

A GUIDE TO PROJECT INITIATION

FOR PROJECT SPONSORS, CLIENTS & OWNERS



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INTRODUCTION

Both the Australasian Procurement and Construction Council (APCC) and the Australian Construction Industry Forum (ACIF) are acutely aware of the need for the most efficient and effective delivery of services from capital works assets, whether in the public or private sector. To meet this objective when resources are limited and demand for services and assets is growing, requires all parts of the construction industry to continually review and improve how community expectations are best met.

The use of rigorous information analysis at the beginning of a project has the greatest potential to significantly improve the whole project. This guide sets out a framework of leading practice methods for achieving those improvements.

The guide has been prepared by a joint working group of the APCC and ACIF. The APCC is the peak council of departments responsible for procurement, construction and asset management policy for the Australian, State and Territory governments and the New Zealand Government. Papua New Guinea is an associate member. ACIF's members are the peak national organisations representing the private sector of the construction industry in Australia. The members of both organisations are listed at Appendix A. Members of the working group are listed at Appendix B.

Ideally, all project initiation should include:

- ▼ recognition of the idea or opportunity;
- ▼ effective client sponsorship of the methods and outcomes to achieve efficient project implementation;
- ▼ use of good team processes to ensure clear and shared objectives are achieved;
- ▼ maintaining continuity in the key elements of the team;
- ▼ formulation of service and functional needs and objectives;
- ▼ project option evaluation to identify a robust concept;

- ▼ proper definition of the concept;
- ▼ effective construction planning during design; and
- ▼ identification of a clear project implementation and procurement plan including clear project stages with defined outcomes.

Attention to these issues has the potential to greatly improve project delivery and achieve:

- ▼ better value for money;
- ▼ the establishment and maintenance of good working relationships;
- ▼ better functional design and environmental outcomes;
- ▼ improved time and whole-of-life cost performance;
- ▼ fewer variations;
- ▼ reduced complexity; and
- ▼ project success for all parties involved in the project.

Many of the terms in this guide require a common acceptance of their meanings. These are defined in the glossary at the end of the document. Particular regard should be given to the definition of project sponsors: "Project sponsors are the client, financiers, and end users who, individually or jointly, commission and undertake project initiation".

This guide aims to facilitate better service delivery from capital works assets by encouraging all stakeholders to consider how, by doing some things differently, we can all take even greater pride in the contribution we make to the built form of our communities.

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OVERVIEW

The precursor to this guide was developed in the early 1990's by the Construction Industry Development Agency (CIDA) action team, mainly in response to the difficulties of project development experienced in the late 1980's. The members of the CIDA action team are listed in Appendix C.

Since then, the core principles of leading practice in project initiation have been adopted by most public sector

agencies engaged in capital works, and by private sector project sponsors.

The core principles of leading practice are also embedded in the detailed sections of this guide. They may be summarised as follows.

1 Project initiation processes should strive to achieve value for money in the delivery of capital works assets.

The working definition of value for money adopted in this guide calls for the client and end users to receive from their investment the levels of performance and quality required, at lowest total optimum whole-of-life cost. Value for money is not and should not be seen as, a prescription for lowest cost of design and construction alone.

Determining value for money requires a systematic evaluation of required standards of performance and quality, consideration of all options available to achieve those standards, ranking of competing solutions by their capacity to deliver those standards, and their cost.

2 A whole-of-life approach should underpin procurement planning and decision-making.

Consistent with principle 1, the entire cost of an asset over its expected economic life should inform evaluation of options to deliver required standards of performance and quality.

This will involve consideration of total construction cost, and include calculations of operating cost, and likely costs of disassembly and renewal at the end of the economic life of the asset.

The growing use of building information modelling (BIM) makes this task achievable. BIM also allows project sponsors to model the impact of different procurement options on sustainability, and encourages greater innovation in both design and construction to achieve the lowest possible carbon impact of any new asset.

3 Leading practice project initiation recognises that the ability to influence whole-of-life cost is greatest during the earliest stages of a project.

The likelihood of achieving required asset performance and quality is a direct product of the effort and planning at the project initiation stage.

Development of concept designs, in particular, has a significant impact on all that follows in finalising a brief for delivery of an asset. This requires sufficient time and professional fees to be available for generation of alternatives, and for them to be evaluated against required standards of performance and quality.

This concept development time is intended to encourage innovation in the development of options to deliver performance and quality standards, and to properly consider the social, commercial, environmental and other functions the asset must deliver.

OVERVIEW

4 The project concept should align with the project sponsors or end users strategic plan and service delivery objectives.

This principle flows directly from principle 3. A key objective is to clearly understand the service needs required to be met by the asset, at the outset, and achieve project success for all parties. Problems commonly encountered later in the delivery process, during detailed design or construction, often stem from scoping issues, the result of not clearly identifying what the investment in the asset is intended to achieve.

Ideally, concept designs will be developed by designers and cost planners, and be informed by the experience and skill of key trade contractors, and a builder. This will encourage innovation and a focus on buildability, whilst achieving client objectives for sustainability and the social contribution the asset is intended to deliver to the community.

5 Every stage of project initiation should involve checking back against all the project sponsors' objectives.

This involves a continual Go/No Go review at each stage comparing available information, design, cost and risk against the fundamental requirements for performance and quality contained in the project sponsor's strategic or business plan.

The key tasks called for by this principle are the minimization of risk, and the achievement of predictable and successful project outcomes.

6 A critical objective of project initiation should be to achieve project success for all those involved in it.

There are 5 elements to achieving project success:

1. End users expectations should be met or exceeded;
2. The project sponsors' strategic and financial objectives should be met;
3. Project team members should achieve their financial objectives;
4. The project delivery team should enjoy working together, and want to work together again; and
5. Community and stakeholder expectations of the project in terms of safety, design, environmental outcomes, and social objectives, should be met or exceeded.



CLIENT PROCUREMENT DECISION-MAKING

In making a decision to spend money on capital works projects, clients have to select a project delivery strategy that best meets their needs. Their common desire is to gain the benefit of a service or a benefit delivered from the completed asset. Project delivery strategies are chosen by clients on the basis of:

1. their appetite for risk and ability to assume risk;
2. the requirements of their project finance providers;
3. the speed with which they wish to design and build; and
4. their previous experience of constructing assets.

This document outlines a “leading practice” approach to project initiation, the precursor to the physical processes of detailed design and construction. Different clients and project sponsors will use different techniques and processes, but ideally will use a combination of those summarised in this guide.

1.1 ECONOMIC ENVIRONMENT

Market and economic forces which influence the physical construction phase of building and construction projects also impact project initiation. Some of these issues are:

1. the one-off nature of many projects;
2. economic cycles and underlying demand for new assets; and
3. short term thinking and opportunism by some project sponsors;
4. the lack of familiarity of some project sponsors with the development of capital works assets;
5. disempowerment of the client and owner as an outcome of the above; and
6. wide variation in skill levels across the construction industry which limits certain new techniques and precludes others.

This culture within the construction industry often creates a climate of expediency, the consequence of which is the tendency to rush the front end of projects and to eliminate or diminish the benefits of more care in initiation. For example, boom and bust cycles in the industry tend to reinforce short term thinking. For either government or the private sector, opportunities created by a boom, either in the investment decision or in the availability of finance, can create significant pressure to bypass sound principles of project initiation.

Other factors like the variability of skills in project option evaluation, feasibility analysis, and assessment together with the tendency for site-based issues to dominate the cost equation and the thinking of the players, have also added to the relatively low emphasis on utilizing leading practice techniques in project initiation.

The global focus on triple-bottom line reporting has also led to much greater emphasis on new investment meeting contemporary standards for carbon pollution reduction, and social inclusion.



CLIENT PROCUREMENT DECISION-MAKING

1.2 PRIVATELY OWNED PROJECTS

Assets constructed for the purpose of sale or rent, rely on income streams to justify their investment decisions. Whether financed by mixes of debt and equity (up to 100% of either), the purpose of the initial investment decision is to provide shelter for the conduct of business or enterprise over which the owner may claim part of the revenue as economic rent.

During times of credit expansion, decisions to build are often influenced by the availability of money supply on the financing side of the equation and not by the needs driven investment decision.

Irrespective of credit availability however, supply of new assets will undershoot or overshoot desired equilibrium causing temporary adjustments in demand and therefore quantum of the rent available to owners. In the 1980's, credit expansion and deflation of asset value growth by the reduction in inflationary pressure caused havoc with supply, economic rent, and therefore values. Conversely, the credit market failures of 2008 caused their own havoc with demand for construction, and asset values.

As a result, investors and developers, since the late 1980's, have adopted a more carefully studied approach to avoid the excesses which caused severe disruptions to their businesses and changes in practices by their lenders and slowed economic growth.

1.3 GOVERNMENT PROJECTS

From about the same time (early 1990's) a strong trend in government to increase the quality and rigour of project initiation became apparent. Increasingly, techniques like:

- ▼ business and service planning
- ▼ strategic and project value management
- ▼ quantitative project option evaluation
- ▼ rigorous business case preparation

became mandatory in the early stages of projects.

The more rigorous approaches have been well understood on complex projects (such as some petrochemical and resource-based developments) for many years. They are still evolving, in particular when public assets are procured using innovative private financing arrangements.

All governments are facing a shortage of funds for new projects, and to manage existing infrastructure. This growing demand for funds to manage existing infrastructure is squeezing the resources available for new projects, and has led to widespread use of partnerships with the private sector to develop assets and, in some cases, to manage the assets after they are complete.

It is clear that governments have adopted, and are committed to the increasing refinement of, techniques to ensure rigorous initiation, testing and evaluation of all government projects.



CLIENT PROCUREMENT DECISION-MAKING

1.4 THE INITIATION PROCESS

Apart from being complex and unique in nature, as a system, construction projects are dynamic, passing through several discrete phases of initiation, documentation and delivery (see Figure 1). In addition, most projects are sufficiently unique to have many of the characteristics of a prototype.

With the exception of projects involving repetitive processes (eg small scale pipelines, roadworks), building and construction projects are not like a manufactured item. The users and the owners do not have the benefit of extensive testing and refinement of the product.

This 'one-off' nature of the construction industry increases the importance of correct initiation. It also explains, in part, the reluctance to expend the sort of effort expected on a more repetitive project because all of the up-front costs have to be allocated to the one project.

This guide is underpinned by the proposition that, although each project is unique, a leading practice initiation process is generic in nature and can be applied to any project. There are four key steps that have been identified.

- 1** Project idea sources
- 2** Concept development
- 3** Evaluation
- 4** Definition

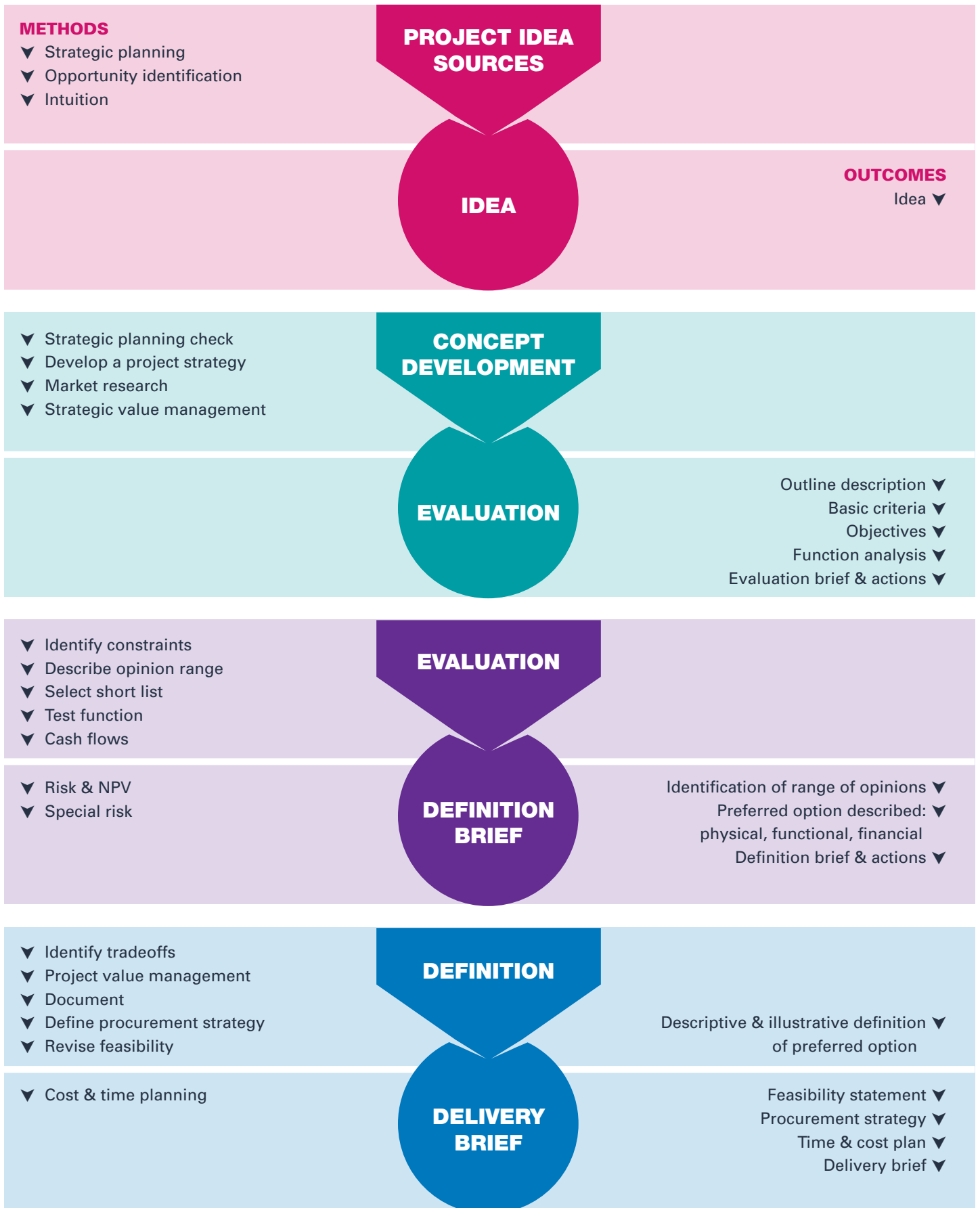
This guide deals in detail with stages 2, 3 and 4. The relationship between these is shown in Figure 1.

Each of these steps is discussed in the following sections. A framework that describes a "leading practice" approach to project definition is outlined describing the methods which are used by project sponsors to achieve required outcomes.

Project initiation is simply part of the full delivery process including project management, design, and construction.

You will see that the choice of which contract to use, should be one of the last decisions made by the project sponsor or client.

THE PROJECT INITIATION PROCESS - FIGURE 1





CONCEPT DEVELOPMENT

2.1 ISSUES

Project sponsors, clients, and owners having seen an opportunity or “need”, should develop a project concept to a stage that would allow for evaluation against a strategic, service or business plan. This concept development should include a range of reasonable alternative options, including a no-build option. However, there are numerous examples of projects proceeding to detailed design stage, prior to this evaluation occurring.

Failures in the current practice of concept development include:

- ▼ poor definition of the concept behind the project;
- ▼ project concepts which are not well supported by the market, service or business needs of the sponsoring enterprise;
- ▼ absence of clearly stated objectives and functional requirements;
- ▼ failure to actively involve relevant stakeholders in concept definition and needs analysis; and
- ▼ the lack of defined action plans and adequate briefing for the evaluation phase.

Private sector business planning amongst continuous users such as resource investors and institutions involved in long term holding of investment property tends to be more studied and professional than speculators and one-off users. Opinion on methods of valuation for buildings is divided between reliance on traditional valuation techniques (which are usually historic) and discounted cash flows. Valuation techniques for financial products and equities deal with valuing future cash flows and reflect changes in market sentiment more quickly than the lagged smoothing effect of historic values.

Rushing the concept and evaluation phase misses the best and lowest cost opportunity to get the project right. Changes made at the concept phase cost little but can have a major impact. In contrast, late changes are expensive or cannot be done, and then disrupt and dislocate project delivery leading to cost and time overruns.

Figure 2 outlines the benefits of good concept development, planning and brief preparation, and the decreasing ability to influence final cost as construction proceeds. The target is to improve the quality of solutions at the earliest stage and have the greatest impact on outcomes.

Often, design development can occur prior to the client knowing the project’s end use (particularly in the case of commercial building developments) or their financial constraints. The result in this case is either a significant rework of the design or the risk of poor functional or service outcomes unless the design is reworked.

Needs analysis involves asking:

- ▼ what are the objectives for project success?
- ▼ what is the state of the market (in terms of price/demand etc.) and, in particular, what are the expectations and plans of likely users and customers?
- ▼ which business or service needs are met by the project and how well?

Inclusion of a needs analysis in the initiation process raises a presumption of rational behaviour. However, there are abundant examples where this rational analysis is swept aside by decisions that arise from some less thoughtful process: where projects are determined, for instance, solely by budget allocation, availability of debt raised on other assets, or are an outcome of a political process.

Prior to the changes of the 1990’s, little market or service needs analysis was undertaken, save for reliance on:

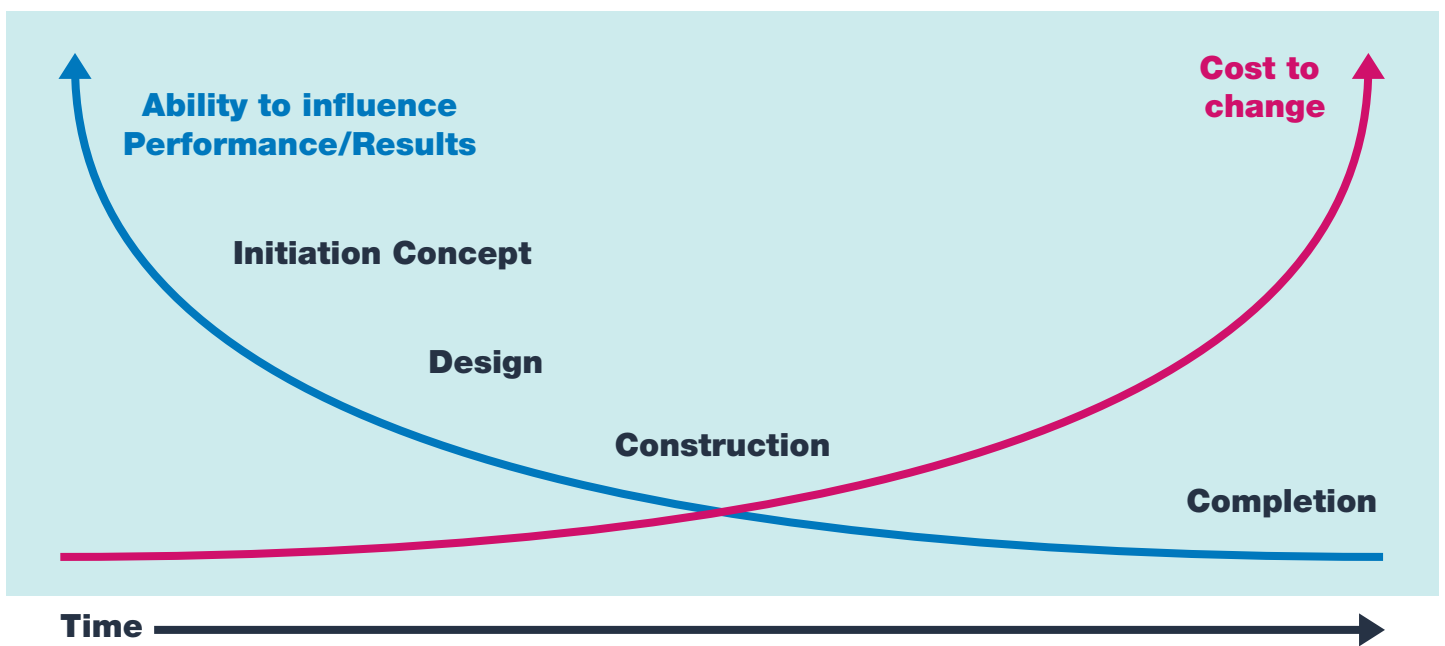
- ▼ historical trends (for example rates of consumption of office space); and
- ▼ comparable rates of return (for example income per square metre for retail centres).

Critical evaluation of growth or serious questioning of service need in the underlying industries which create the income streams is now essential. Projects will rarely proceed on expectations of market growth alone, which is not based on quantitative demand research.



CONCEPT DEVELOPMENT

ABILITY TO INFLUENCE PERFORMANCE/RESULTS OVER PROJECT TIME - FIGURE 2



The large property investment institutions have highly developed evaluation procedures. They understand the need to ensure the appropriate market based criteria are included in the evaluation of the project. This also emphasises the need to bring together a sound knowledge of the business and the knowledge of successful project strategies to get a balanced evaluation.



CONCEPT DEVELOPMENT

2.2 METHODS & OUTCOMES

The concept development phase of project initiation has three stages:

- ✔ concept identification;
- ✔ needs analysis; and
- ✔ development of the evaluation brief.

Figure 3 shows how these stages relate and the methods and outcomes for each stage.

Proper concept identification can also test alternative concepts and the impacts of environmental and planning approval procedures on the length of the development program. The questions to be asked are:

- ✔ Does the concept completely conform with planning policies and regulation?
- ✔ Can the concept only proceed with changes to planning policies and regulations or call in?
- ✔ Will the project require utility or infrastructure adjustments?

2.3 CONCEPT IDENTIFICATION

Concept identification should ensure that a project concept is consistent with the client's strategic, business or service planning. To satisfy the requirements of this stage, the client should develop the concept detail to a level that enables the project to be compared with the organisation's strategic direction. This assumes that strategic planning for the business is completed down to a level where measurable service objectives are used. Construction solutions should support these quantified objectives. This process will include the preparation of a cost plan, within the broad strategic direction of the organisation's business plan.

The outcomes from this stage can include:

Detailed results from conceptual analysis

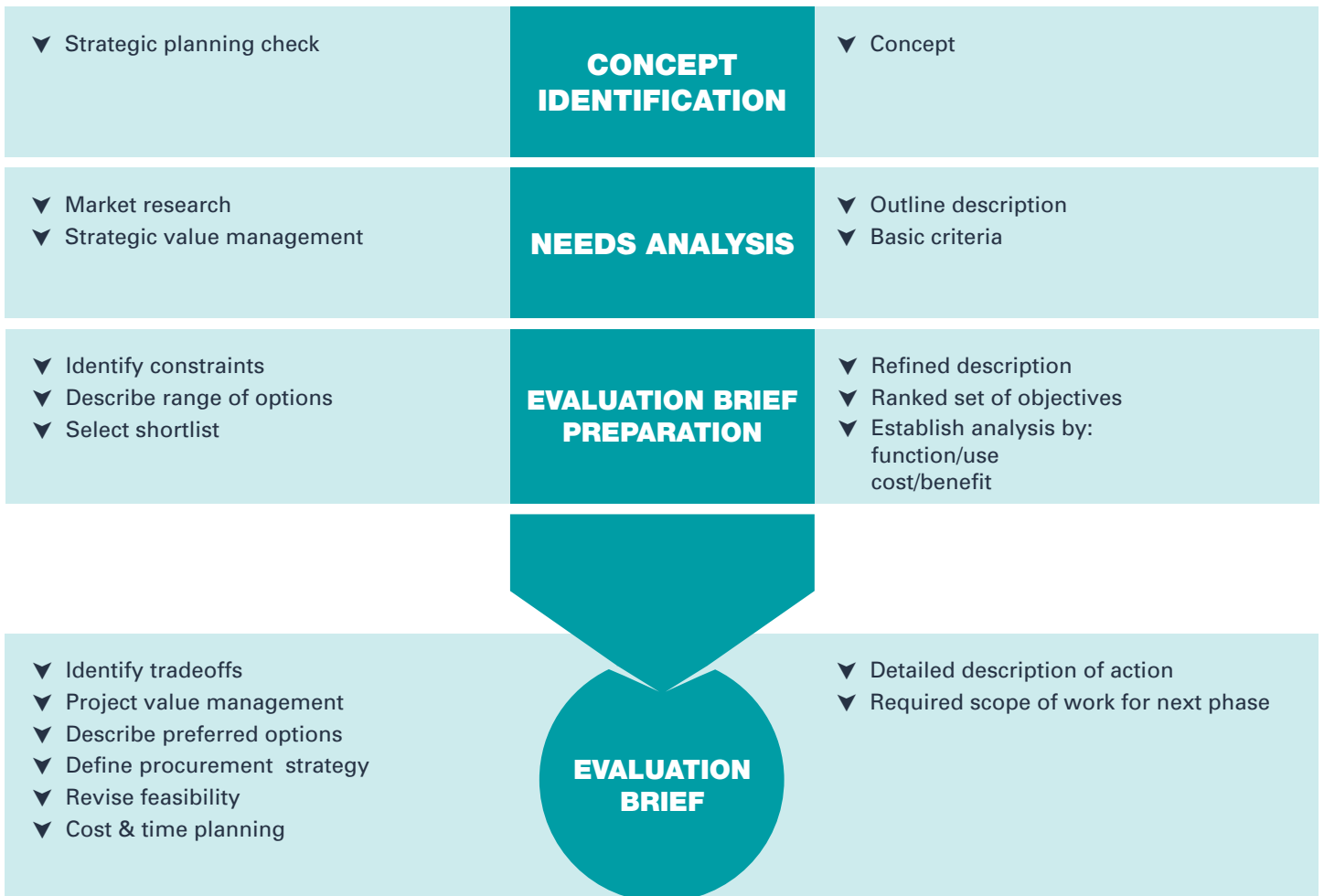
- ✔ What was the catalyst?
- ✔ Expected results

Conclusions

- ✔ Problem and solution at the summary level
- ✔ Cost plan framework
- ✔ Recommendation whether or not to proceed to the preliminary phases of the project
- ✔ Outline of concept



CONCEPT DEVELOPMENT - FIGURE 3





CONCEPT DEVELOPMENT

2.4 NEEDS ANALYSIS

While high level business planning is essential to success, it is not sufficient. There is considerable research which suggests that successful outcomes require all parties to clearly understand project objectives.

Strategic value management (SVM) is one technique which can be used as a key to presenting a clear set of client objectives for the project and to answer the key functional questions up front. By establishing this at the earliest stage of the project and tying it to the business plan for the organisation, a coherent framework is established which enables the project to proceed to the next stage.

Options should be built into the SVM process and treated by:

- ✔ broadly describing and pricing each option;
- ✔ testing each option against function and objectives; and
- ✔ subjecting a smaller subset of options to more detailed description and pricing.

The task in this stage is to achieve a ranked set of objectives that broadly describe “what the project must do”. Analysis to achieve this consists of:

- ✔ market service needs analysis;
- ✔ functional needs and outcomes (what must it do);
- ✔ prioritisation of objectives and functions;
- ✔ explicit evaluation of project objectives against strategic business or service plans; and
- ✔ an action plan for the next stages, which identifies both actions and “gaps”.

Emphasis on the above will vary from project to project.

The outcomes expected from the needs analysis are:

- ✔ a refined description of the project and what it must do;
- ✔ a ranked set of objectives; and
- ✔ analysis of the project by:
 - function or use,
 - the cost/benefit of the function or uses; and
- ✔ a statutory planning check.

2.5 THE EVALUATION BRIEF

The concept phase would normally be completed by the owner or sponsor of the project with limited specialist assistance. The evaluation phase requires specialist analysis of the project concept to test for viability and robustness of assumptions. The evaluation brief ensures the concept phase is recorded clearly as input to the evaluation process.

The evaluation phase requires an increased involvement by technical and business specialists. The evaluation brief will:

- ✔ define the actions required and scope of work for the evaluation phase.
- ✔ contain the outcomes from the concept phase including:
 - an outline description of the concept - project strategy, objectives; and
 - functional analysis.



EVALUATION

3.1 ISSUES

There are at least two critical issues in project evaluation. Firstly, the analytical processes of project evaluation are not easily understood and are not easily accessible to people who must make decisions about projects. Secondly, the area of project evaluation and initiation requires specialist skills. These are in short supply and are not always well enough applied to building and construction projects in either the private or public sectors.

Given the long term nature of uses for building and construction projects and the relatively high costs of ownership and operation, project sponsors must ensure careful evaluation of each project.

Project implementation is improved by the introduction of documented objectives which define the success criteria for the project. This results in a more focused project and higher chances of achieving the goals which are set. The owner also achieves a better business outcome simply because the business goals are clearly linked to the project and properly thought out.

The key issues which emerge from review of the preparation of feasibility analysis in the evaluation phase are:

- ▼ the need for all projects to be subjected to effective quantitative analysis;
- ▼ the implicit or explicit existence of an underlying inflationary expectation - relying on capital appreciation, to rescue an otherwise marginal investment decision;

- ▼ the need for well structured net present value (NPV) techniques;
- ▼ the need for proper risk assessment;
- ▼ the need to differentiate the investment decision and financing options;
- ▼ the criticality of testing of needs, functions and objectives to determine best value for money;
- ▼ the need for effective communication and presentation of analysis to owners and project sponsors; and
- ▼ particularly in government, the need to leverage portfolio opportunities in a “whole-of-government” approach.

Project evaluation and feasibility studies involve two principal decisions:

- ▼ the decision to invest (the investment decision); and
- ▼ the decision on the break-up of capital into equity and debt (the financing decision).



EVALUATION

3.2 METHODS & OUTCOMES

The evaluation phase of project initiation has three stages:

- ▼ option generation;
- ▼ testing and feedback; and
- ▼ development of the definition brief.

Figure 4 shows how these stages relate and the methods and outcomes for each stage

3.3 OPTION GENERATION

With manufactured products, the range of options available to the purchaser is taken for granted. There is a market need for a range of forms, qualities and prices. Similarly, for most projects there is more than one solution to a given problem, and in most cases a range of variations within a solution. However, the one off nature of construction projects too often results in the “one right answer” being locked in too early in the process. Whilst being expedient, this may be a result of the reluctance to spend money on the adequate development of meaningful options and proper evaluation.

Provided the function or uses are clear and the project objectives are well defined, there is a firm basis for generating a range of meaningful options for analysis and consideration. This will include early design studies by the project consultants.

This does not imply the detailed examination of all possible options - a path of action which would be most likely to delay or stop the project – but instead the careful selection of a meaningful set of options.

A simple glance at the range of solutions which usually emerge in a design competition reveals the spectrum of ways in which the form of some projects can be expressed.

In a similar way, the range of forms for even simple consumer goods which have evolved over time, also gives some idea of the power of options.

The adequate examination of options also provides a review of risk for the project and may help to add flexibility for evolving choices or changed circumstances.

The methods used in the options generation phase are mainly descriptive. Group processes and expert input from the project consultant team are used to identify a range of options. Flow charts, outline cost plans, diagrams and simple block plans are then used to describe the options. This step in the process is very important and requires the full input of the owner or sponsor of the project.

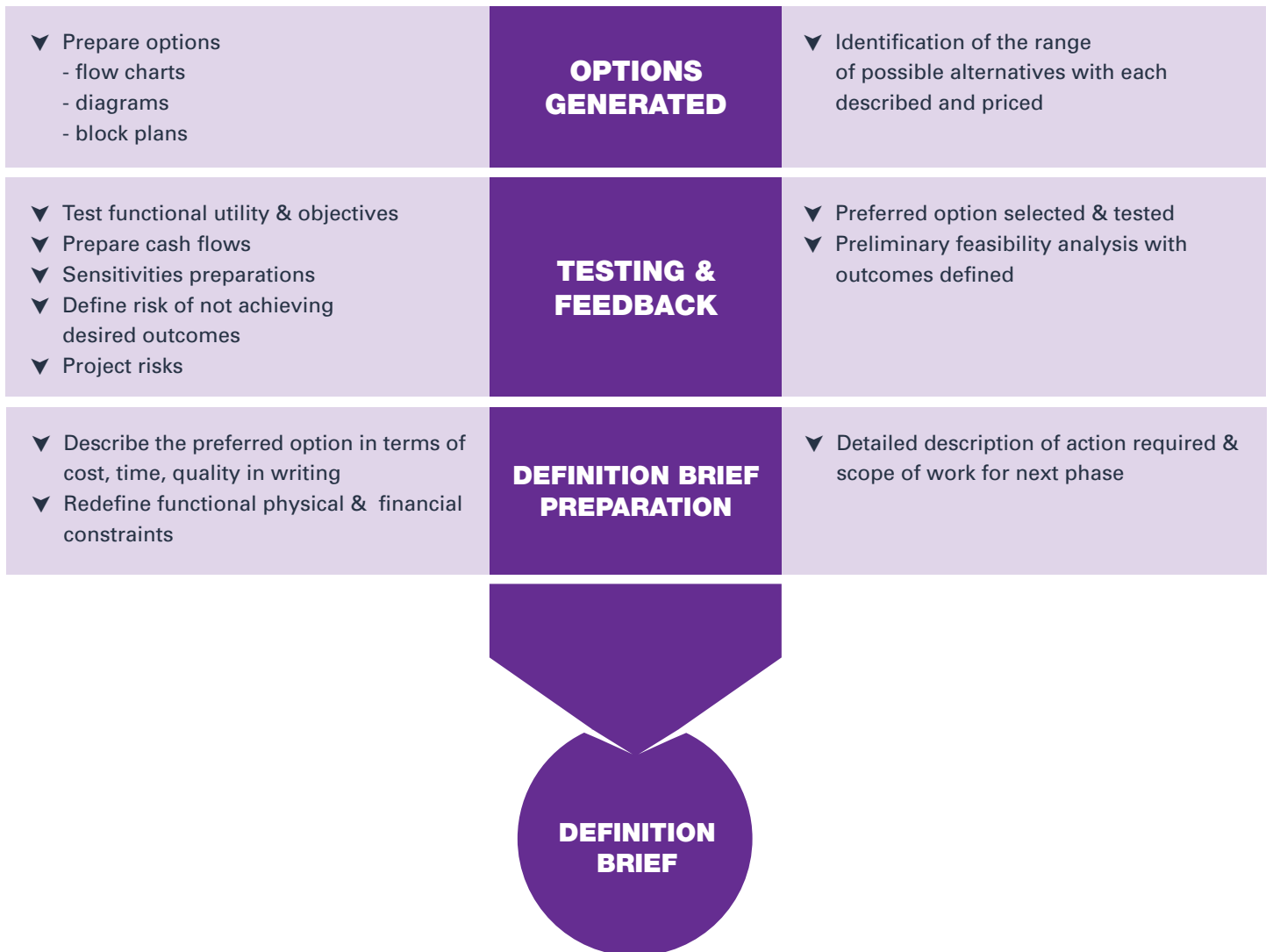
A common abuse of the options process occurs when poorly thought through design competitions are used to subsidise the owners costs for this work and substitute for proper planning of the project.

The outcomes from this stage then, can include:

- ▼ a range of identified possible alternatives;
- ▼ each of the alternatives described quantitatively and qualitatively and priced (including assumptions regarding price escalation); and
- ▼ initiation of early planning approval process steps.



EVALUATION - FIGURE 4





EVALUATION

3.4 ENVIRONMENTAL PLANNING & APPROVAL

The options considered will determine the length of the planning path. Choosing an option that complies with existing guidelines may significantly reduce the time and complexity of the planning approval process.

Different project program times are required for the planning and environmental approval procedures where alternative design concepts result in different 'approval paths'. Where the time taken to gain approvals is on the critical path of the approvals, time is important. To have a project designed from the initial concept in such a way that it is able to meet applicable planning and environment regulations will save time and money. When it is necessary for a project to follow a more complex 'approval path', the inclusion of it in the evaluation stage will provide clarity and greater certainty to the timing of the development.

The Development Assessment Forum's Leading Practice Model outlines the steps involved in securing required approvals. The Development Assessment Forum (DAF) was formed in 1998 to recommend ways to streamline development assessment and cut red tape - without sacrificing the quality of the decision making. The Forum's membership includes the three spheres of government (the Commonwealth, State/Territory and Local Government), the development industry, and related professional associations.

3.5 TESTING & FEEDBACK

This is the analytical step of project evaluation. It is also the point at which a preferred option is selected, based on the criteria established for the project. It involves taking the various options and a range of tests and techniques to fully determine the range of likely outcomes and risks for the project. It forms the essential ground work for the decision in the definition phase to proceed with the project.

The analysis in the testing and feedback phase is essentially specialist and highly skilled analysis. The other focus of the testing process is to determine how well the options fit the stated functional and business objectives for the project set in the concept phase. This process will involve feedback into some of the outcomes and processes of the concept phase to refine and modify the objectives of the project to incorporate the better state of knowledge which is building on the project. In addition, the new players on the project required for this specialist phase will be able to assist the refinement of the concepts for the project.

The methods used in this phase will most likely include:

- ▼ quantitative analysis of project functional and business objectives;
- ▼ preparation of project option cash flows (including an assessment of the likely cost escalation during the flow period);



EVALUATION

- ▼ preparation of indicative project management information including project time schedules;
- ▼ determination of the range of quantitative parameters which influence the project viability;
- ▼ preparation of NPV analysis of the project options including sensitivity analysis;
- ▼ completion of a project and business risk assessment;
- ▼ undertaking probability of outcome assessment; and
- ▼ consideration of special project risks.

The outcomes from this stage can include:

- ▼ a preliminary feasibility study which:
 - describes and analyses a range of options for the project; and
 - defines a range of likely outcomes for the project as whole; and
- ▼ a preferred option selected and tested physically, functionally, and financially.

3.6 THE BRIEF FOR THE DEFINITION PHASE

Preparation of a brief for the next phase, definition, is the last step in evaluation. The definition phase again signals a shift in approach to the project. The emphasis in this phase is getting to the point of a decision to commit to the project. The preferred option is refined, the definition developed and expanded, and the project management plan is developed in more detail. It is a transition phase between project evaluation and full project implementation.

It is essential to capture and effectively communicate the results of the evaluation phase in the definition phase brief.

The definition phase brief may include:

- ▼ a written description of the preferred option;
- ▼ cost targets;
- ▼ time requirements;
- ▼ quality considerations; and
- ▼ redefinition of the objectives for project success.



DEFINITION

4.1 ISSUES

During the definition phase, the preferred option is developed as a design to bring the project plan, cost plan and time schedule to a point where the owner or sponsor can make a decision to proceed.

As part of this decision to proceed, the value management process should be formally re-run with the defined project to confirm the functions and objectives of the project and their connection to the service and business planning for the project. It is also imperative to have achieved planning approval by the end of this stage.

In current practice it is unusual to have the concept development and evaluation phases completed in the ways recommended in this guide. Consequently, the design process often absorbs the need to make decisions which should have been made prior to commencing this definition phase. Accordingly some of the following are likely to occur:

- ▼ no criteria or objectives for testing the success of the project;
- ▼ lack of process for owner involvement in decision making;
- ▼ delays in design while options studies are completed;
- ▼ the expensive process of finding out on the design board that a particular approach does not work;
- ▼ the design process does not have the fees to support a process of the type recommended in this paper and the project does not deliver value for money;
- ▼ the process is project delivery focused and does not generate innovative alternative solutions within the portfolio – including ways to achieve a no build outcome;
- ▼ projects which are poorly conceived or not viable “slip through” the process; and
- ▼ more extensive rework occurs.

4.2 METHODS & OUTCOMES

The project definition phase has three stages:

- ▼ schematic design;
- ▼ testing and feedback; and
- ▼ development of the delivery brief.

Figure 5 shows how these stages relate and the methods and outcomes for each stage.

4.3 SCHEMATIC DESIGN

At this stage, the design professionals prepare the schematic design. At the same time, a fully developed project plan is prepared for the project management of the implementation phase.

This developed schematic design for the project is then used for a value management study which confirms the SVM but also tackles the specifics of value for money with the chosen design. This process is used to ensure the money is being spent to deliver the function required and to eliminate high cost/low function elements of the design.

The developed cost plan and the SVM study will result in ranked trade-offs in the design process and make the choices on these visible to the owner or sponsor.

The methods used in the schematic design stage include:

- ▼ drawing of the project to a schematic or single line stage;
- ▼ refinement of the project plan to develop:
 - a specific project time schedule, and
 - a limit of cost plan;
- ▼ running a value management study which confirms the SVM and evaluates the specific project for value for money; and
- ▼ identification of ranked trade-offs.

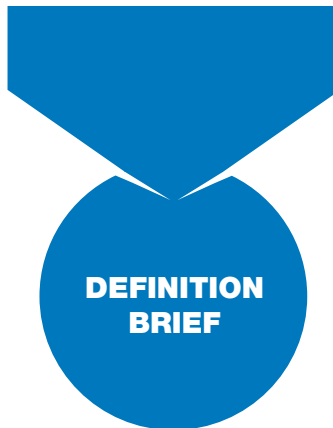


DEFINITION - FIGURE 5

<ul style="list-style-type: none"> ▼ Identify tradeoffs ▼ Re-run strategic & functional objectives ▼ Prepare single line drawings/diagrams 	<p>SCHEMATIC DESIGN</p>	<ul style="list-style-type: none"> ▼ Descriptive & illustrative definition of preferred option
<ul style="list-style-type: none"> ▼ Schedules define procurement strategy & risk ▼ Re-run all quantitative analysis ▼ Cost plans ▼ Life cycle costing 	<p>TESTING & FEEDBACK</p>	<ul style="list-style-type: none"> ▼ Revised feasibility ▼ Time schedules in place ▼ Financial constraints set ▼ Go/No Go decision
	<p>DEFINITION BRIEF PREPARATION</p>	<ul style="list-style-type: none"> ▼ Identification of scope of works & procurement strategy ▼ Prepare report containing defined & tested project; and

The outcomes from this stage can include:

- ▼ a descriptive and illustrative definition of the preferred option including:
 - time schedule
 - cost plan (taking account of industry capacity and expected cost escalation)
 - schematic drawings
- ▼ a value management report confirming value for money, and;
- ▼ the identification of ranked trade-offs.





DEFINITION

4.4 TESTING & FEEDBACK

This step is the final confirmation of the project prior to a decision to proceed. The analysis developed and refined in the evaluation stage is rerun and further developed to confirm that the project, which is now defined in some detail, still meets the needs of the owner or sponsor and will still perform and deliver outcomes which are beneficial to the enterprise.

Also included in this stage is an evaluation of the costs of ownership and operation which flow from the chosen design. Techniques including life cycle cost analysis would be used at this point.

The methods used in the testing and feedback step for project definition include:

- ▼ re-running all quantitative analysis;
- ▼ establishing life cycle costing of the project; and
- ▼ developing cost of ownership and operation of the project.

The outcomes from this stage can include:

- ▼ revised feasibility analysis;
- ▼ time schedules in place;
- ▼ financial constraints set;
- ▼ planning approval achieved;
- ▼ cost of ownership and operation defined, and;
- ▼ a Go/No Go decision in-principle from the owner or sponsor.

4.5 THE DELIVERY BRIEF

The delivery brief consolidates and documents all of the project analysis, description and planning, which has resulted in the approval of the owner, into a brief for the implementation of the project. The delivery brief is expected to contain:

- ▼ the project sponsor's strategic objectives for the project;
- ▼ the functional objectives for the project - what it must do;
- ▼ life cycle requirements – what is important to the owner post construction
- ▼ a first draft of the sustainability rating tool outcome for the project;
- ▼ the financial constraints and objectives;
- ▼ a summary of the conclusions from the feasibility and risk analysis;
- ▼ details of planning approvals;
- ▼ the project implementation plan, actions and schedules;
- ▼ a procurement plan;
- ▼ a cost plan; and
- ▼ the project schematic design, description and illustrative definition.

GLOSSARY

Brief

Written goals, methods and desired results prepared by committed project participants at the end of each phase of project initiation sufficient to permit advancement of the project to the next phase without double handling.

Capital Structure

Leverage of returns (up or down) occurs when the cost of debt varies from the project return. Capital structure share between debt and equity determines how strong this leverage will be to the investors equity compared with the project's return.

Construction Industry

The aggregate of human, financial and other resources necessary to complete a project. This is traditionally viewed as three sectors:

- ▼ engineering construction including infrastructure projects such as bridges, roads, dams, and resource projects;
- ▼ non-residential projects including offices, industrial, retail, health, education; and
- ▼ residential projects including single and multi-unit dwellings.

Cost Benefit Analysis (CBA)

The comparison of payback by initial cost and life cycle costing of options for elements of the project.

Cost of Capital

The project sponsor, client, or owners desired or necessary rate of return used to discount cash flows to determine if the cash flows have positive net present value.

Cost Plan

Financial guidelines prepared prior to concept design from project goals within which the project delivery can confidently be completed. Final project definition and documentation occur after the cost plan preparation.

Discounted Cash Flows (DCF)

Reducing time based cash flows (in or out) at the project

sponsor's cost of capital to their present value, to reduce bias based on time.

Efficient Project Implementation

Management technique designed to reduce double processing of individual steps in the process by testing options at discrete points during initiation and committing participants to a clear definition of the next step prior to its commencement.

Estimate

The likely outturn? cost of a project based on a given design. Undertaken as a comparison with and after a cost plan has been defined and design prepared. Assumptions regarding industry capacity and associated cost movements during the life of the project (i.e. cost escalation) should be declared.

Feasibility Analysis

Quantitative analysis to define all cost inputs and outputs of the investment decision. Results should be discounted back to present value at a percentage rate applicable to the risk adjusted cost of capital of the project. Sensitivity analysis must be performed on input data to determine the range of variance.

This discounted result is deducted from initial present cost to determine if the balance is positive (proceed) or negative (defer or adjust).

Financing Decision

Result of considering the investment decision. The share of equity and debt used to construct the capital structure to obtain a result commensurate with the project's cash inflows.

Investment Decision

Result of evaluating the project cash flows. Care must be taken not to confuse this with the financing decision. Only capitalised interest to project commencement should be included in the Investment decision cash flows.

Leading Practice

Management technique(s) which if implemented sequentially will most likely produce beneficial time and

GLOSSARY

cost results to the project sponsor and provide high levels of reward to the participants in the process.

Managerial Actions

Directions given (or withheld) by project participants who are empowered to commit subsequent phases of a process including proceeding, marking time, and withdrawal.

Needs Analysis

The result of detailed research into underlying market demand (or acceptance) of the use of the project.

Net Present Value (NPV)

The difference between the discounted future cash flows of a project and the initial investment. Can be positive or negative and is measured in \$. If NPV is zero, the project sponsor's discount rate equals the internal rate of return of the cash flows.

Procurement Strategy

Method of project delivery detailing the participant's methods and outcomes necessary to complete the project strategy.

Project

Completed outcome of a decision to invest human and financial resources in the establishment of a physical item or implementation of a process.

Project Delivery

The process of documenting, tendering, and constructing the defined project.

Project Initiation

Process to conceive, evaluate and define the methods necessary and outcomes likely to achieve the starting point for project delivery.

Project Option Evaluation

Testing of clear alternatives by

- ▼ quantitative methods including initial and life cycle costing feasibility analysis and value management
- ▼ qualitative methods including utility convenience and design.

Project Sponsors

Are the client, financiers, and end users who, individually or jointly, commission and undertake project initiation.

Project Strategy

A plan of the detailed steps to achieve a given outcome from investment of a fixed sum of human and financial capital.

Risk

Possibility that a given outcome may not be achieved as predicted. Measured in percentage of variance.

Strategic Planning

Identification of the likely goals by which the success of an organisation's purpose can be measured. Business and service planning are sub-sets of strategic planning.

Strategic Value Management (SVM)

Testing of both project concept and individual function and components of the project to obtain value for money and eliminate high cost and/or low function elements. The process will involve the commitment of all team members.

Sustainable Development

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Value for Money

Definitions of value for money vary from client to client. It is suggested that a universal definition calls for the client and end users to receive from their investment the levels of performance and quality required, at lowest total whole-of-life cost.

Variance

Range of possible outcomes distributed around the most likely option. Measured as a % in the terms of the item being considered (\$ or time).

APPENDICES

APPENDIX A - MEMBERS OF APCC & ACIF

APCC MEMBERS

New South Wales

NSW Treasury
Department of Services, Technology and Administration

Victoria

Department of Planning and Community Development
Department of Treasury and Finance

Queensland

Department of Public Works

South Australia

Department for Transport, Energy and Infrastructure
Department of Treasury and Finance

Western Australia

Department of Treasury and Finance

ACIF MEMBERS

Air Conditioning and Mechanical Contractors' Association of Australia
Association of Consulting Architects Australia
Association of Consulting Engineers Australia
Australian Institute of Architects
Australian Institute of Building

Northern Territory

Department of Business and Employment
Department of Construction and Infrastructure

Commonwealth

Department of Finance and Deregulation
Defence Materiel Organisation

Australian Capital Territory

Department of Territory and Municipal Services

New Zealand

Ministry of Economic Development

Papua New Guinea (Associate Member)

Central Supply and Tenders Board

Australian Institute of Quantity Surveyors
Construction Industry Engineering Services Group
Facility Management Association of Australia
Fire Protection Association Australia
Institution of Engineers Australia
Master Builders Australia
Property Council of Australia

APPENDIX B - APCC/ACIF WORKING GROUP MEMBERS

Darral Haynes	Director (CEIID PMO), Department of Treasury and Finance, WA
Nicola Grayson	National Policy Manager, Consult Australia
Jane Montgomery Hribar	Executive Director, APCC
Megan Motto	CEO, Association of Consulting Engineers Australia
David Parken	CEO, Australian Institute of Architects
Vincent Shaw	Principal Quantity Surveyor, NSW Government Architect's Office
Ross Smith	Principal Policy Manager (Capital Works), Department of Public Works, QLD
Peter Barda	Executive Director, ACIF

APPENDIX C - CIDA ACTION TEAM MEMBERS

Don Cunnington (Chair)	Properties (QLD) Pty Ltd, QLD	Neill Green	John Holland, NSW
Alan Piper	Building Management Authority, WA	Carleen Devine	Sydney City Council, NSW
Tim White	AMP Society, NSW	Ian Court	ACTU, VIC
Terry Donaghy	Simon Engineering, NSW	Barry Paice	Health Department, VIC
Peter Watt	Peddle Thorp, NSW	Greg Paramor	Growth Equities Mutual, NSW
Bob Blanchard	Boral Elevators, VIC	Dick Pollet	McLachlan Group, NSW
Grahame Campbell	Crooks Michell Peacock Stewart, NSW	Scott Gartrell	CIDA Project Manager
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