

Project Evaluation Guidelines

**Queensland Treasury
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*For further information, please contact:
Budget Division
Queensland Treasury
Executive Building
100 George Street
Brisbane Qld 4000
or telephone (07) 3224 5712*

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1. Introduction

These guidelines outline the rationale, processes and requirements for the evaluation of capital projects in the Queensland Public Sector. Project evaluations of major capital projects are required under the Public Finance Standard for Asset Management (Sect. 346-7, July 1995), and form part of the procedures associated with the State's Capital Works Program.

The guidelines will assist agencies to evaluate project options in a consistent and comprehensive manner, and to prioritise competing projects. At a whole of government level they provide a uniform framework for the evaluation of capital projects in the context of the State strategic planning process.

Government Owned Corporations are not subject to these guidelines as their investment evaluation criteria are established by shareholding ministers; commercialised entities within departments would place greater emphasis on financial aspects of the project.

These guidelines cover the key principles to be applied in the evaluation of capital projects, but, consistent with these principles, individual agencies are encouraged to develop their own evaluation manuals to address the particular issues and concerns relevant to each organisation.

The focus of these guidelines is primarily on what is required for a project evaluation rather than on detailed descriptions of long established techniques, such as cost benefit analysis, for which there is already a wide range of literature available (see references at the end of these guidelines).

2. What is project evaluation?

Project evaluation is a methodology for assessing the economic, social, environmental and financial impact of proposed capital projects. All the impacts associated with a capital project are identified and, where possible, costs and benefits valued in monetary terms, so that the projects selected by government will provide the maximum net benefit to the State.

Economic analysis assesses the net worth of a project for the economy. It is usually the major element of a project evaluation because it provides a means to rank projects in terms of the efficient allocation of resources. It provides an initial default ranking for projects which may then be modified by analyses of the social, environmental and budgetary issues associated with these projects. For these reasons, economic analysis is discussed in greater detail in these guidelines than the other analyses.

Social and environmental analyses assess the effect of the project on social groups, employment, regional development, etc. and on natural ecosystems, pollution, heritage, rare species etc. respectively. They also identify ways to deal with these issues. The extent to which these analyses form part of a project evaluation depends on the importance of these issues for a particular project.

The fourth element in project evaluation, budget analysis, provides decision-makers with information on cashflows, borrowings, funding sources, etc. in order to assess the budgetary implications of the project. It is required for all projects which impact on the State Budget.

These various analyses are then considered together, the options ranked and a preferred option selected.

Project evaluation assesses the economic, social, environmental and financial impacts of a project and combines these to provide an overall assessment of the project.

3. The purpose of project evaluation

The purposes of project evaluation are to improve the quality of services, to ensure value for money, and to prioritise proposed capital projects.

This is achieved through a structured process which makes it possible to:

- clearly define project objectives, and consider a wide range of options to meet these objectives;
- link the project to the strategic objectives of the government, the State Capital Works Program and an agency's physical asset strategic plan;
- carry out economic, social, environmental and budgetary analyses of the project; and
- identify the net benefit of the project to the community, and the effect on the State Budget.

Project evaluations assist departments to make decisions on proposed capital projects. They provide the means to assess the viability of proposed capital projects, and to rank competing projects in the department's annual capital works program.

Project evaluations also facilitate deliberations by the Cabinet Budget Committee during the Budget process. They assist in the selection of projects to be included in the State Capital Works Program.

4. Which projects should be evaluated?

All capital projects, including fixed capital expenditure, plant and equipment, and capital grants and subsidies, should be subject to evaluation, commensurate with the level of investment, to provide the necessary information to decision-makers. There are also formal reporting requirements for capital projects greater than \$1 million.

Under the Public Finance Standard for Asset Management (Section 347), accountable officers are to provide the Treasurer with evaluations of physical asset investments if the investment is estimated to be more than:

- (a) \$5 million and is to be funded from the department's capital base; or
- (b) \$1 million and;
 - (i) is to be funded from specific budget funding; or
 - (ii) the Treasurer has asked for the document.

Under the Public Finance Standards, there are formal reporting requirements for evaluations of capital projects over \$1 million.

All capital projects should be evaluated irrespective of whether they are funded through the State Budget or from other sources (for example, an organisation's own revenues, borrowings, Commonwealth funding etc.). It is the expected value of a project to the community which is being evaluated, not the source of funding.

Evaluations should also be undertaken in respect of any substantial capital projects and expenditures for which individual ministers; or organisations may have discretion and can commit without reference to Cabinet.

5. Costs and timing

Costs

The resources devoted to each evaluation should be commensurate with the size and importance of expenditure involved.

As a major purpose of project evaluation is to improve value for money, the cost of project evaluation must be balanced against the benefits of improved decision making. The resources allocated to a project evaluation should be the minimum necessary to inform decision-makers adequately of the worth and impact of the project.

Key clients and stakeholders (e.g. departmental management, Treasury) should be consulted on a periodic basis to ensure the evaluations are relevant to client needs and to avoid unnecessary costs and delays.

Timing

In view of the substantial financial implications of the capital works program, it is essential that information on the viability of proposed capital projects is available to Treasury and the Cabinet Budget Committee in the development of the State Budget.

Project evaluations for major capital projects, to be funded from a department's capital base and to commence in the next financial year, should be completed by the start of the annual Budget process. The evaluations should be completed sufficiently in advance of the Budget process to allow the necessary time for review. This applies especially where there are contentious issues.

Initially, only short-form evaluations are required for new capital initiatives. Projects which the Cabinet Budget Committee determines merit further consideration will require a full evaluation to be undertaken. These will be then considered by the committee later in the Budget process.

More detailed information on the Budget process itself is outlined in the Treasury Budget Manual. The Budget Division of Treasury can provide the specific dates for the budget process for a particular year.

The resources devoted to an evaluation of a capital project should be commensurate with the value and importance of the project.

Early contact should be made with the Budget Division of Treasury, to allow adequate consideration of the project in the Budget process, particularly where the evaluations involve contentious issues or where advice is required on specific issues.

6. How does project evaluation link to strategic plans and the budget process?

The evaluation of capital projects is a key element of a department's financial and service delivery planning, and in the development of the State's Capital Works Program. Project evaluations are used to optimise service delivery strategies and resource utilisation within a department, and to do so from a whole of government perspective.

Physical asset planning, project evaluation and budgeting are the key elements in determining what assets are needed, which provide the best value for money, and which can and should be funded.

Although these three elements have been presented sequentially, they represent an ongoing process which is interlinked and interdependent. For example, the results of project evaluations could be expected to modify both physical asset planning and Budget decisions.

Ensuring that these three elements are linked effectively is important in being able to provide the right infrastructure at the right price and at the right time. These linkages are illustrated in diagram 1.

To achieve this linkage, service delivery strategies and the assets necessary to support them should be identified in a department's corporate plan and its physical asset strategic plan. Information on this aspect of the process is contained in Treasury's *Physical Asset Strategic Planning Guidelines*.

In line with this overall strategic direction, project proposals are selected and then evaluated in order to prioritise them, and to decide whether to include them in the department's proposed capital program. Proposals are then considered in the Budget context and, based on which proposals are approved, the departmental and the State capital programs are developed.

These *Project Evaluation Guidelines* are designed to assist in the evaluation and prioritisation part of the process.

Diagram 1

Strategic Planning, Project Evaluation and the Budget Process



7. The project evaluation process

The project evaluation process involves the identification of service delivery needs, the listing of options (including a “do nothing” option), the gathering of relevant data on these options, detailed analyses of the options, and the selection of a preferred option.

The process is shown in diagram 2.

7.1 Define the objectives and scope of the project

The services to be provided by the project must be assessed and identified in order to clarify the purpose of the project. This purpose can be expressed as an “outcome” (e.g. better recreational access), and as an “output” (e.g. build a new road). These outcomes and outputs should derive from the organisation’s corporate and physical asset strategic plans. Any capital proposal should explicitly identify its contribution to a department’s service delivery strategies.

The identification of service needs should also be linked to overall government objectives as spelt out in the State strategic planning processes, and in agreed regional strategies.

In determining the scope of a capital proposal, consideration should be given to determining what constitutes a discrete project, i.e. avoid excessive aggregation or excessive dis-aggregation of capital works components, and consider the impact on other projects or organisations.

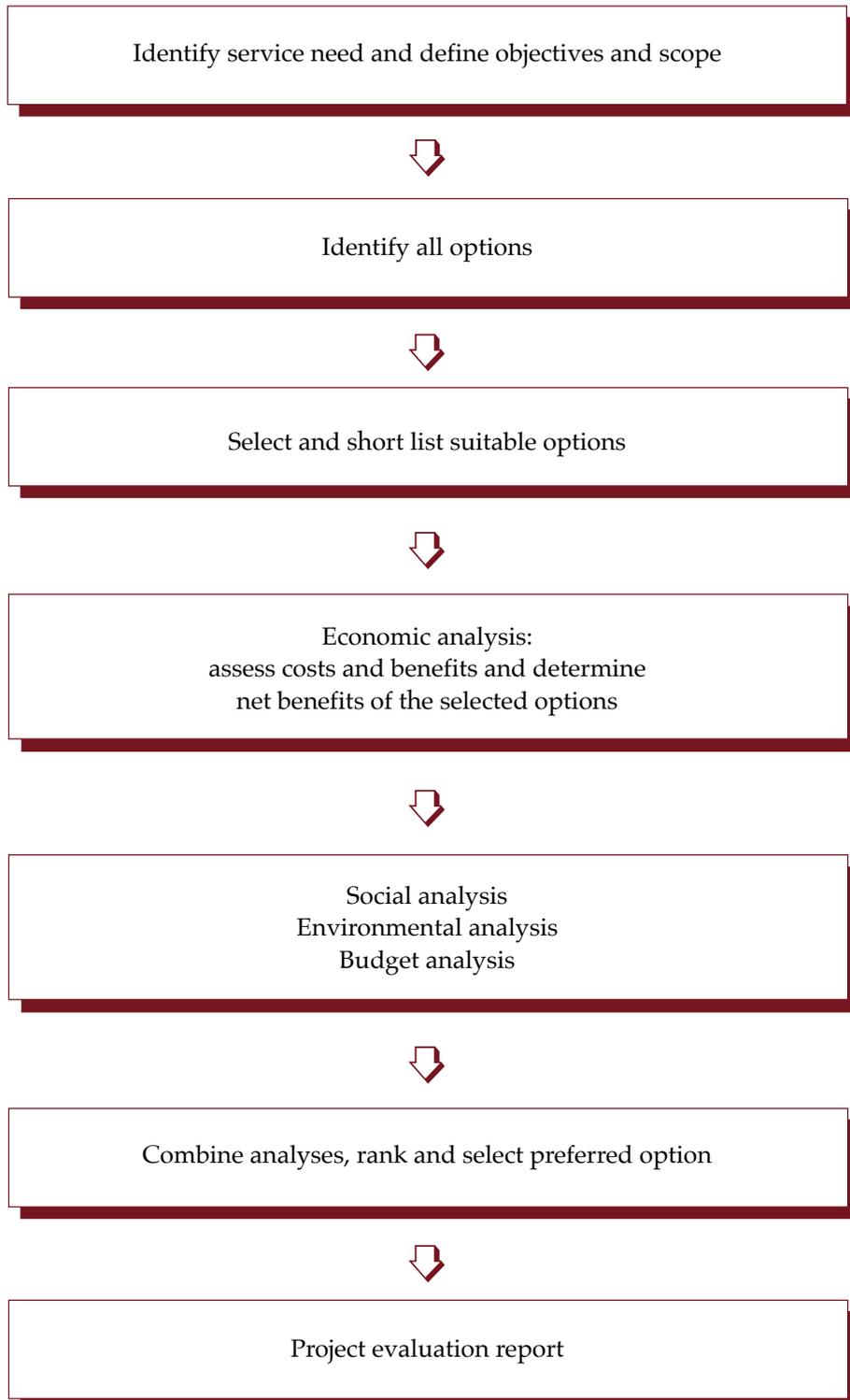
7.2 Identify and select suitable options

All realistic options should be identified at the early stage in the planning process, including a realistic base case option of “do nothing” or “do without” i.e., maintaining the status quo. Other options can include:

- refurbishing existing facilities;
- various options in terms of timing and scale;
- options to rent, build or purchase;
- provision of the service or facility by the private sector;
- maintenance by the private sector;
- various combinations of capital and recurrent expenditure;
- various locations or site options;
- co-operation with other spheres of government; or
- co-location or shared facilities with other agencies.

Diagram 2

The Project Evaluation Process



Options can be generated by asking questions such as:

- Could the operation be scaled down or closed?
- Are all elements of the operation justified?
- Could the operation be combined or divided to advantage?
- Can the project be linked to other projects?
- Could the operation be integrated with other functions?
- Is there a role for the private sector?
- Could the operation or part of it be contracted out?
- Are different sizes or qualities of operation feasible?
- How can the design and/or life of the scheme be varied?
- Is there scope to trade-off capital and maintenance costs?
- What interim solutions are available?

Following identification and preliminary assessment of all reasonable options, the most suitable options should be short listed for more detailed assessment.

7.3 Carry out the project analysis

To ensure that all aspects of a project are assessed adequately, the economic, social, environmental and budgetary impacts should be investigated. The analyses of each of these issues, which often may be interrelated, are then considered together to form the overall analysis of the project.

The weight placed on each type of analysis will depend on the nature of the project.

7.3.1 Economic analysis

Economic analysis assesses the impact of capital projects on the economy. The costs and benefits of a project are identified, valued (using estimates if necessary), analysed and ranked according to net economic benefit. The two techniques mainly used for economic analysis are Cost/Benefit Analysis and Cost/Effectiveness Analysis.

Cost/Effectiveness Analysis is particularly applicable to projects with strong community or social welfare objectives which may be difficult to value. It expresses the benefits in physical units rather than in monetary units and would apply, for example, where the output of a project cannot be readily assigned a monetary value. Because of the informational

The five steps of economic analysis are:

Identify benefits

Identify costs

Calculate net benefits

Prioritise options

Assess risk and uncertainty

Multipliers, which measure the secondary or indirect effects of a project on the economy, should not be included as benefits in an economic analysis.

demands of Cost/Benefit Analysis, the project and the benefits have to be of reasonable significance to justify the resources required for it.

There are five steps in an economic analysis.

(a) Identify benefits

In identifying benefits consideration should be given to:

- avoided costs — 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 project proceeds;
- revenues — revenues which result directly or indirectly from the project; revenue changes which would have occurred regardless of the project must not be included;
- benefits to consumers, and to the broader community as a whole (externalities); and
- the residual value of the asset (if any).

Multipliers, which measure the secondary or indirect effects of a project on the economy, should not be included as benefits in an economic analysis.

The inclusion of multipliers is inappropriate because any construction project will generate activity, directly and indirectly. However, these could also be generated by alternative uses of the funds.

Benefits should be valued in monetary terms wherever possible, e.g. by using real or estimated market prices. Often some notional financial measures will be available, but in some cases valuation may be excessively expensive and the results produced may be uncertain. Hence, organisations should use discretion as to the worth of undertaking such valuations.

(b) Identify costs

Evaluations should be based on the additional cost to the State of undertaking the particular project. Costs which would have been incurred anyway should be excluded. The stream of costs should cover the life of the proposed capital item.

The degree of accuracy in identifying costs will vary with the significance of the project and the availability of data. Assumptions underlying all capital and recurrent cost estimates should be made explicit in the evaluation, including assumptions regarding, for example, real labour costs, real energy costs, demand growth or real charges/rates.

It is important that estimates of costs be undertaken on a consistent basis to enable meaningful comparisons to be made between competing options and projects. Also valuation of costs should be on the same basis as benefits.

(c) Calculate net benefits

Nominal and real values must not be used in the same analysis.

The concept of present value is used to facilitate comparison between projects. For Cost/Benefit Analysis the various future costs and benefits should be expressed in present value terms. For Cost/Effective Analysis, a present value should be provided for costs.

Discounting takes account of the fact that initial investment costs are borne up front, while benefits and/or operating costs may extend far into the future. Discounting reflects the concept of the time preference of money which is relevant even in the absence of inflation. The use of real interest rates, i.e., with the effect of inflation removed, for example, reflects this time preference.

As a general rule, costs and benefits should be valued in real terms and the stream of costs and benefits should be discounted. Where nominal costs and benefits are used then this should be stated. Nominal and real values should not be used in the same analysis.

The calculation of present value requires the use of a discount rate.

A common discount rate is recommended for all departments in the economic evaluation of capital projects in the general Budget sector to facilitate the comparison and ranking of projects within and between portfolios.

A test discount rate of 6% real should be used with appropriate sensitivity testing.

All departments in the general Budget sector should use a test discount rate of 6% real with appropriate sensitivity testing, e.g. 4% and 8%.

Commercialised entities would normally, subsequent to an economic evaluation, undertake an overall financial evaluation of the project which would use an appropriate commercial rate.

The time period the analysis covers should be the expected life of the asset to be created so that immediate costs and benefits, as well as those that occur at varying times in the future, are included in the assessment. In many cases a 20-year time frame will be appropriate.

All evaluations should show the Net Present Value or Net Present Value of Costs to assist in ranking projects.

(d) Prioritise options

In a Cost/Benefit Analysis, Net Present Value (NPV) is a key decision criterion; this is the difference between the streams of costs and benefits of a project, both discounted to present value.

A project is viable if the Net Present Value is greater than zero; i.e., the total discounted value of benefits is greater than the total discounted costs. If projects offer alternative solutions to a single problem, the project with the highest Net Present Value should be selected.

For Cost/Effectiveness Analysis, Net Present Value of Cost is the key decision criterion used to rank projects on the basis of cost and to show the lowest cost alternative.

(e) Assess risk and uncertainty

There will always be some degree of uncertainty surrounding the outcome of an evaluation. To estimate the risks associated with this uncertainty, and to determine the sensitivity to adverse movements in particular variables, the projected outcomes should be tested under different scenarios.

An assessment should be made of a realistic range for all key variables. NPV calculations should then be performed using different combinations of worst and best case scenarios. The analysis should identify the minimum set of changes in key assumptions that would render the project uneconomic.

Analytical techniques for assessing risk and uncertainty include:

- *Sensitivity analysis*: this illustrates what would happen if a small number of the key variables changed and how these changes would affect the overall cost or benefit of the project.
- *Risk analysis*: this can be used where there are a limited number of key variables. Risk analysis assigns probabilities to the key variables, weights the key values by their probability of occurrence and uses these data to calculate the net present value of the project.
- *Scenario planning*: this approach is used if there are many assumptions in the project evaluation, each of which could vary. It is a process of looking at various possible situations or future scenarios. Scenario planning usually focuses on long term rather than short term horizons and is used to illustrate a range of technical, economic, social, and political uncertainties which may affect the success of a project.

A bias towards optimism should be avoided and all scenarios, including pessimistic scenarios, should be considered adequately and presented.

A clear statement of the assumptions used in the analyses and the reasons for choosing them must be given, so that the decision maker is aware of the assumptions underlying the analysis.

While both optimistic and pessimistic scenarios should be presented, particular attention should be given to the development of pessimistic or conservative scenarios. Areas where a bias towards optimism may occur are in the under-estimation of future costs and over-estimation of benefits.

7.3.2 Social analysis

An analysis of the social impacts of a capital project provides information, such as distributional effects, which are not included in an economic analysis but may be needed for decision-makers in assessing the desirability of projects.

An analysis of the social impacts of a project should be undertaken where it is likely that the project will:

- result in significant distributional shifts in costs and benefits between and within communities;
- substantially affect employment, trade, private sector or other levels of government etc.;
- cause disproportionate disadvantage to a particular sector;
- provoke appreciable community concern; or
- require changes in government policy and direction.

An analysis of the social impacts of a project should:

- identify any significant social issues or opportunities associated with the project;
- outline the extent to which they may impact on the project; and
- develop strategies and options to deal with these issues.

Risks and uncertainty associated with the analysis, in particular with assumptions underlying the analysis, should be outlined to assist decision-makers in the overall assessment of project risk.

Issues identified in this analysis should be stated clearly in the evaluation report so that decision-makers are fully aware of any policy implications or community reactions to the project proposal.

The extent and nature of the social analysis of a project proposal should be commensurate with the importance of the project and of the social issues involved.

The analysis should identify:

If there are any significant social impacts from the project

If anything can, or should be done in relation to these issues

What are the costs and benefits of any such action?

7.3.3 Environmental analysis

An environmental analysis is required for all capital projects to ensure that they meet the requirements of the *Environmental Protection Act 1994* and other relevant legislation, including the *Queensland Heritage Act 1992*.

The environmental analysis may include a preliminary review to determine the extent and nature of the environmental issues and whether further investigation is needed, followed by a detailed environmental impact statement commensurate with the significance of the environmental issues and the project.

Environmental analyses provides decision-makers with information about the environmental issues associated with capital projects, and should also identify ways of dealing with these issues.

The analysis should assess:

- the extent and nature of both on-site and off-site environmental consequences;
- the short- and long-term environmental effects from the project;
- opportunities to improve environmental benefits from the project (e.g. through the incorporation of conservation initiatives); and
- whether environmental considerations associated with the project are likely to be of significant community concern.

Where an assessment confirms areas of significant environmental concern, strategies and options should be developed, where feasible, to address these concerns. The costs and benefits associated with these strategies should then be identified and valued to assist in the ranking of options.

Risks and uncertainty associated with the analysis, in particular with assumptions underlying the analysis, should be outlined to assist decision-makers in the overall assessment of project risk. The extent and nature of the analysis should be commensurate with the nature of the environmental issues involved.

The analysis should identify:

If there are any significant environmental issues

If anything can, or should be done in relation to these issues

What are the costs and benefits associated with these actions?

7.3.4 Budget analysis

A budget analysis should be provided for the selected options. This should identify outlays and revenues for each year over the three year forward estimates period, and subsequently as appropriate.

The budget analysis of a project should outline:

- the outlays, both capital and recurrent;
- the revenues; and
- the funding source, including details of any financial arrangements

These can all be summarised in tabular format, for example:

NPV	Year 1	Year 2	Year 3	Post Year 3	Funding Source
Capital outlays					
Recurrent outlays					
Revenues					
Net					

All effects of the project on the State Budget should be identified, with particular emphasis on the three year forward estimates period.

All effects on the State’s Budget should be identified. These include:

- any budget impacts on other organisations, e.g. inter-departmental/ agency charging;
- possible effects on organisations’ budgets including capital and recurrent outlays, appropriations from the Consolidated Fund or Trust Funds, Commonwealth and State grants, borrowings and debt service charges, taxes and fees; and
- whole of government impacts, e.g. on other agencies.

Cash flows should be in current dollar terms, not in “real” or constant dollar terms (which excludes the effect of inflation). Note that analyses undertaken in “real” dollars will need to be adjusted to current dollars for Budget estimates. Particular emphasis should be given to the initial three year forward estimates period.

Borrowings and any risks or uncertainties, particularly with external funding sources, should be identified and described.

Net Present Value and Net Value of Costs are important factors in ranking projects, but not necessarily the only factors to be considered.

7.4 Select the preferred option

Options should be ranked initially on the basis of the economic analysis using Net Present Value or the Net Present Value of Costs as the yardstick. This facilitates comparisons on a consistent basis.

The ranking from the economic analysis should then be re-assessed in the light of the social, environmental and budgetary analyses and the ranking adjusted where necessary, and where the preferred option differs from that selected in the economic analysis, the reasons should be stated clearly.

It must always be recognised that the lowest cost option is not necessarily the “best” option; the “best” option is the one that most closely fulfils all government policy objectives (economic, social, environmental, etc.).

8. The project evaluation report

The purpose of a project evaluation report is to inform departmental management, ministers and Cabinet Budget Committee of the relative importance and worth of capital projects. To be able to do this project evaluation reports must be **clear and concise**.

To facilitate consideration by the Cabinet Budget Committee, a summary of the report should state:

- whether the project is consistent with the government's overall direction and the department's strategic plan;
- if the project forms part of an interdepartmental strategy;
- what impact the project will have on service delivery;
- how the project contributes to increased productivity;
- what budgetary impact and economic return the project will produce;
- whether options other than the government as owner and operator have been considered;
- whether the project will attract external funding;
- whether borrowings are to fund all or part of the project; and
- what scope there is for user charges to meet all or part of the cost.

The body of the report should:

- identify the project name, location and Australian Bureau of Statistics Statistical Division;
- state the project objective/s, and identify the most suitable options to meet the objective/s;
- briefly describe the process used to analyse these options;
- outline the results of the economic analysis including;
 - the costs and benefits of the most suitable options,
 - the results of the analyses of these options, and
 - the identification and justification of assumptions used;
- outline the results of the social, environmental and budget analyses;
- provide a risk assessment of the options;
- present a combined assessment of the economic, budgetary, social and environmental assessments, and then rank the options;
- identify the preferred option; and
- provide an analysis of the impact of the preferred option on the State Budget, and on other agencies.

9. Post implementation review

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

- a re-examination of the benefits and costs of the selected option to assess whether the anticipated benefits were realised and the forecast costs achieved;
- an assessment of the effectiveness in meeting government priorities and objectives;
- reconsideration of alternative options (if still applicable); and
- an examination of the project design and implementation to assess the scope for improvement to the adopted option.

Ex-post evaluations will assist in the development and evaluation of future project proposals, and so the investment in ex-post evaluations should be considered in the context of benefits likely to be gained.

10. Reference material

General

An Economic Framework for Assessing the Financial Performance of Government Trading Enterprise. Steering Committee on National Performance Monitoring of Government Trading Enterprises, Industry Commission, Melbourne, 1996.

Introduction to Cost/Benefit Analysis for Program Managers. Commonwealth Department of Finance, Australian Government Publication Service, 1995.

Handbook of Cost/Benefit Analysis. Commonwealth Department of Finance, Australian Government Publication Service, 1991.

Strategic Asset Management — Best Practice Guidelines. Queensland Department of Public Works and Housing.

Queensland Treasury publications

Budget Manual

Financial Administration and Audit Act 1977

Physical Asset Strategic Planning Guidelines

Public Finance Standards — PFS 340 to 348 — Management of Physical Assets

Recording and Valuation of Non-Current Physical Assets in the Queensland Public Sector