:

- generally less rigorous than technique 1;
- generally more expensive than technique 1; and
- difficult to separate out environmental impact eg flight path noise on house prices.

3 Hypothetical Market

A hypothetical market for environmental impacts is developed, where no markets exist, through the use of consumer surveys .

Contingent Valuation Method (CVM) can be used to elicit consumers':

- willingness to pay to prevent an environmental impact; or
- willingness to accept compensation in order to allow an environmental impact:
- through survey questions.

CVM is subject to a wide range of potential biases, thus particular attention must be given to the design and means of conducting a survey, and survey questions should be made available as well as the results.

Pros:

- generally less expensive than technique 2; and
- only way to directly measure existence values.

Cons:

- not revealed preferences ie people overvalue willingness to pay;
- generally less rigorous than techniques 1 and 2;
- generally more expensive than technique 1; and
- subject to a wide range of potential biases.

Contingent ranking, which ranks alternative combinations of environmental and non-environmental attributes, and the Delphi approach may be used respectively when CVM is not feasible.

4 Benefit Transfer

Benefit transfer is the only one of the four major valuation techniques not to involve original studies. It draws upon previous studies with similar:

- projects;
- environmental impacts; and
- consumers or suppliers.

The first 'port-of-call' should be *ENVALUE*.

Pros:

- generally the least expensive of the four techniques.

Cons:

- often data is not readily transferable; and
- dependent on quality of study results.

Project Design & Evaluation Flow Chart